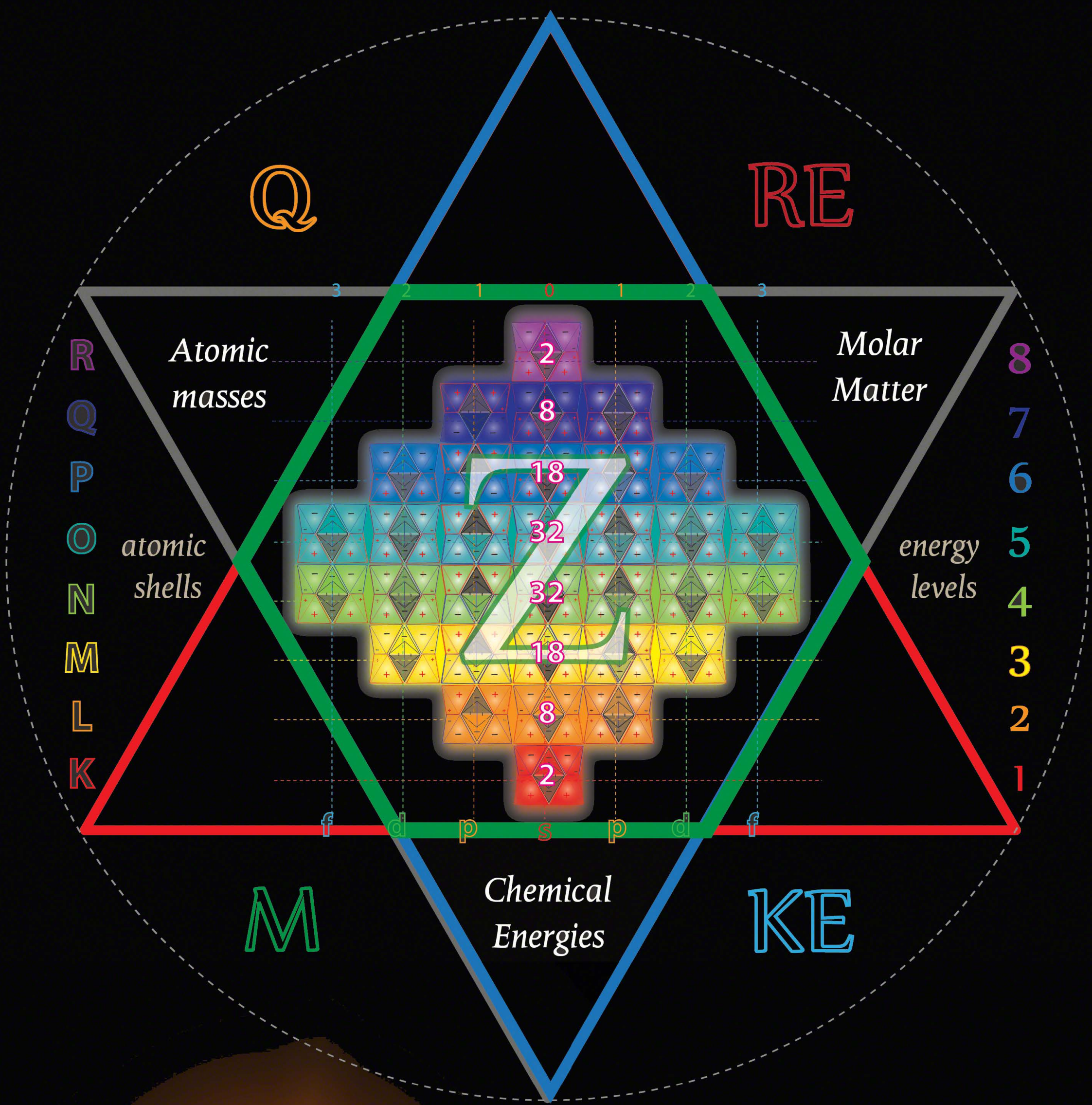
TETRYONICS

The charged topology of periodic & compound Matter



Foundational Quantum Chemistry

Abraham

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[Second Edition © 2012]

Protons + Neutrons

u+d+u d+u+d

All electrons, quarks and Baryons are made up of 4n+ (Tetryonic) standing-wave EM fields.

As well as having nett Tetryonic charged topologies ranging between [+24] ~ [-12] they all posses distinct ELECTRIC FIELDS that are concentrated in 3 apex points as indicated in the illustrations

These points result from the orientation of Electric apexes and orthagonal Magnetic dipole field edges that make up each particle's externalised EM fields.

The Positive and Negative electric apex points, obey the Law of Interaction forcing separated nuceli to combine due to their individual nett Tetryonic charges and provide a means of orienting nuclei to each other to create larger particles [elements, allotropes and compounds]

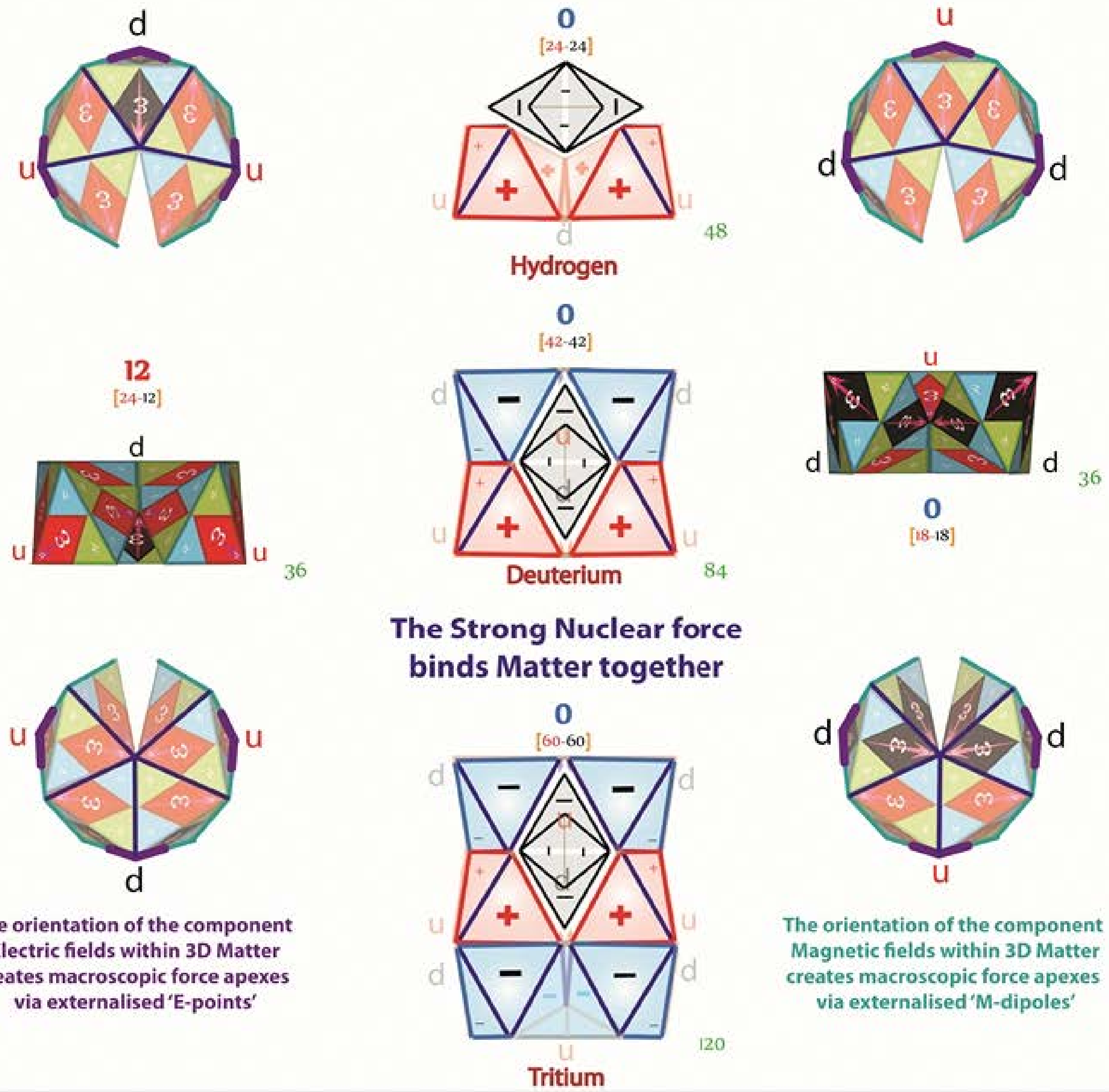
External Magnetic (H) fields can interact with the integral magnetic (B) dipoles of Tetryonic particles forcing them to orientate in specific directions to facilite chemical bonding [nuclear forces]

Additionally, external Electric fields can interact with the integral electric fields attracting or repelling them depending on the polarity of the external electric field [Electrostatics]

External energies can be induced into these integral EM fields via inductive coupling or the absorption of spectral photons in turn leading to an increase in the strengthes of the integral EM apexes in turn increasing the Strong Nuclear Force.

Residual Electro-Magnetic Forces

allow Neutrons and Protons to attract via the opposite Electric charge points created by their constituent Quarks in order to create Elementary Nuclei



The orientation of the component Electric fields within 3D Matter creates macroscopic force apexes via externalised 'E-points'

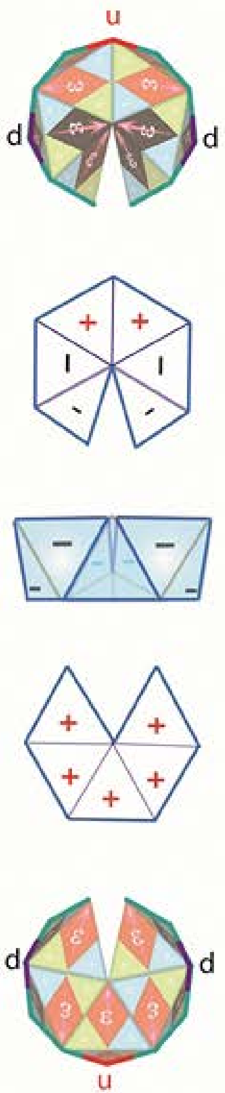
The orientation of the component Magnetic fields within 3D Matter creates macroscopic force apexes via externalised 'M-dipoles'

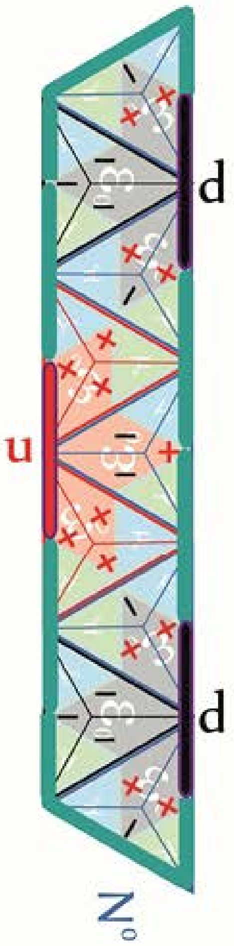
Nucleonic residual EM force

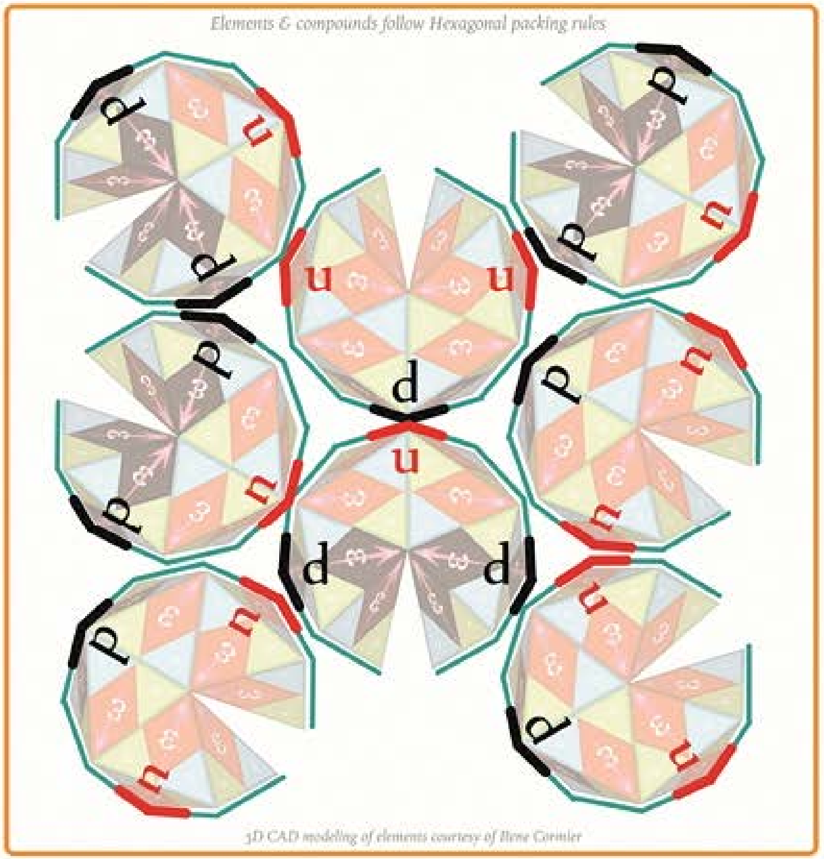
The attraction between Baryonic E&M field apexs, a result of their component Quark arrangements, results in the formation of heavier and more complex Nuclei

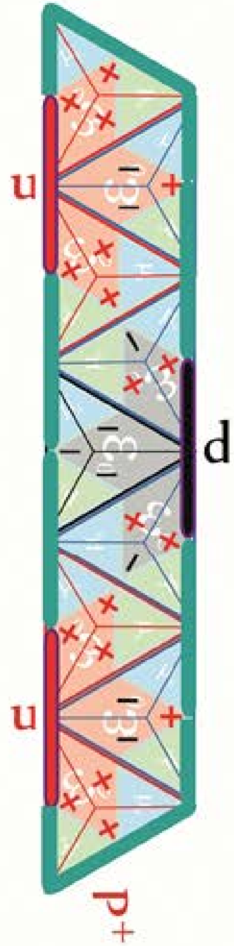
The residual e-field apexes and m-field dipoles form two rings of residual EM fields around the circumference of atomic nuclei

Neutrons

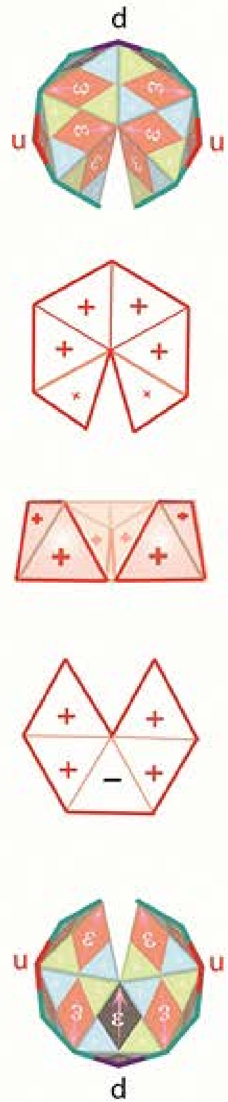








Protons



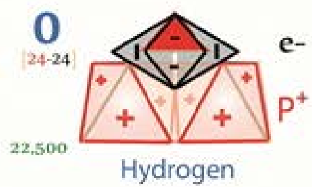
E-field apexes and their polarities highlight the quark alignment of all atomic nuclei and elements

UP Quark
Positive Electric field apex

DOWN Quark
Negative Electric field apex

Insulators and Conductors

The position of electrons in Nuclei within Atomic Elements
results in the properties of Insulators or Conductors



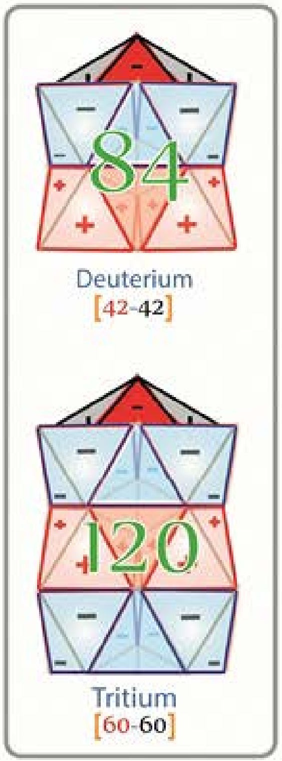
Coloumbic forces

Electrons are attracted to the residual EM net (+12) positive charge of Protons or n[+12] unbalanced Ionic charges of nuclei

Conductor

Electrical energies move around the material via boson exchanges and electron movement

0

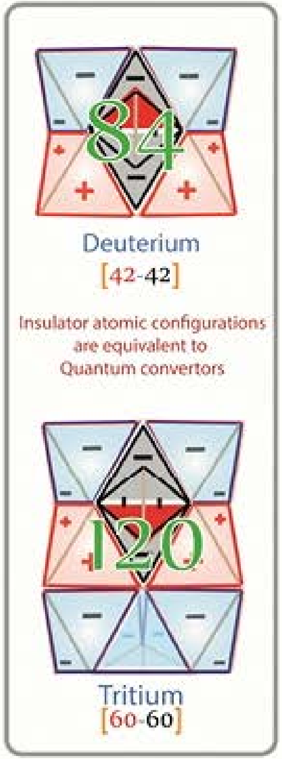


0

≈

Insulator

Electrical energy is fixed within the nucleus as electrostatic charges & released upon demand via electron rotation/motion within the nucleus

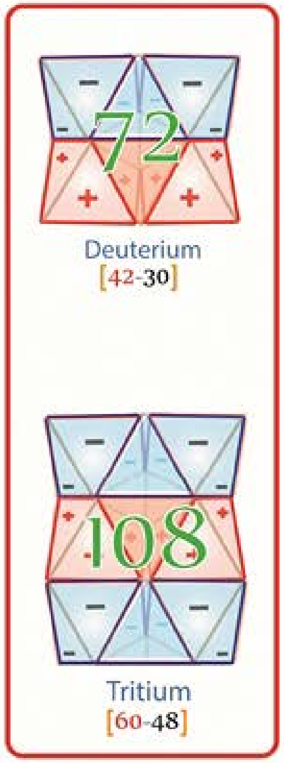


0

0

Ions

Charge (energy) is moved around material via electron movement



12

12

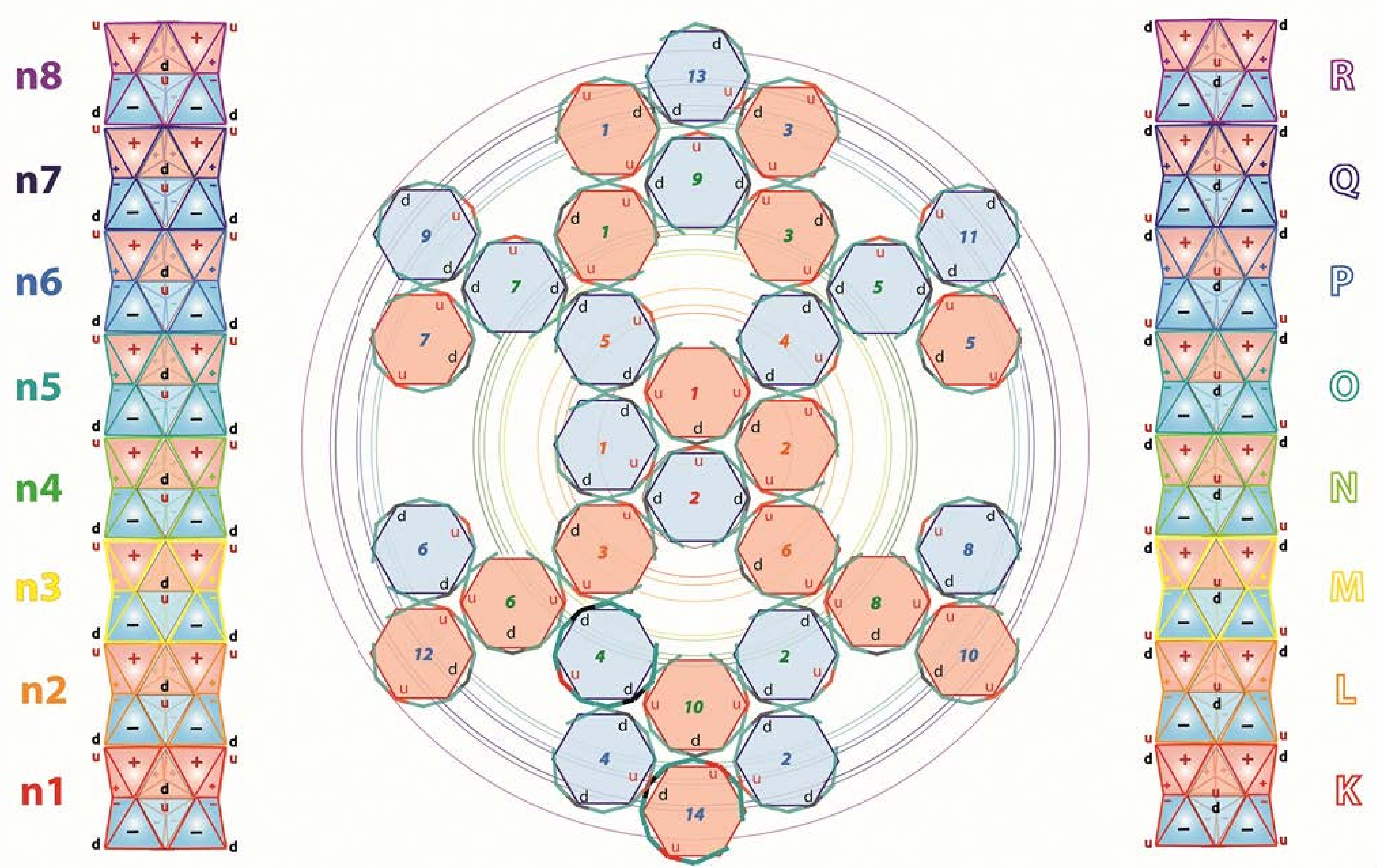
Conductive materials contain 'free' electrons that can be readily or easily moved within the material

Insulator materials have electrons that are 'bound' tightly to the atoms and store charges locally where they are applied

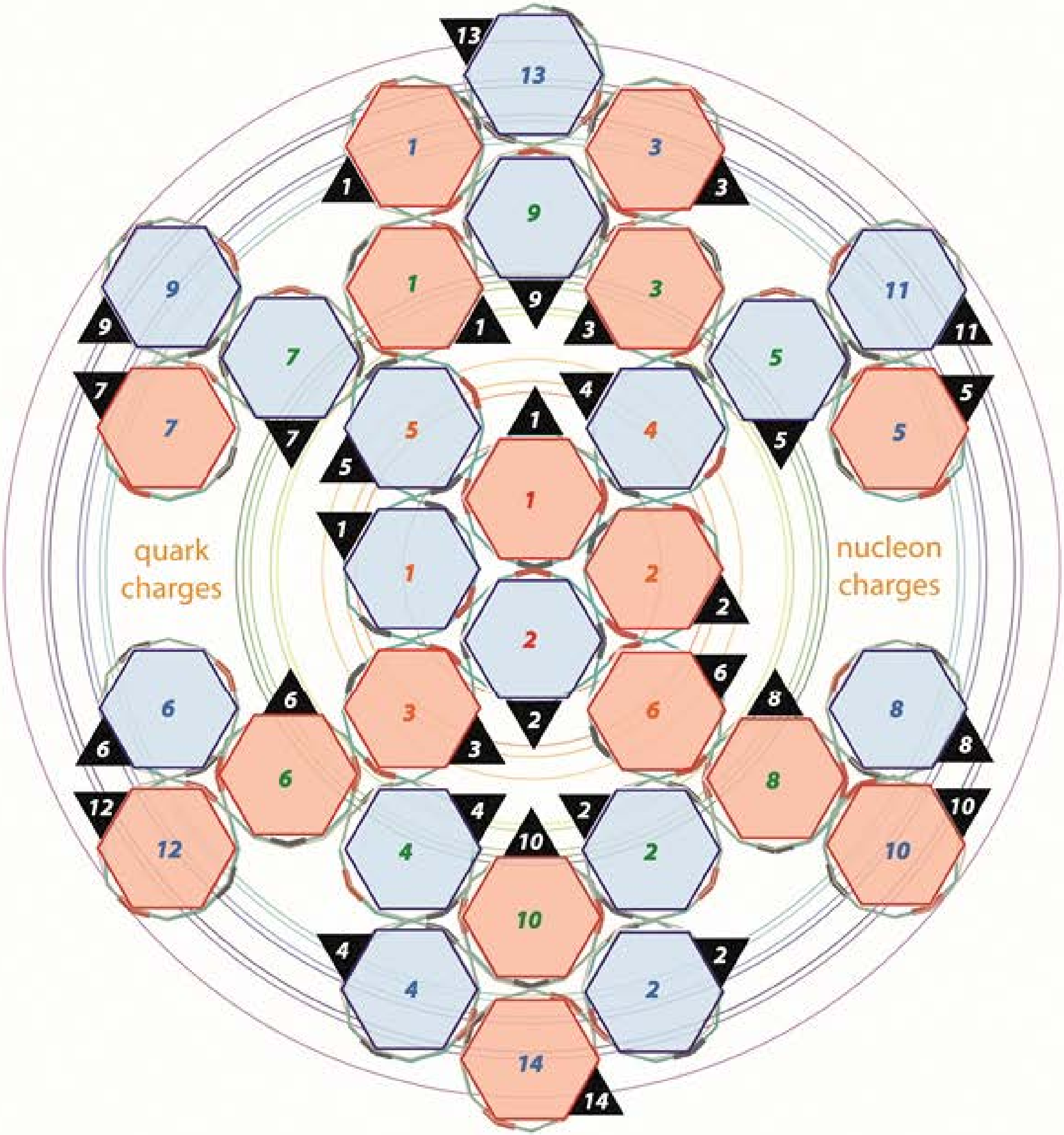
Materials that have been ionised are more likely to become Conductors as they easily attract and bind free electrons to them

Nucleon Quark Arrangement

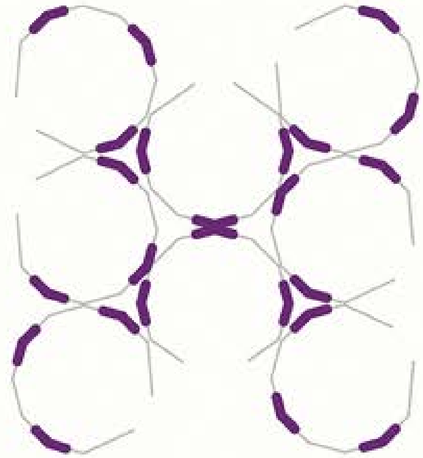
The nuclei arrangement of each atomic shell [quantum level] is the result of quark EM field interactions



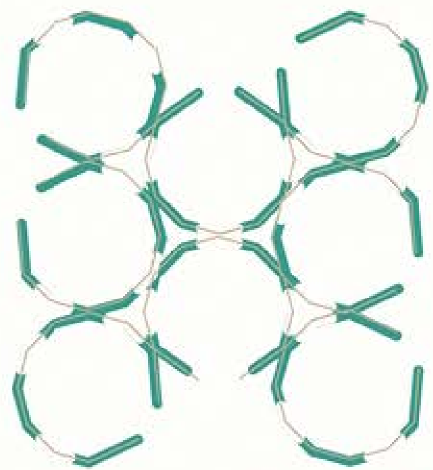
Nucleon Charges and Bonding



(Strong force - topological Electric Points)



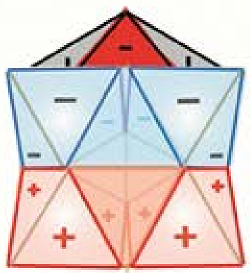
residual EM forces



(Strong force - topological Magnetic dipoles)

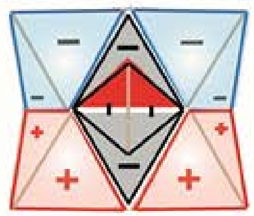
Bound electron arrangements

Externally bound electrons produce sub-orbital patterns different to the electron orbitals of internally bound electrons



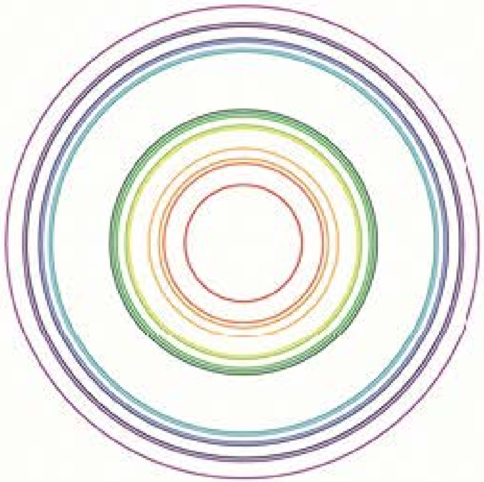
Deuterium

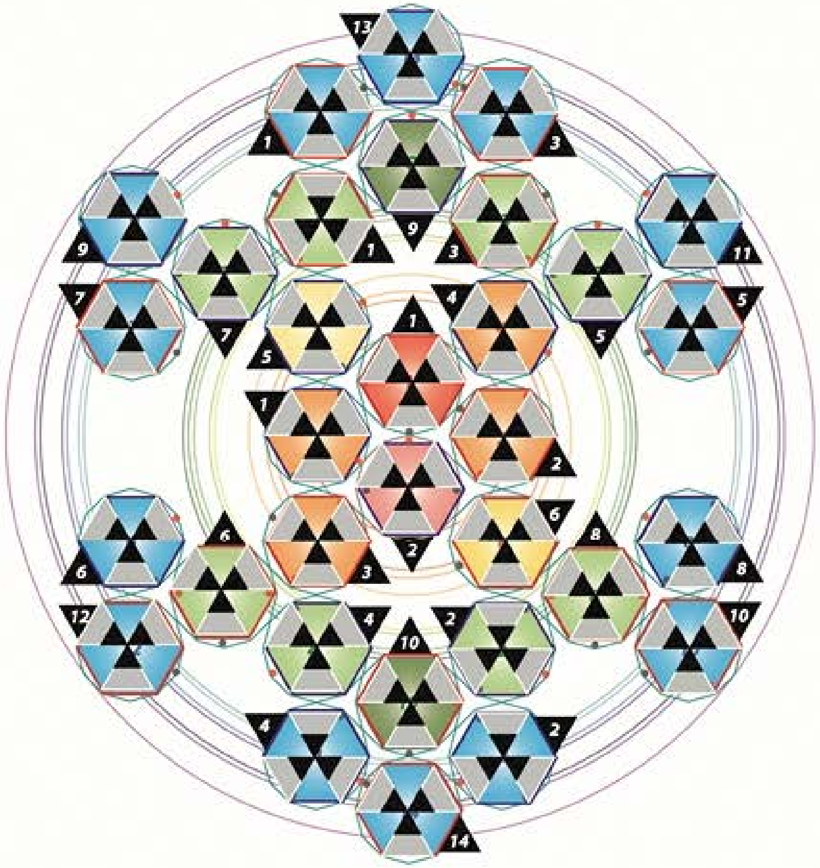
electrons are externally bound to the Deuteron nuclei

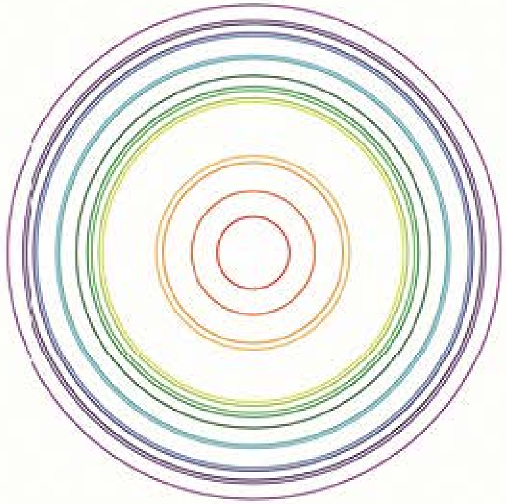


Deuterium

electrons are internally bound in the Deuteron nuclei







Conductors

Charges are free to move and equalise

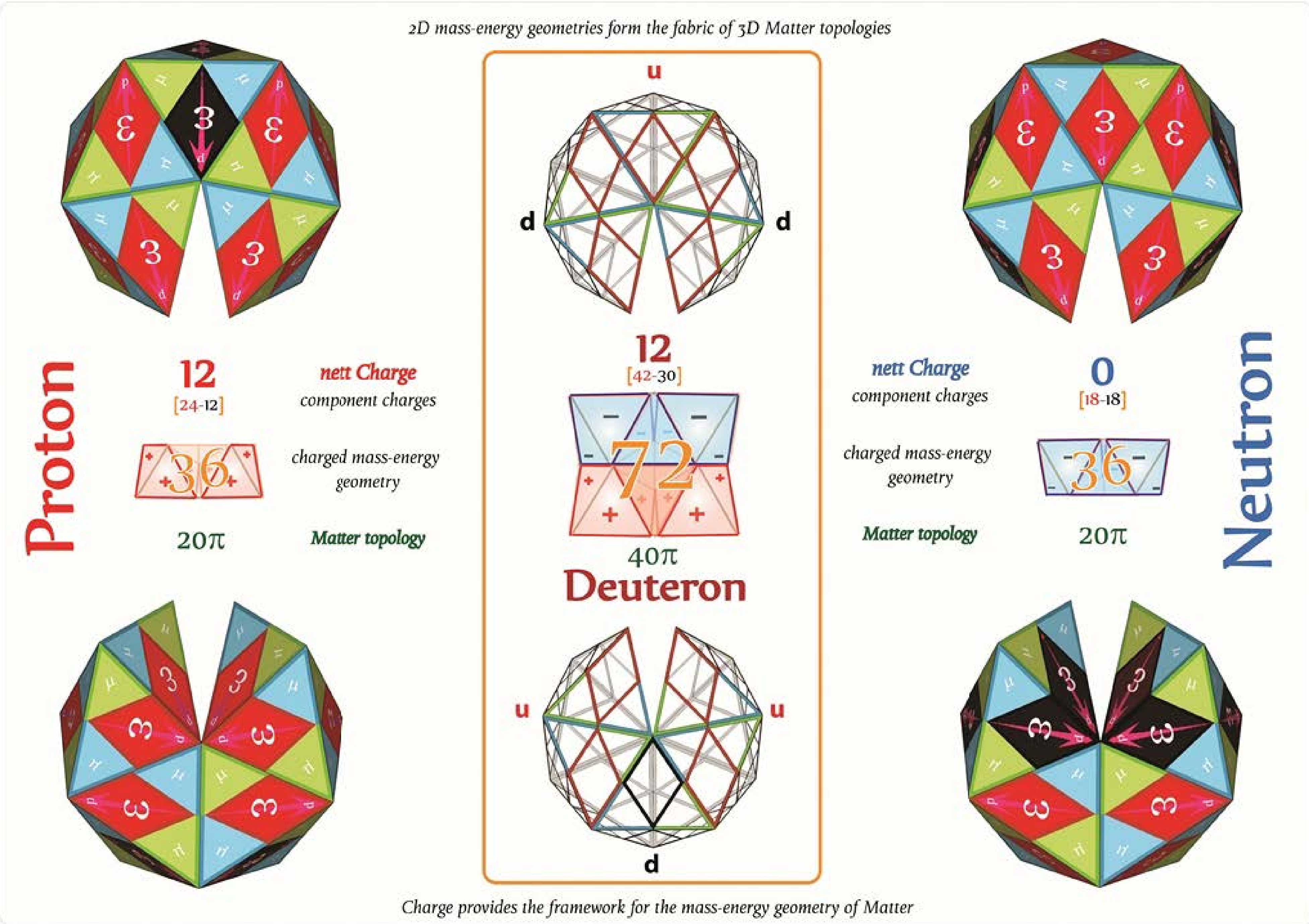
electrons require less energy to 'break free' from Nuclei

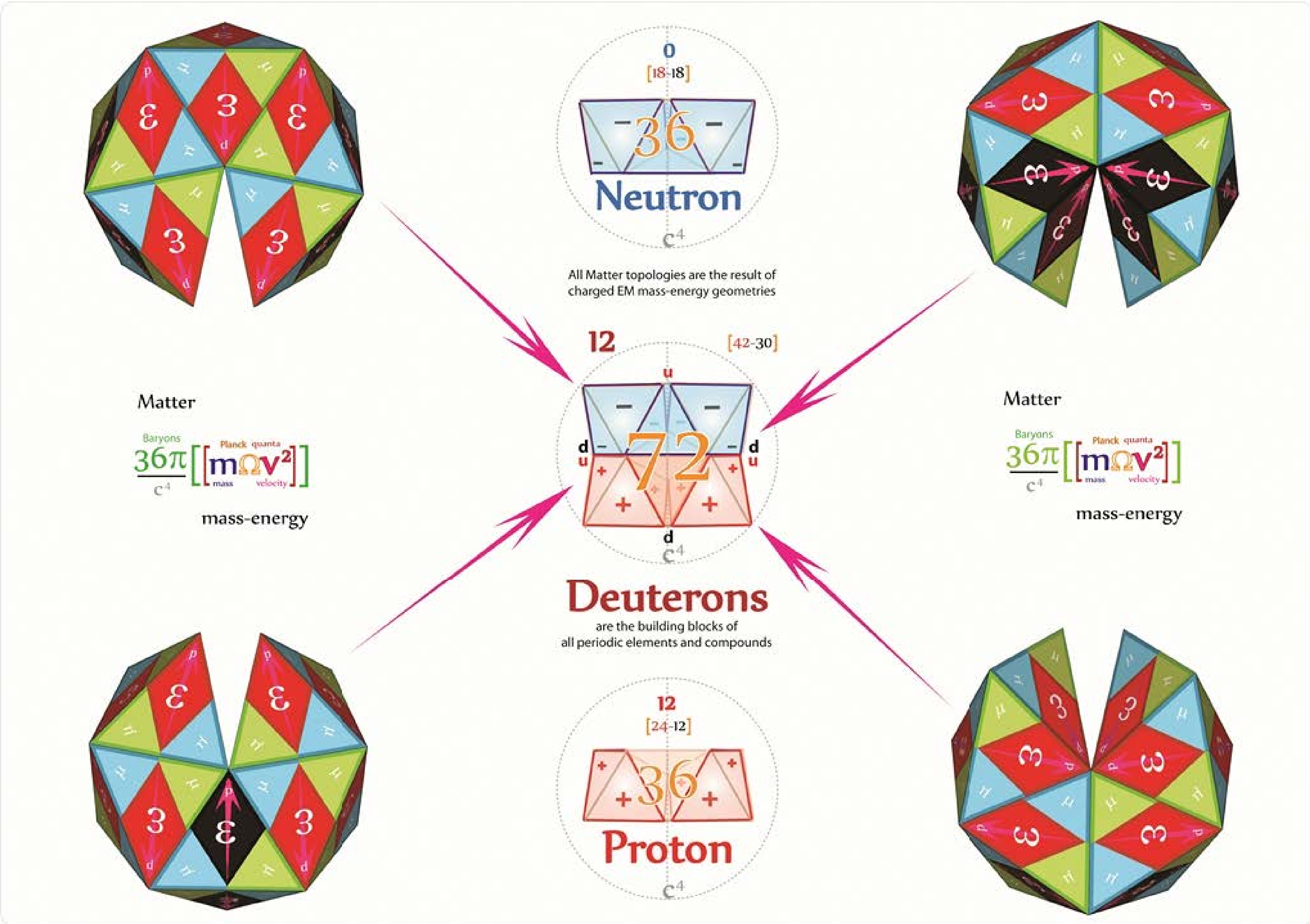
Insulators

Charges are bound to specific locations

electrons require more energy to 'break free' from Nuclei

The electron orbitals of conductors are lower energies than those of insulators

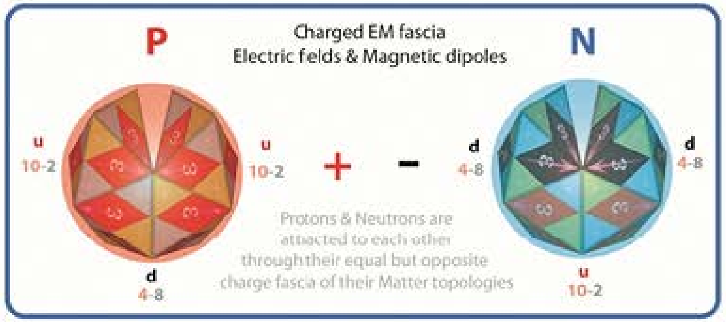

2D mass-energy geometries form the fabric of 3D Matter topologies
Proton
12
[24-12]
nett Charge
component charges
36
charged mass-energy geometry
20π
Matter topology
u
d
d
12
[42-30]
72
40π
Deuteron
u
u
d
nett Charge
component charges
0
[18-18]
charged mass-energy geometry
36
Matter topology
20π
Neutron
Charge provides the framework for the mass-energy geometry of Matter

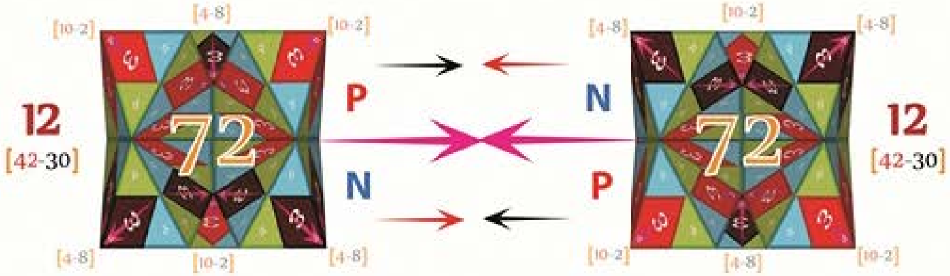


Tetryonics 42.02 - Nuclei formation

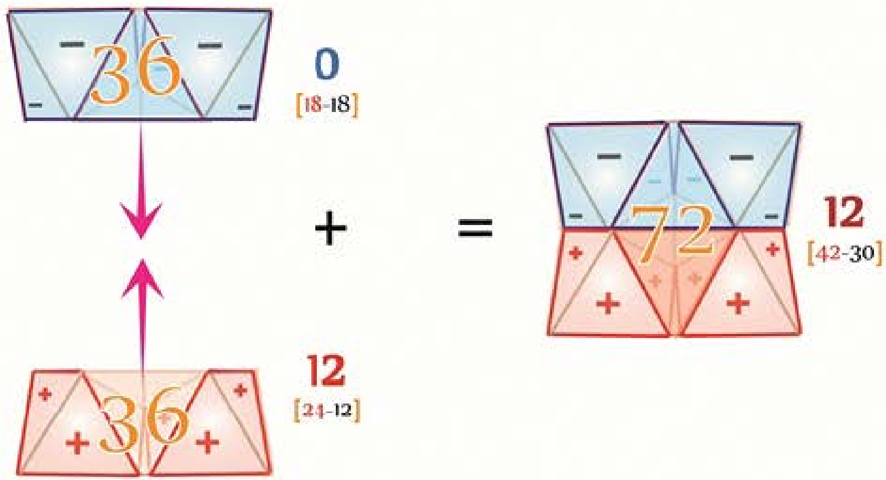
Strong Forces and Nuclear Bonding

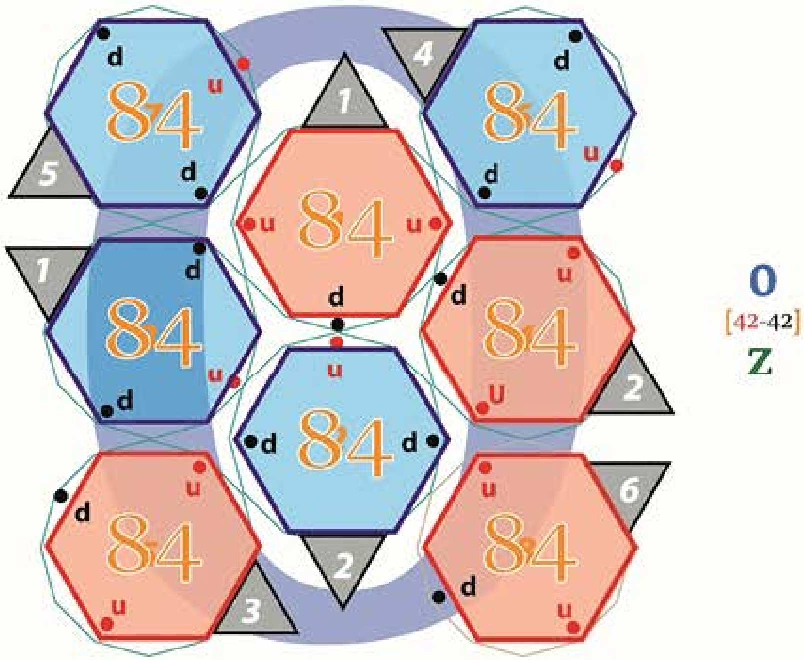
How do Baryons with Positive and Neutral charges
attract each other and bind to form stable elements ?





Once nuclei have been created their external electric fields & magnetic dipoles continue to attract and bind individual nuclei together via the Residual EM Force as nuclei seek charge equilibrium by combining with each other and electrons to form neutral elements

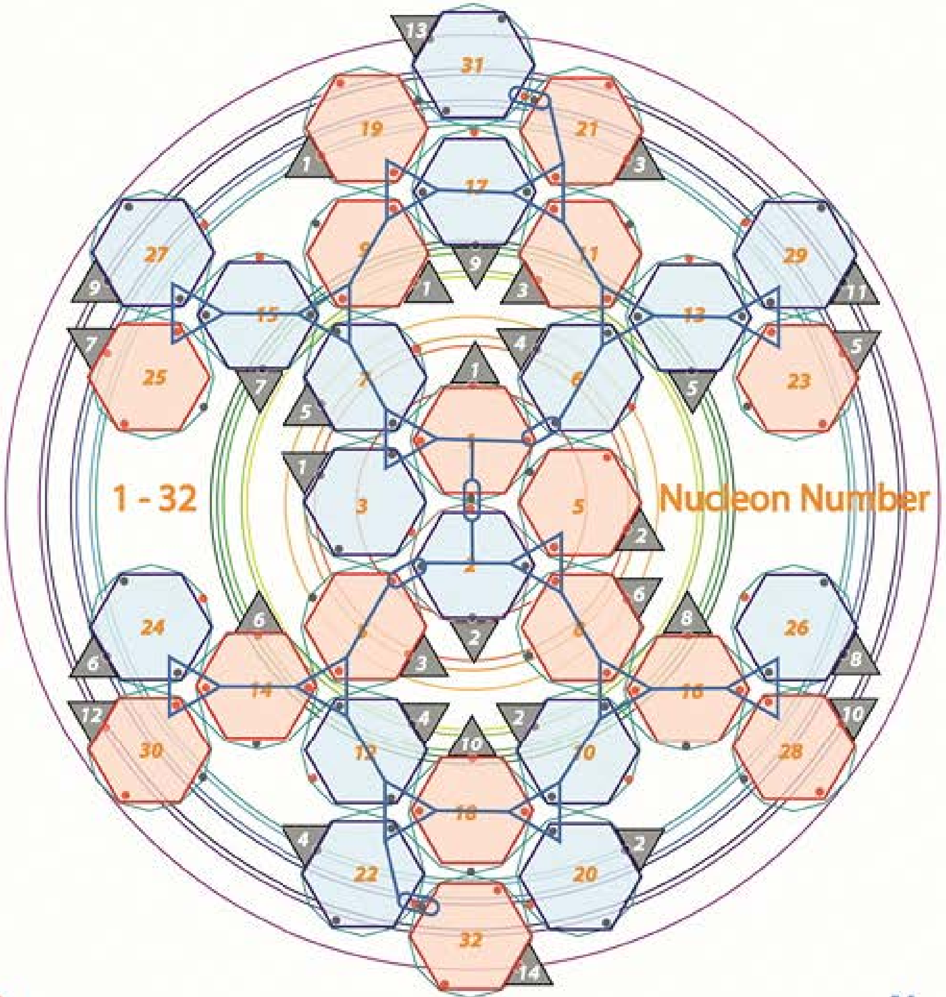


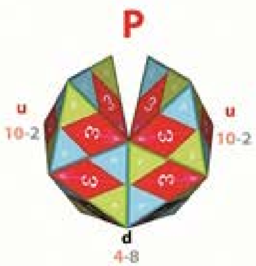


The attraction and binding of Protons and Neutrons through their electric charge imbalances creates Deuterons which have +12 charges

The residual Z[+12] charge is what attracts electrons to form neutral atomic nuclei via Coulombic attraction

Strong Nucleonic Bonding

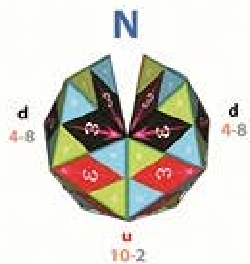




+

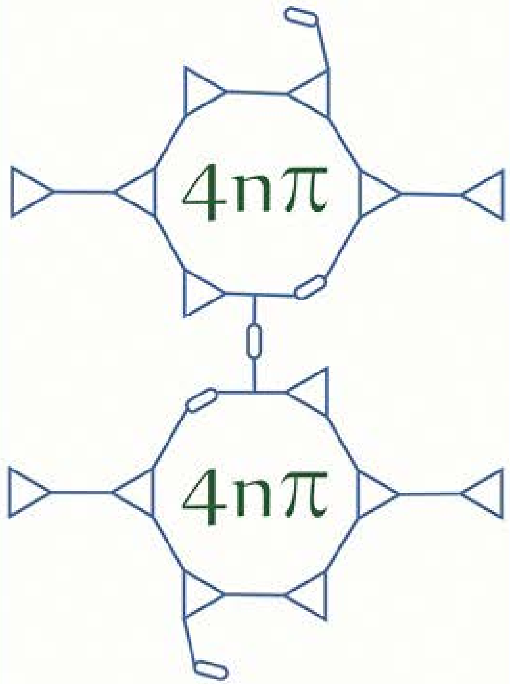
In addition to the Strong colour force
a separate residual binding force arises
from the external apexes formed by
Positive and Negative Electric points of quarks
in each Baryon [nuclear-chemical bonds]

-



All energy seeks equilibrium

External Electric field points
bind via Charge fascia interactions
with Plus and Minus Electric points
combining and sharing energy
throughout the resultant nuclei

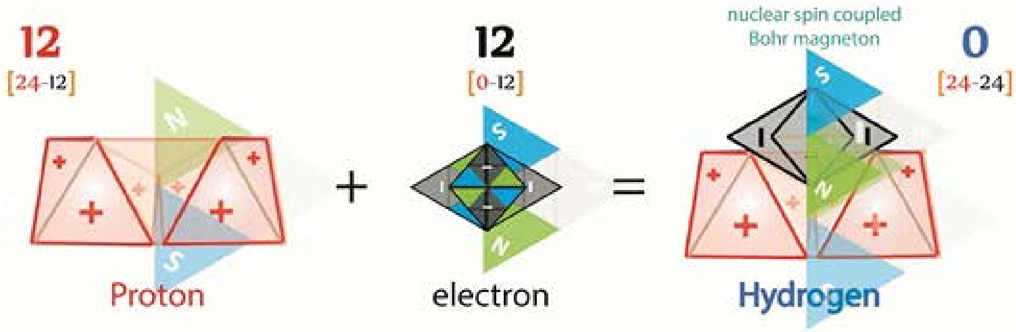


Positive Electric field apex

Negative Electric field apex

Hydrogenic vs Nucleonic electron binding

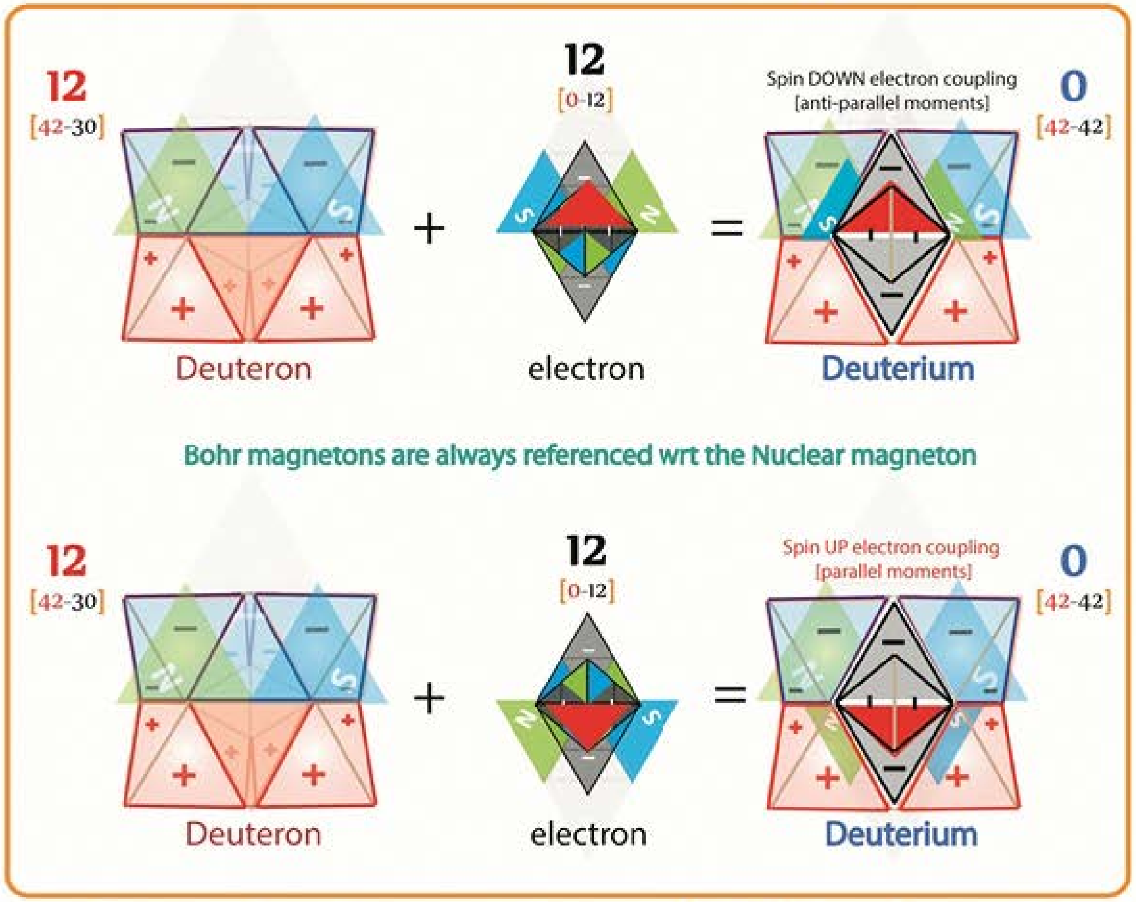
If a unbound Proton attracts an Electron
the Electron can be bound to the nuclei
in a number of differing orientations
[each with differing spin energies]



The energy levels of Baryons determines the KEM field energy of bound electrons

All atomic nuclei (and elements) are Deuteron'ic nuclei with a mixture of *orthagonal*, parallel and anti-paralllel spin orientations

(this is why Rydberg is less accurate for elemental nuclei compared to Hydrogenic atoms - see QM spin)

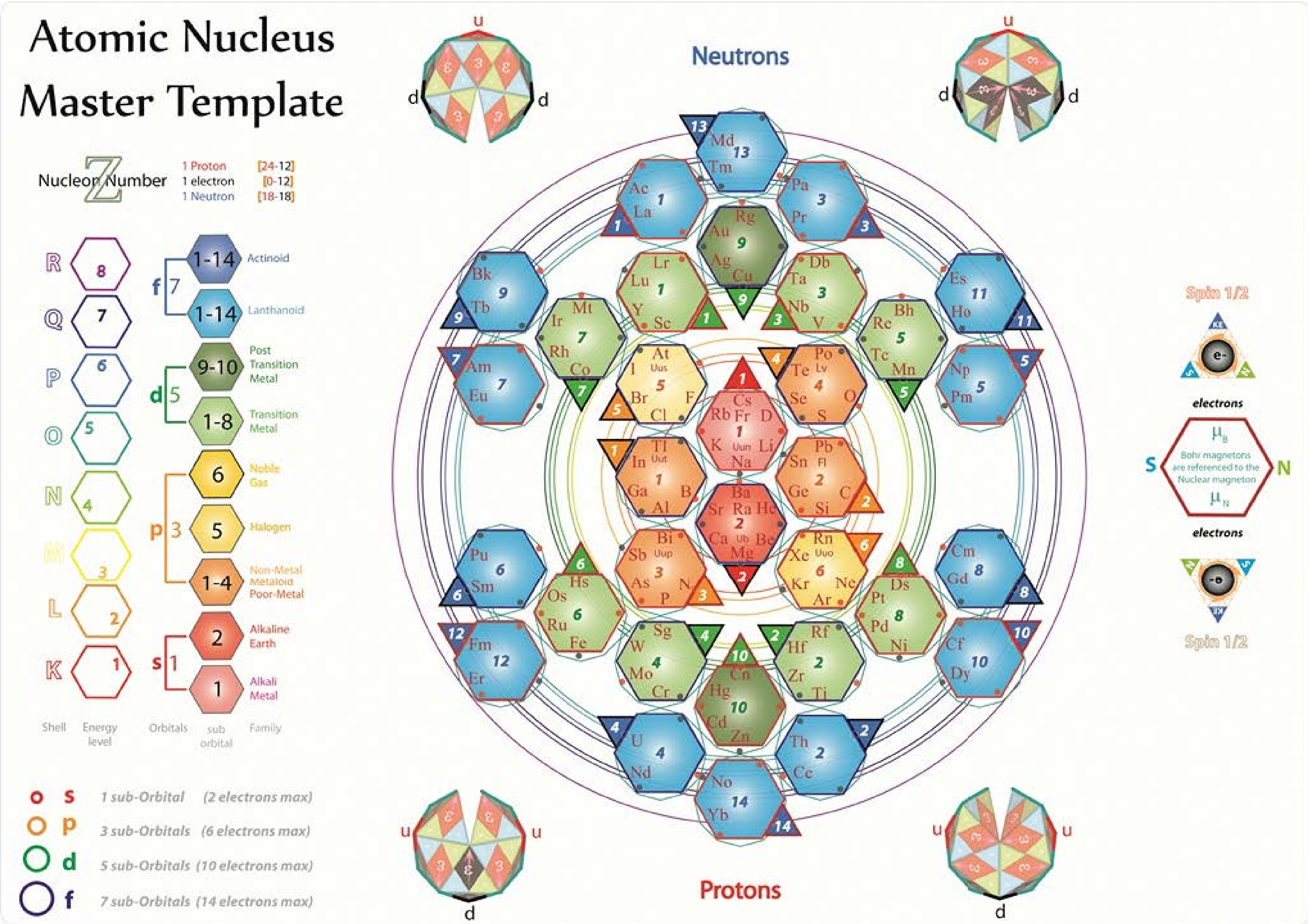


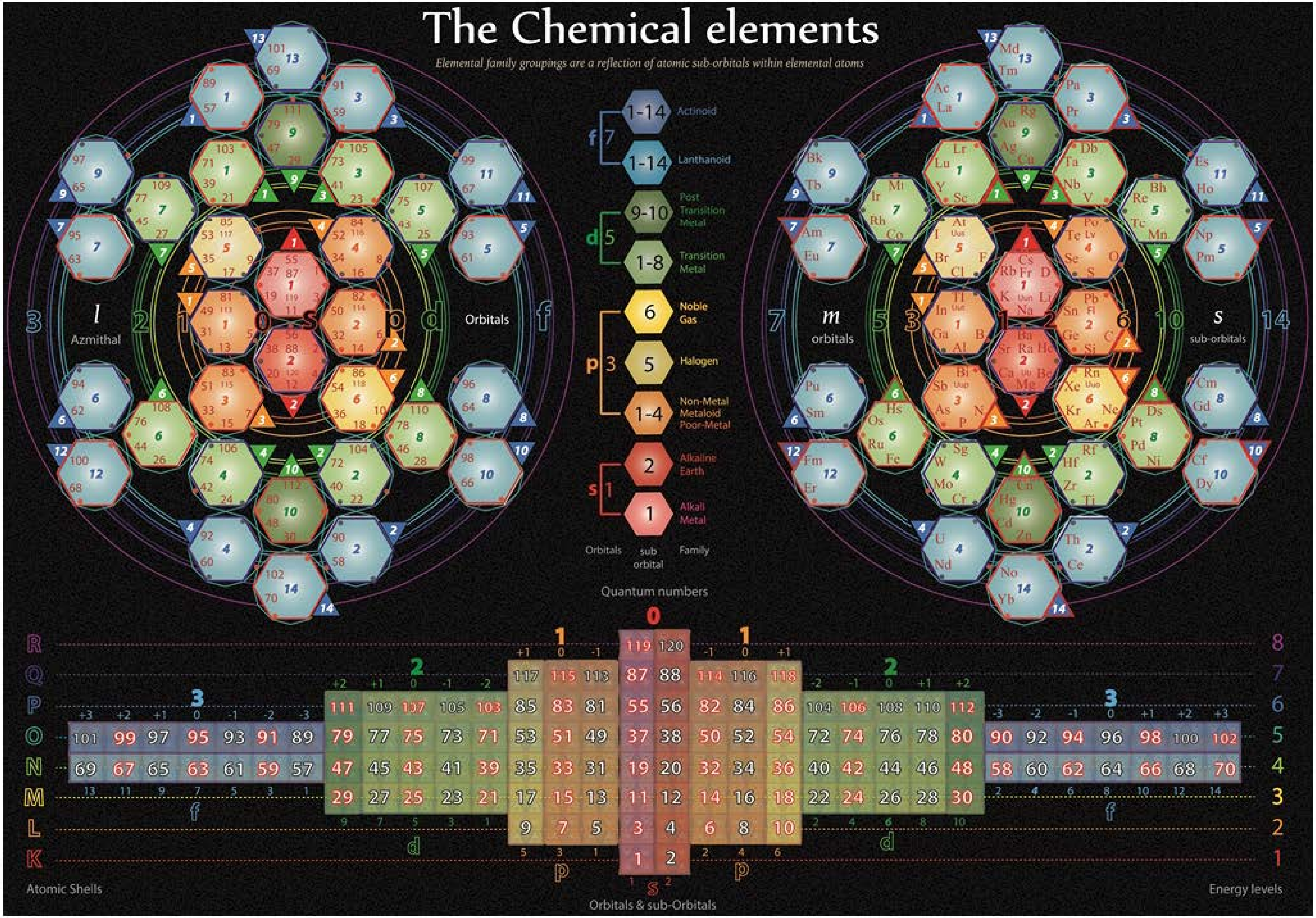
Electrons can be bound to deuteron nuclei
in four distinct orientations [2 horizontal & 2 vertical]
with each spin coupling orientation producing
differing energy electron orbitals
[wrt to the nuclear magnetic moments]

Ejecting electrons from atomic nuclei
by adding energies to their KEM fields
[the Photoelectric effect]
creates Positive Ions

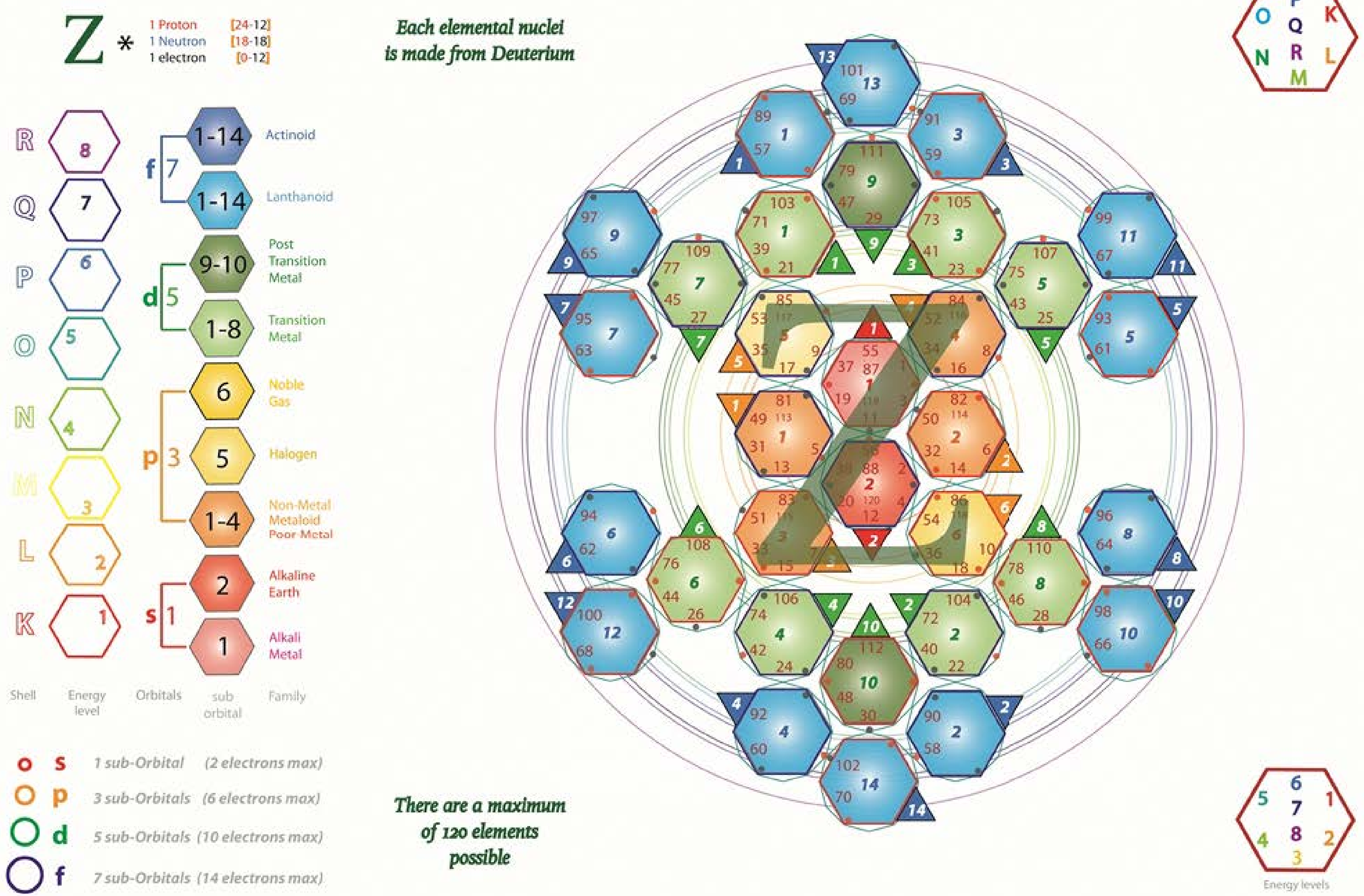
Vertically orientated electrons
within Proton-Neutron Nuclei [Deuterons]
create quantum synchronous convertor geometries

electrons produce stronger magnetic moments due to their mass-charge quotient

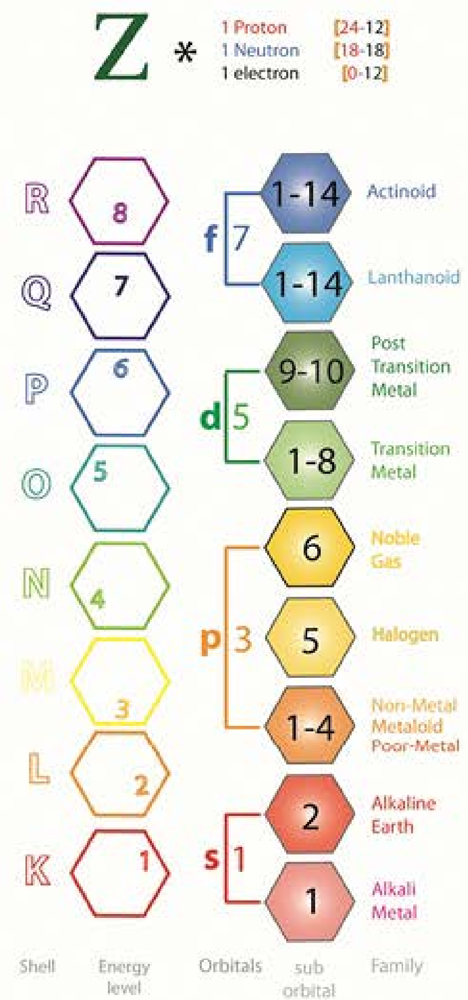

Atomic Nucleus
Master Template
Nucleon Number
Z
1 Proton [24-12]
1 electron [0-12]
1 Neutron [18-18]
R 8
Q 7
P 6
O 5
N 4
M 3
L 2
K 1
f 7
1-14 Actinoid
1-14 Lanthanoid
d 5
9-10 Post Transition Metal
1-8 Transition Metal
p 3
6 Noble Gas
5 Halogen
1-4 Non-Metal Metaloid Poor-Metal
s 1
2 Alkaline Earth
1 Alkali Metal
Shell
Energy level
Orbitals
sub orbital
Family
s 1 sub-Orbital (2 electrons max)
p 3 sub-Orbitals (6 electrons max)
d 5 sub-Orbitals (10 electrons max)
f 7 sub-Orbitals (14 electrons max)
Neutrons
Protons
u
d
Spin 1/2
electrons
S
N
Bohr magnetons are referenced to the Nuclear magneton
electrons
Spin 1/2


The Chemical elements
Elemental family groupings are a reflection of atomic sub-orbitals within elemental atoms
1-14 Actinoid
1-14 Lanthanoid
9-10 Post Transition Metal
1-8 Transition Metal
6 Noble Gas
5 Halogen
1-4 Non-Metal Metalloid Poor-Metal
2 Alkaline Earth
1 Alkali Metal
Orbitals
sub orbital
Family
Quantum numbers
Azmithal
Orbitals
orbitals
sub-orbitals
Atomic Shells
Energy levels
Orbitals & sub-Orbitals

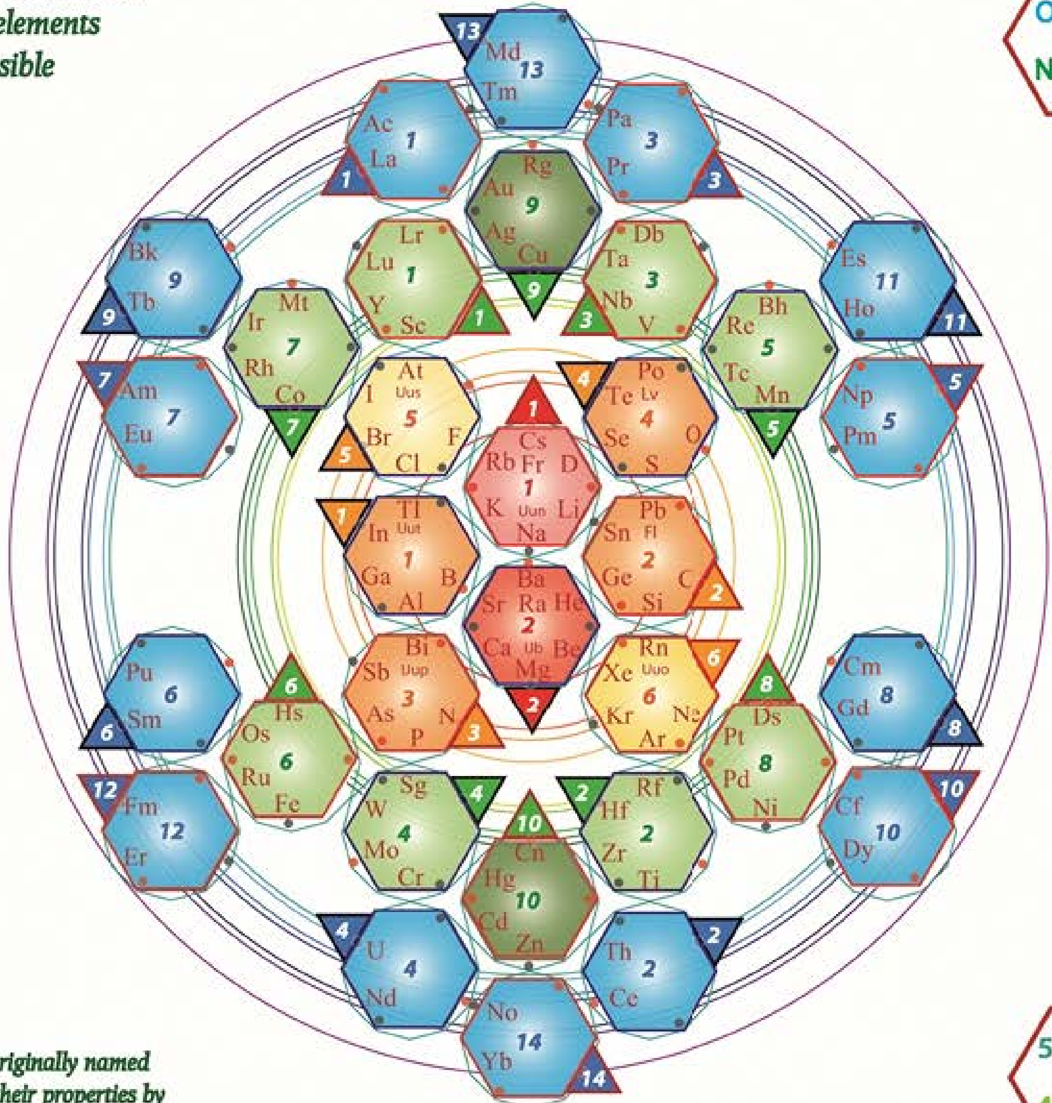
Element Numbers



Element Names



There are a maximum of 120 elements possible

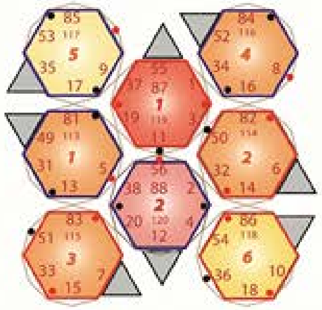


- **s** *1 sub-Orbital (2 electrons max)*
- **p** *3 sub-Orbitals (6 electrons max)*
- **d** *5 sub-Orbitals (10 electrons max)*
- **f** *7 sub-Orbitals (14 electrons max)*

They were originally named according to their properties by their discoverer but have recently been named after famous scientists

Electron orbital configurations

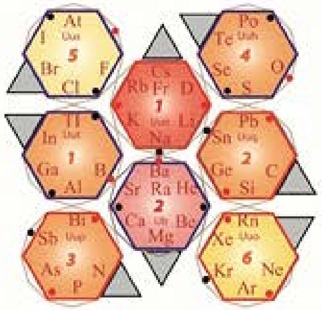
A huge number of differing d and f orbital configurations are possible given the number of nuclei and bond points created by elemental topologies

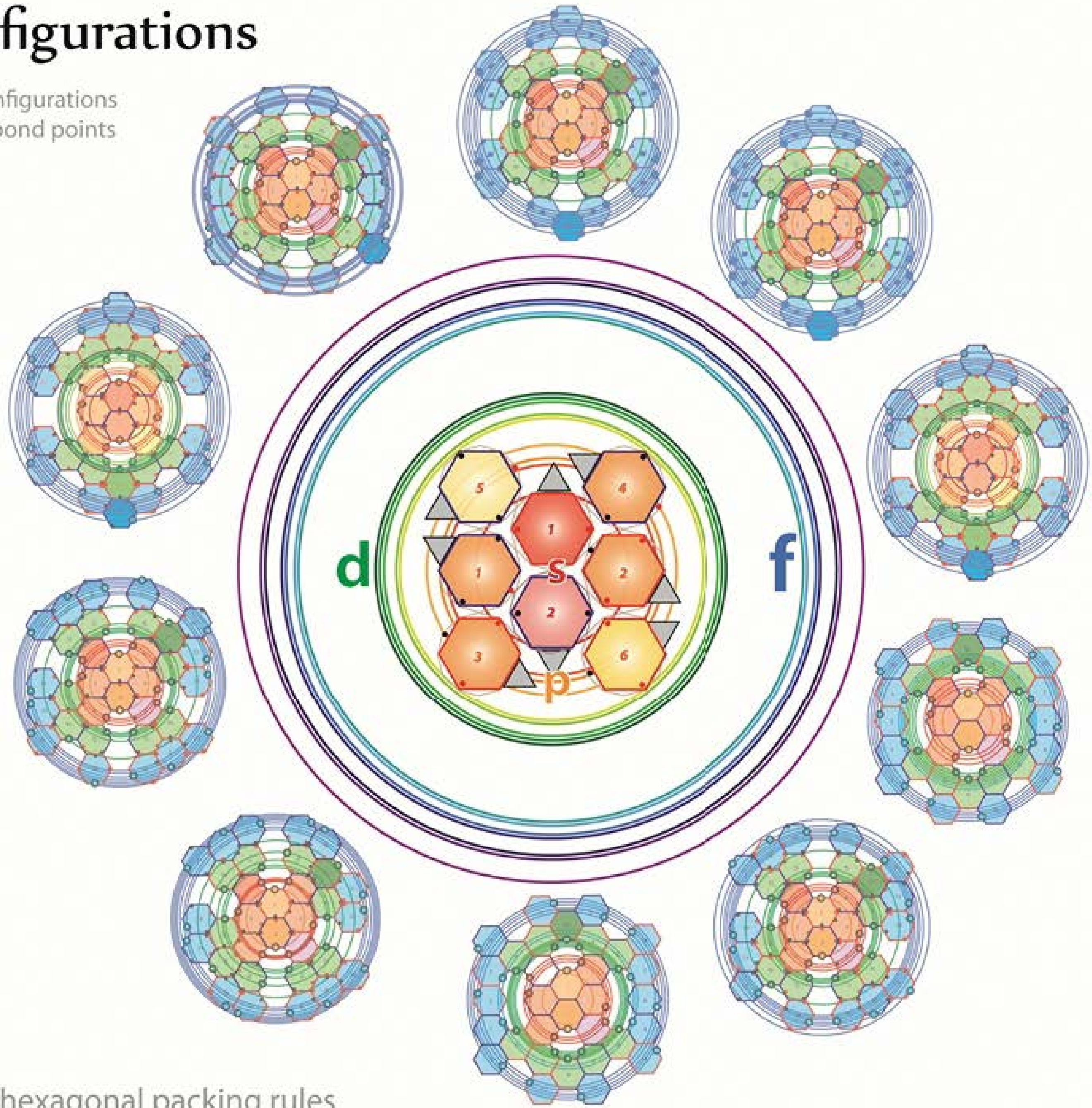


As the number of nucleons increases so does the complexity of the electron orbitals possible

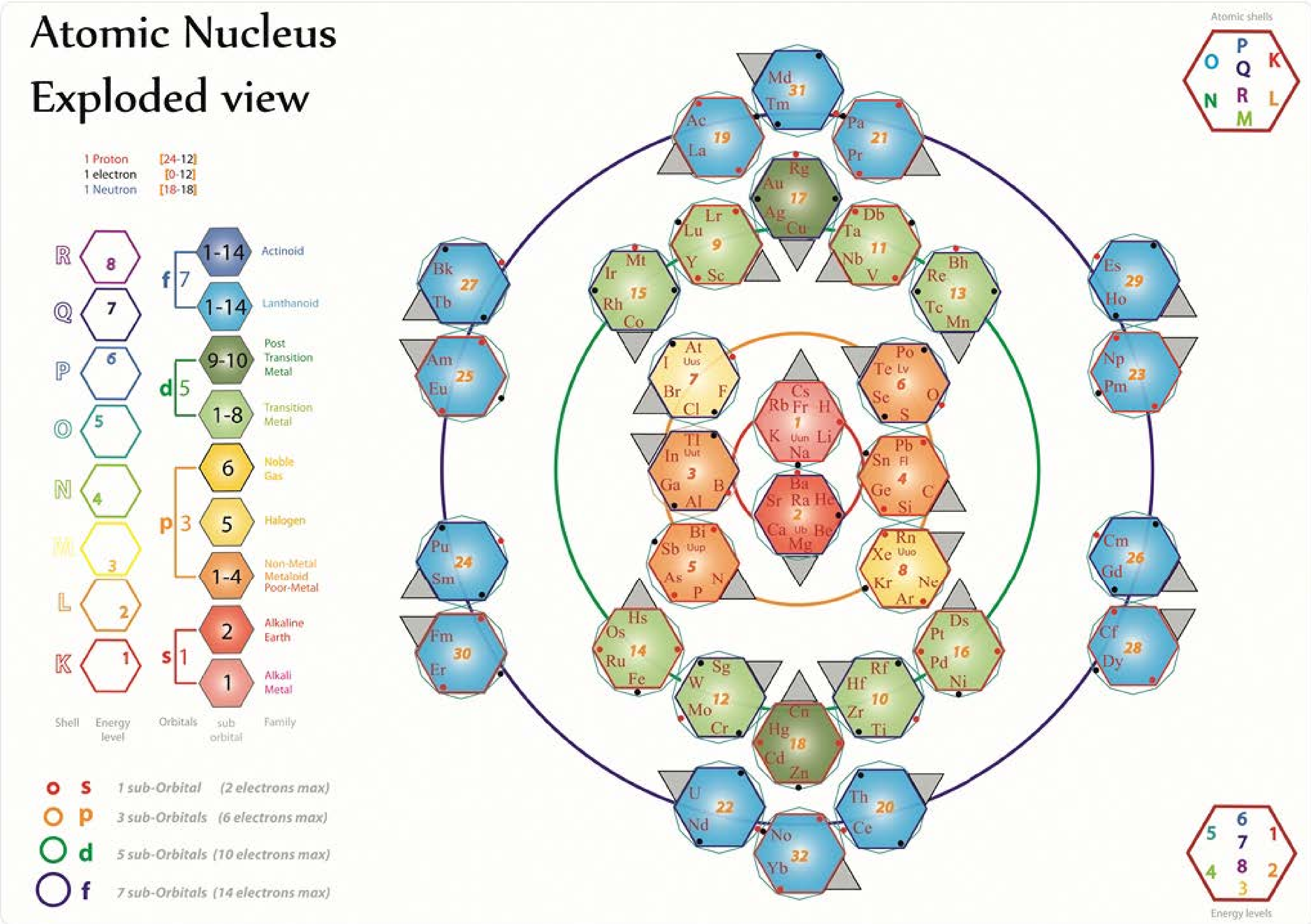
quantum snowflakes

However all have a stable 'core' grouping of nuclei comprised of s and p electron orbitals

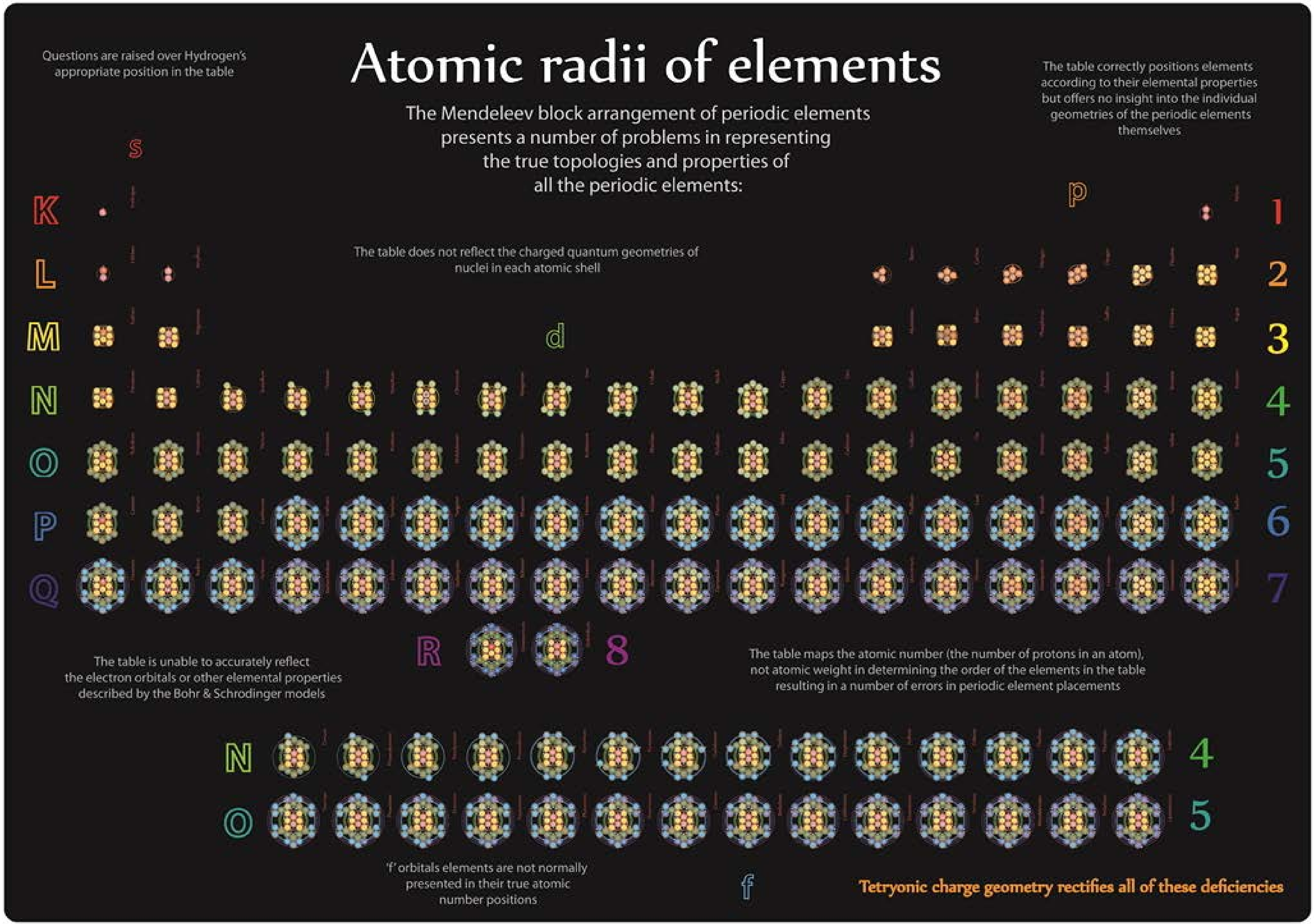


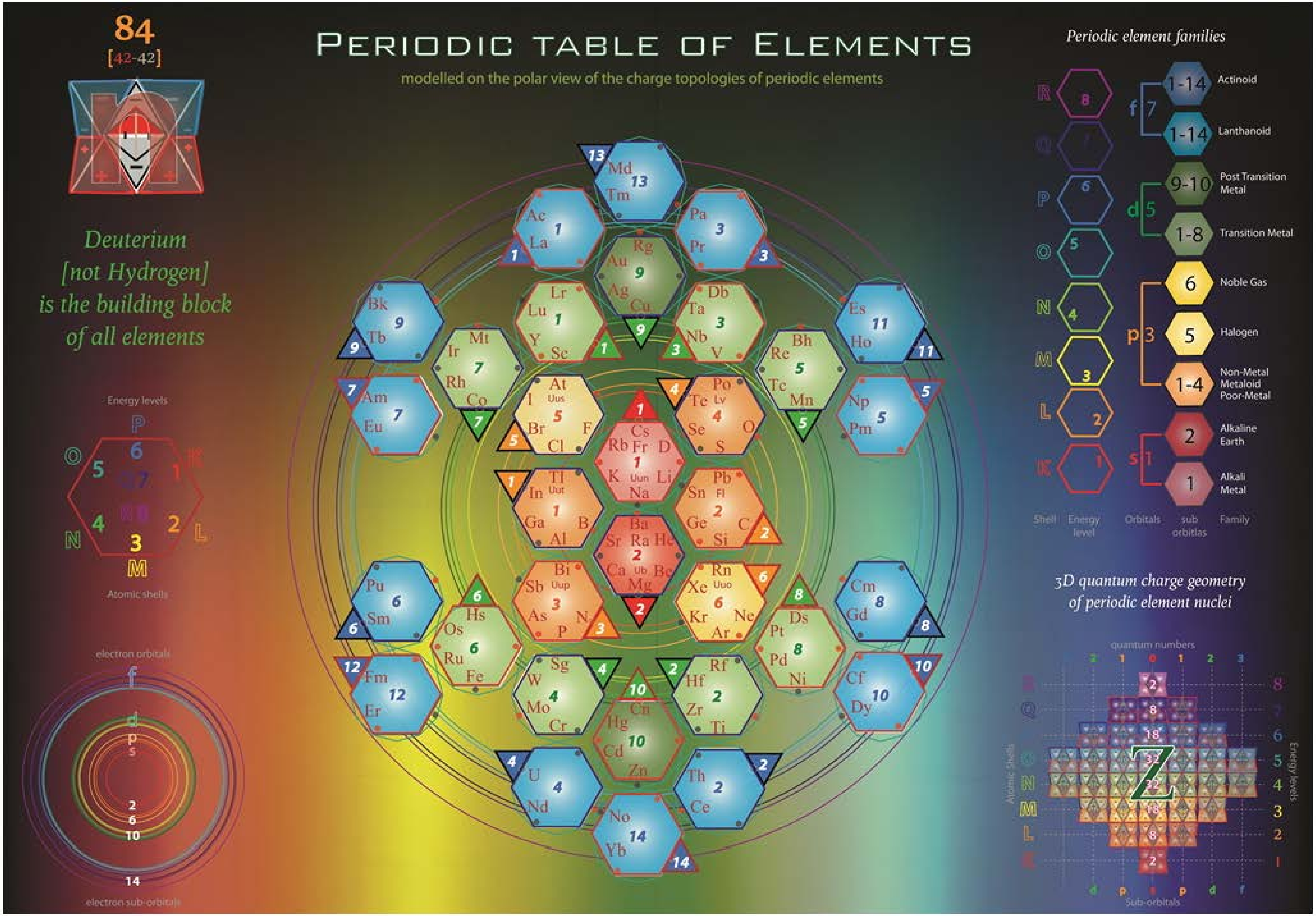


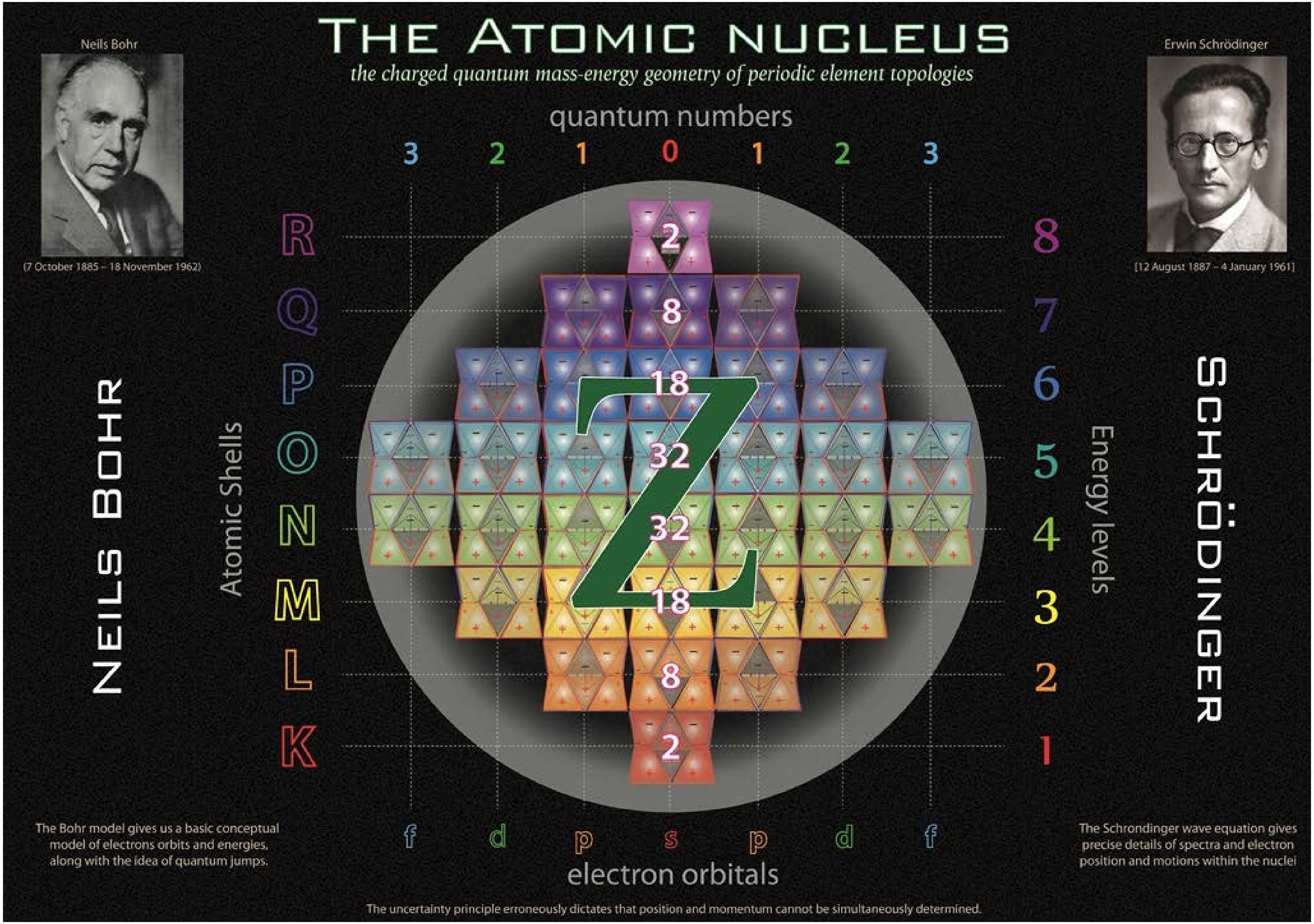
All nuclei bonding closely follows hexagonal packing rules



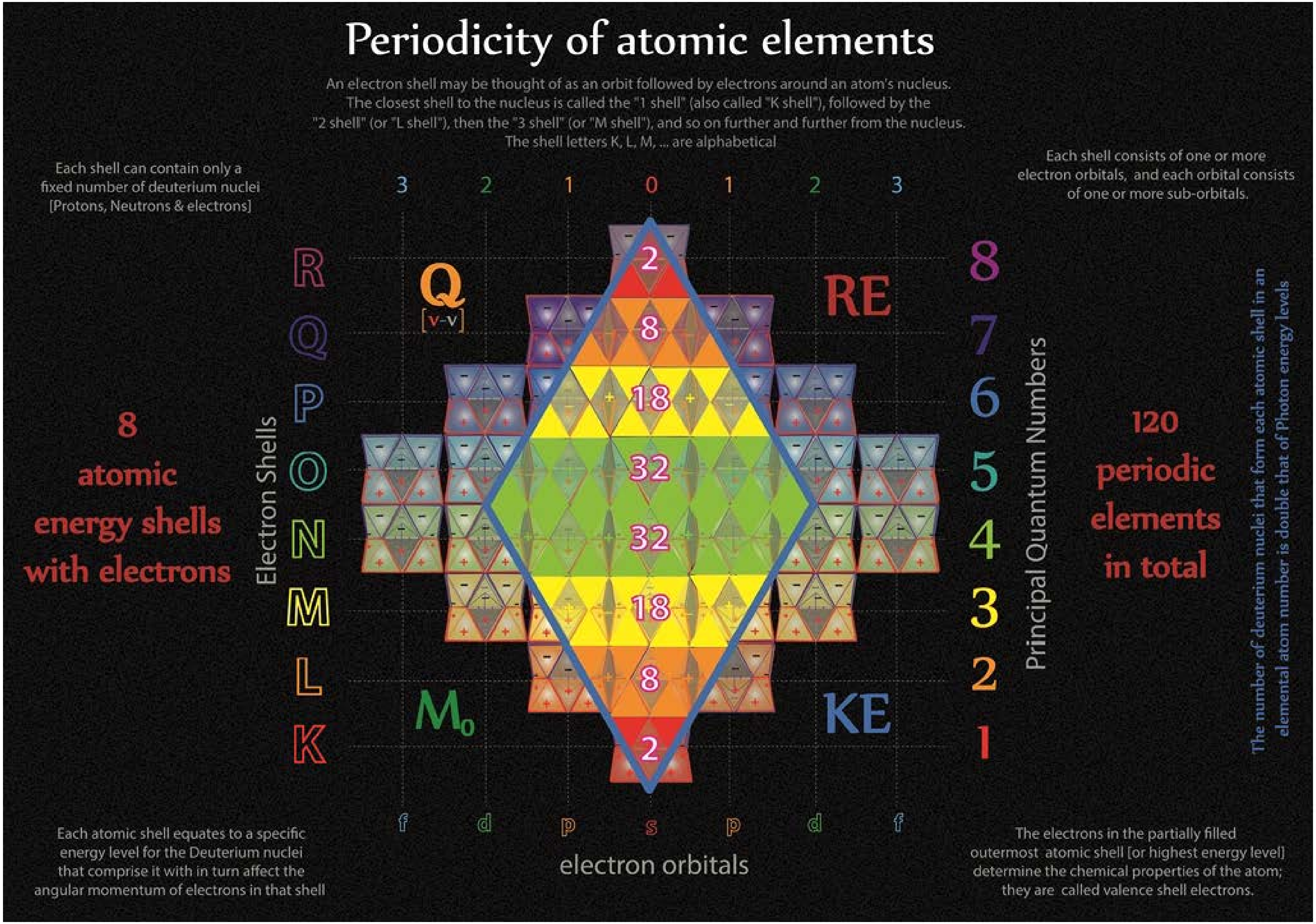
Tetryonics 43.06 - Exploded Atomic Nucleus


Atomic radii of elements
Questions are raised over Hydrogen's appropriate position in the table
The Mendeleev block arrangement of periodic elements presents a number of problems in representing the true topologies and properties of all the periodic elements:
The table correctly positions elements according to their elemental properties but offers no insight into the individual geometries of the periodic elements themselves
s
p
d
f
K
L
M
N
O
P
Q
R
1
2
3
4
5
6
7
8
The table does not reflect the charged quantum geometries of nuclei in each atomic shell
The table is unable to accurately reflect the electron orbitals or other elemental properties described by the Bohr & Schrodinger models
The table maps the atomic number (the number of protons in an atom), not atomic weight in determining the order of the elements in the table resulting in a number of errors in periodic element placements
'f' orbitals elements are not normally presented in their true atomic number positions
Tetryonic charge geometry rectifies all of these deficiencies

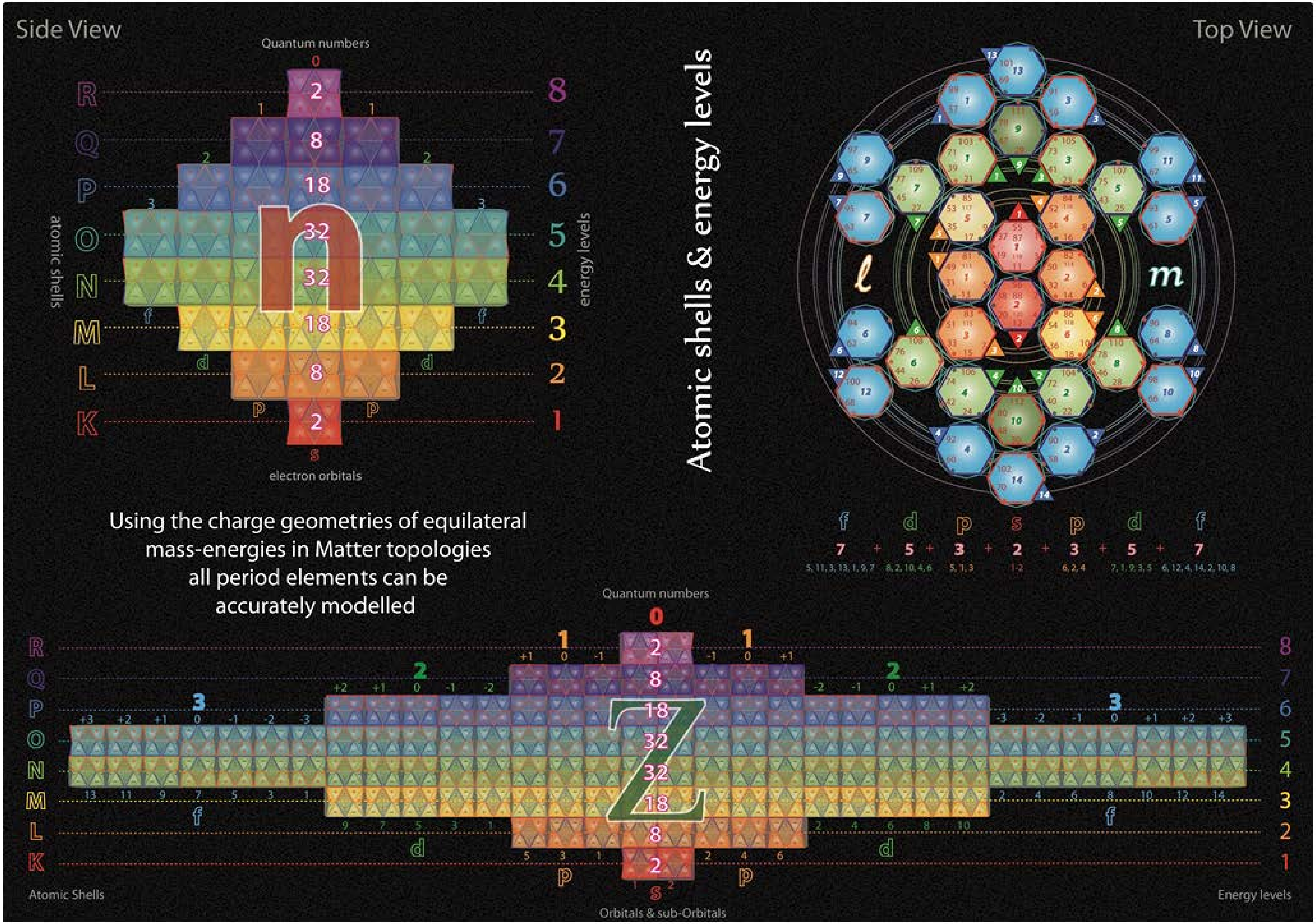

84
[42-42]
Deuterium
[not Hydrogen]
is the building block
of all elements
Energy levels
Atomic shells
electron orbitals
electron sub-orbitals
PERIODIC TABLE OF ELEMENTS
modelled on the polar view of the charge topologies of periodic elements
Periodic element families
Actinoid
Lanthanoid
Post Transition Metal
Transition Metal
Noble Gas
Halogen
Non-Metal Metaloid Poor-Metal
Alkaline Earth
Alkali Metal
Shell
Energy level
Orbitals
sub orbitlas
Family
3D quantum charge geometry
of periodic element nuclei
quantum numbers
Atomic Shells
Energy levels
Sub-orbitals

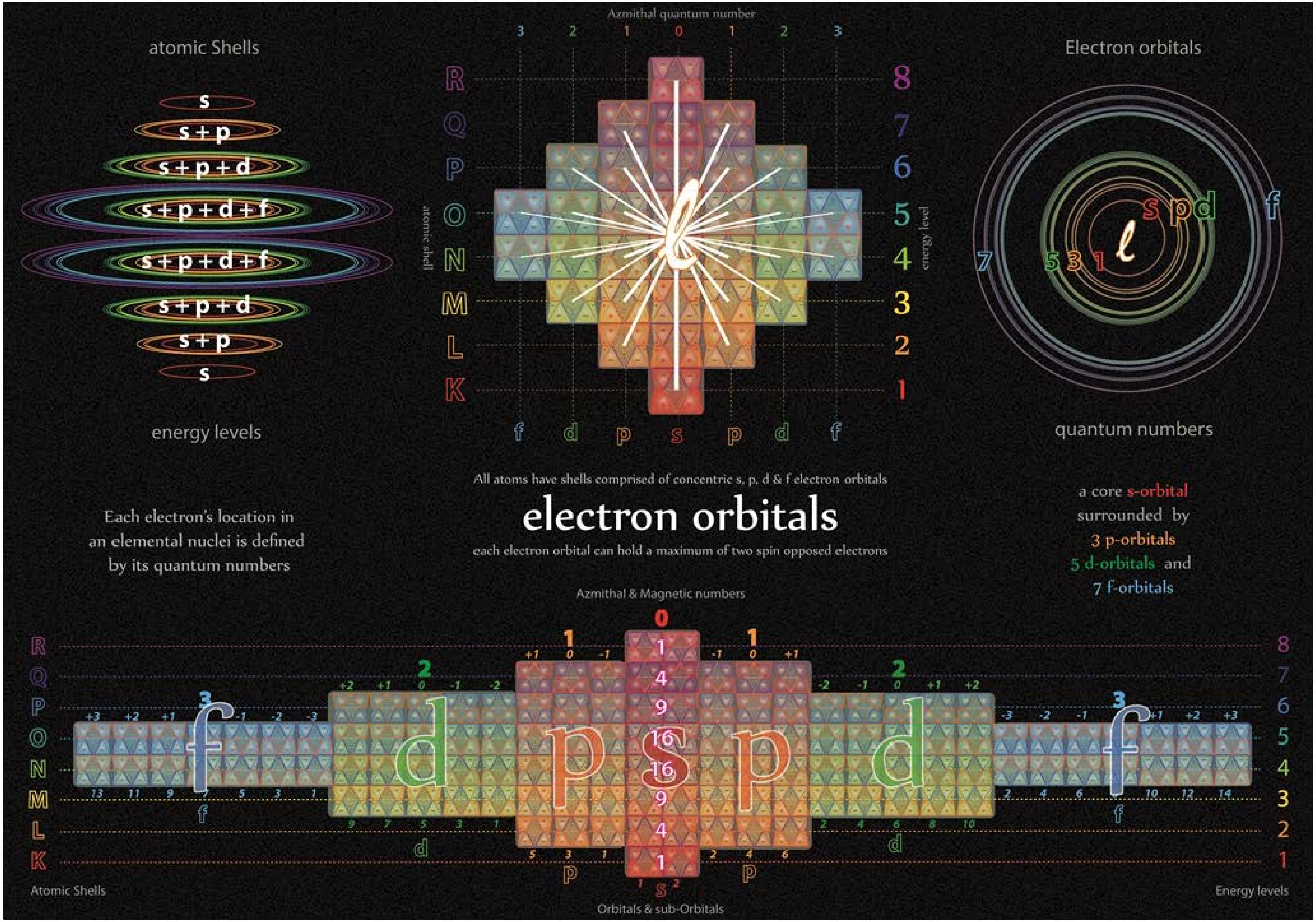


Tetryonics 44.01 - The Atomic Nucleus

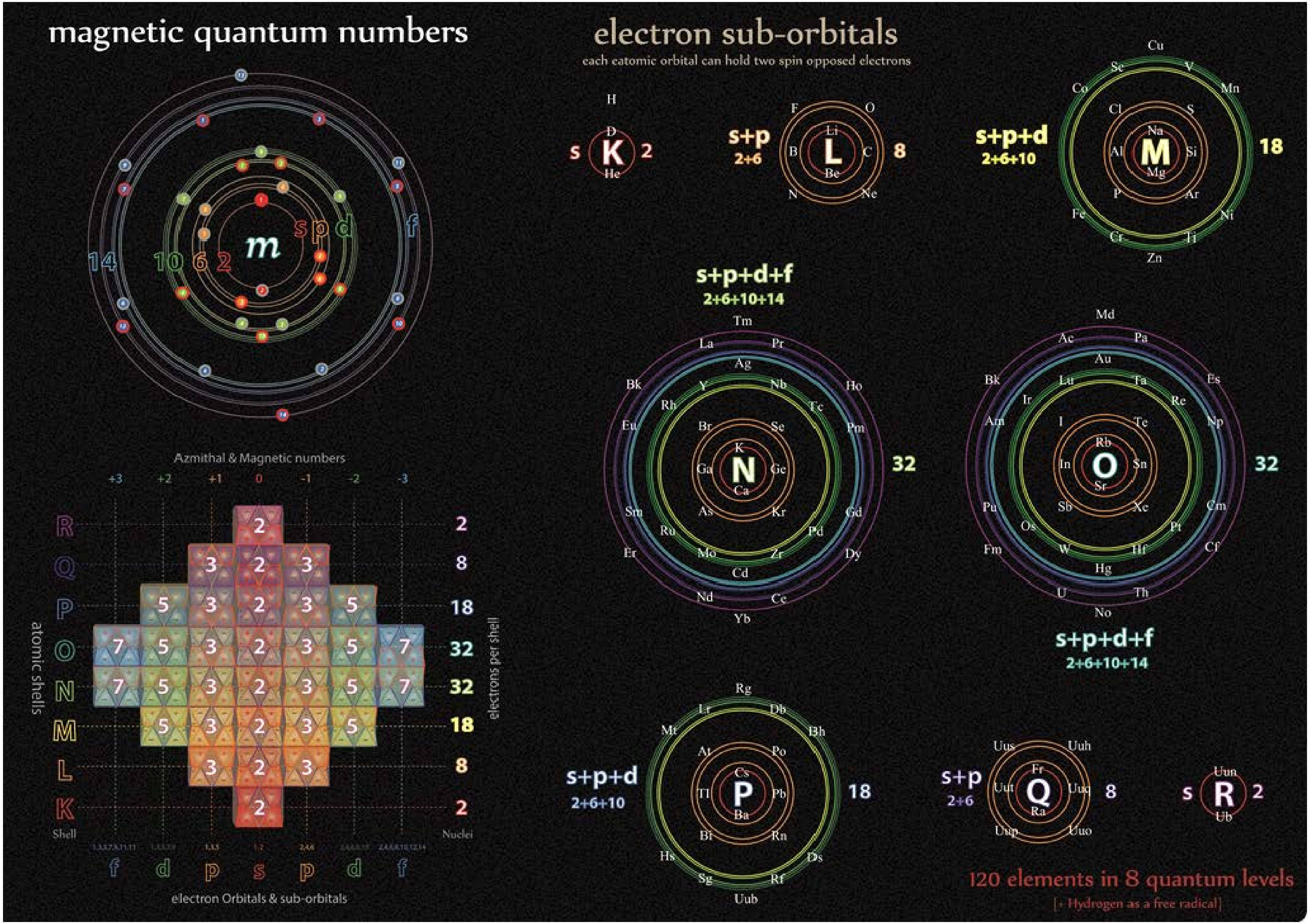


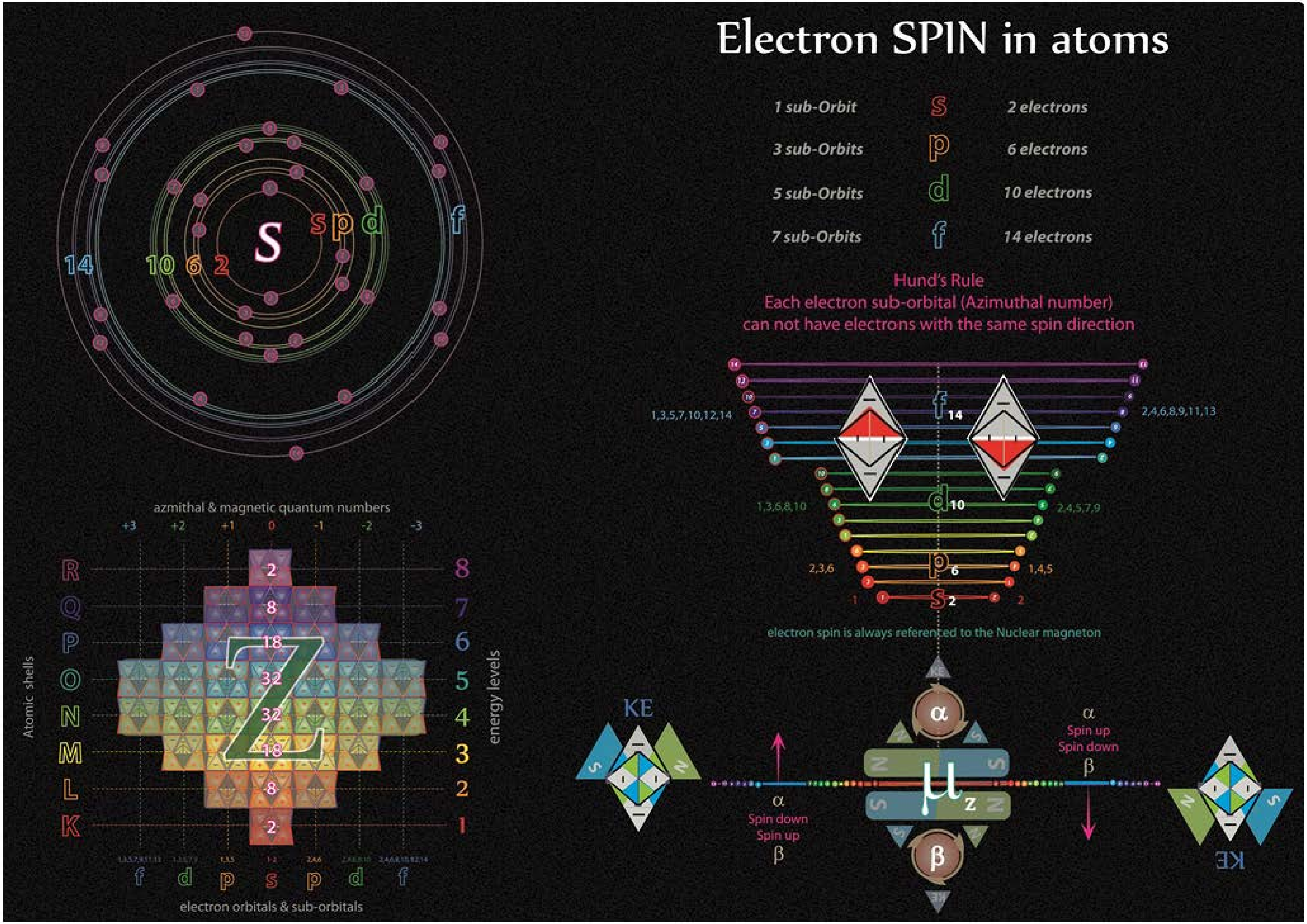
Tetryonics 44.02 - Periodicity of atomic elements


Side View
Top View
Atomic shells & energy levels
Quantum numbers
electron orbitals
atomic shells
energy levels
R Q P O N M L K
8 7 6 5 4 3 2 1
2 8 18 32 32 18 8 2
n
s p d f
ℓ
m
f d p s p d f
7 + 5 + 3 + 2 + 3 + 5 + 7
Using the charge geometries of equilateral mass-energies in Matter topologies all period elements can be accurately modelled
Z
Atomic Shells
Energy levels
Orbitals & sub-Orbitals

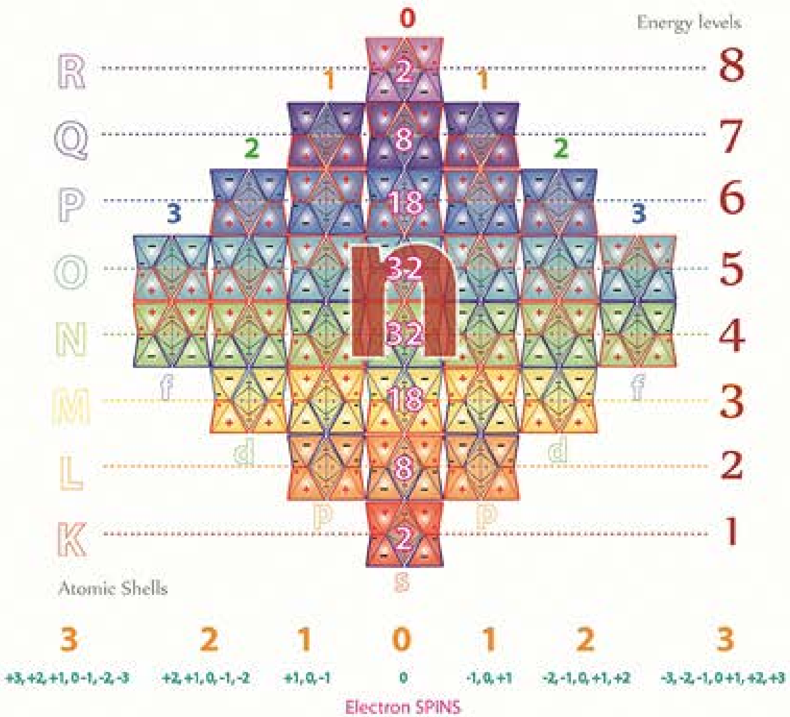


atomic Shells
s
s + p
s + p + d
s + p + d + f
s + p + d + f
s + p + d
s + p
s
energy levels
Azmithal quantum number
3 2 1 0 1 2 3
R Q P O N M L K
8 7 6 5 4 3 2 1
atomic shell
energy level
f d p s p d f
Electron orbitals
s p d f
7 5 3 1
quantum numbers
Each electron's location in an elemental nuclei is defined by its quantum numbers
All atoms have shells comprised of concentric s, p, d & f electron orbitals
electron orbitals
each electron orbital can hold a maximum of two spin opposed electrons
a core s-orbital surrounded by 3 p-orbitals 5 d-orbitals and 7 f-orbitals
Azmithal & Magnetic numbers
0
1 0 -1 +1
+1 0 -1 -1 0 +1
2 2
+2 +1 0 -1 -2 -2 -1 0 +1 +2
3 3
+3 +2 +1 0 -1 -2 -3 -3 -2 -1 0 +1 +2 +3
1 4 9 16 16 9 4 1
f d p s p d f
13 11 9 7 5 3 1 2 4 6 8 10 12 14
9 7 5 3 1 2 4 6 8 10
5 3 1 2 4 6
1 s 2
Atomic Shells
Energy levels
Orbitals & sub-Orbitals


magnetic quantum numbers
m
s p d f
14 10 6 2
Azmithal & Magnetic numbers
+3 +2 +1 0 -1 -2 -3
R Q P O N M L K
Shell
atomic shells
2 8 18 32 32 18 8 2
electrons per shell
Nuclei
f d p s p d f
electron Orbitals & sub-orbitals
electron sub-orbitals
each eatomic orbital can hold two spin opposed electrons
s K 2
s+p 2+6 L 8
s+p+d 2+6+10 M 18
s+p+d+f 2+6+10+14 N 32
O 32
s+p+d+f 2+6+10+14
s+p+d 2+6+10 P 18
s+p 2+6 Q 8
s R 2
120 elements in 8 quantum levels
[+ Hydrogen as a free radical]


Electron SPIN in atoms
1 sub-Orbit s 2 electrons
3 sub-Orbits p 6 electrons
5 sub-Orbits d 10 electrons
7 sub-Orbits f 14 electrons
Hund's Rule
Each electron sub-orbital (Azimuthal number)
can not have electrons with the same spin direction
s p d f
14 10 6 2
1,3,5,7,10,12,14
2,4,6,8,9,11,13
1,3,6,8,10
2,4,5,7,9
2,3,6
1,4,5
electron spin is always referenced to the Nuclear magneton
azmithal & magnetic quantum numbers
+3 +2 +1 0 -1 -2 -3
R Q P O N M L K
8 7 6 5 4 3 2 1
Atomic shells
energy levels
f d p s p d f
electron orbitals & sub-orbitals
KE
α
Spin up
Spin down
β
Spin down
Spin up
μ z
N S

Quantum numbers



The properties of every atom's specific electron configuration can be described by four quantum numbers:

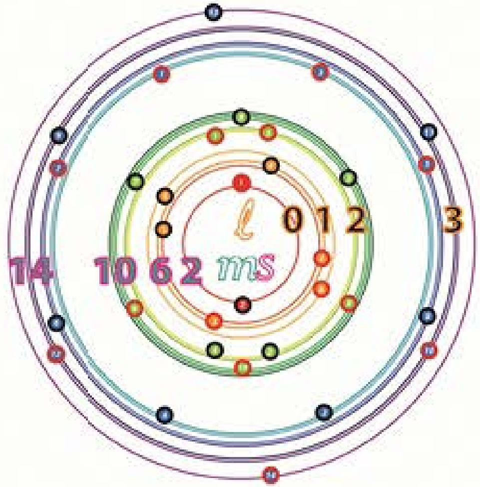
n (1-8)
Principal
(n = 1, 2, 3, 4 ...)

ℓ (0-3)
Azimuthal
(l = 0, 1 ... n−1)

m (2ℓ+1)
Magnetic
(ml = −l, −l+1 ... 0 ... l−1, l)

s ±½
electron Spin
(ms = −1/2 or +1/2),

The Bohr model was a one-dimensional model that used one quantum number to describe the distribution of electrons

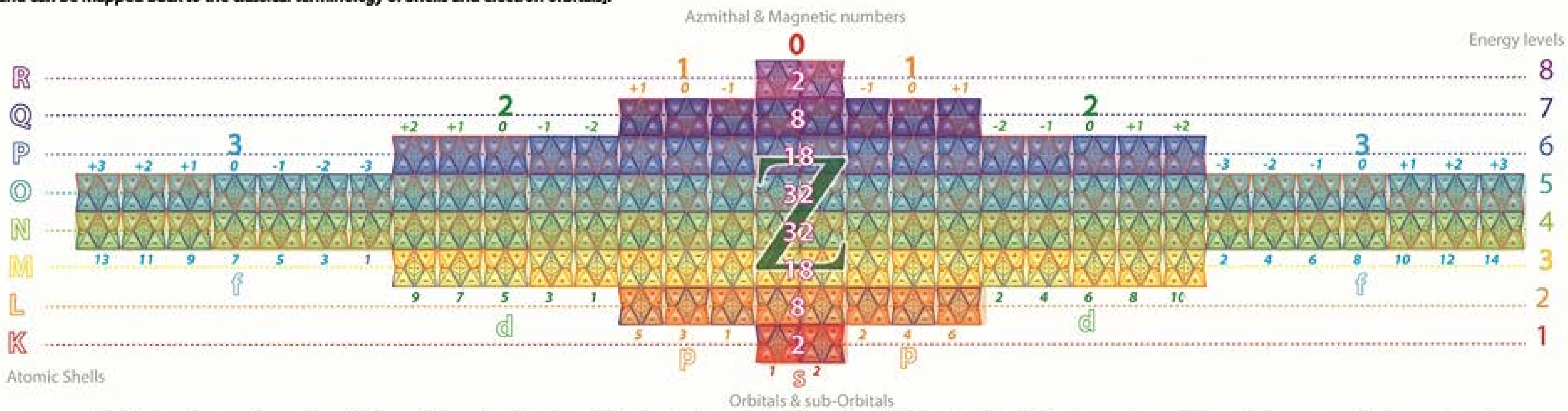


The three coordinates that come from Schrödinger's wave equations are the principal (n), angular (l), and magnetic (m) quantum numbers.

These quantum numbers describe the size, shape, and orientation in space of the orbitals of any particular atom mathematically.

These four numbers, n, ℓ, m and s can be used to describe any electron in a stable atom [and can be mapped back to the classical terminology of Shells and electron orbitals].

Each electron's quantum numbers are unique and cannot be shared by another electron in that atom.



A stable atom has equal numebrs of Protons, electrons [and Neutrons], all following the Pauli Exclusion Principle thus orientating their spins so that each element has a unique electron configuration

PRINCIPAL quantum number

The first describes the electron shell, or energy level, of an atom.

This is the only quantum number introduced by the Bohr model

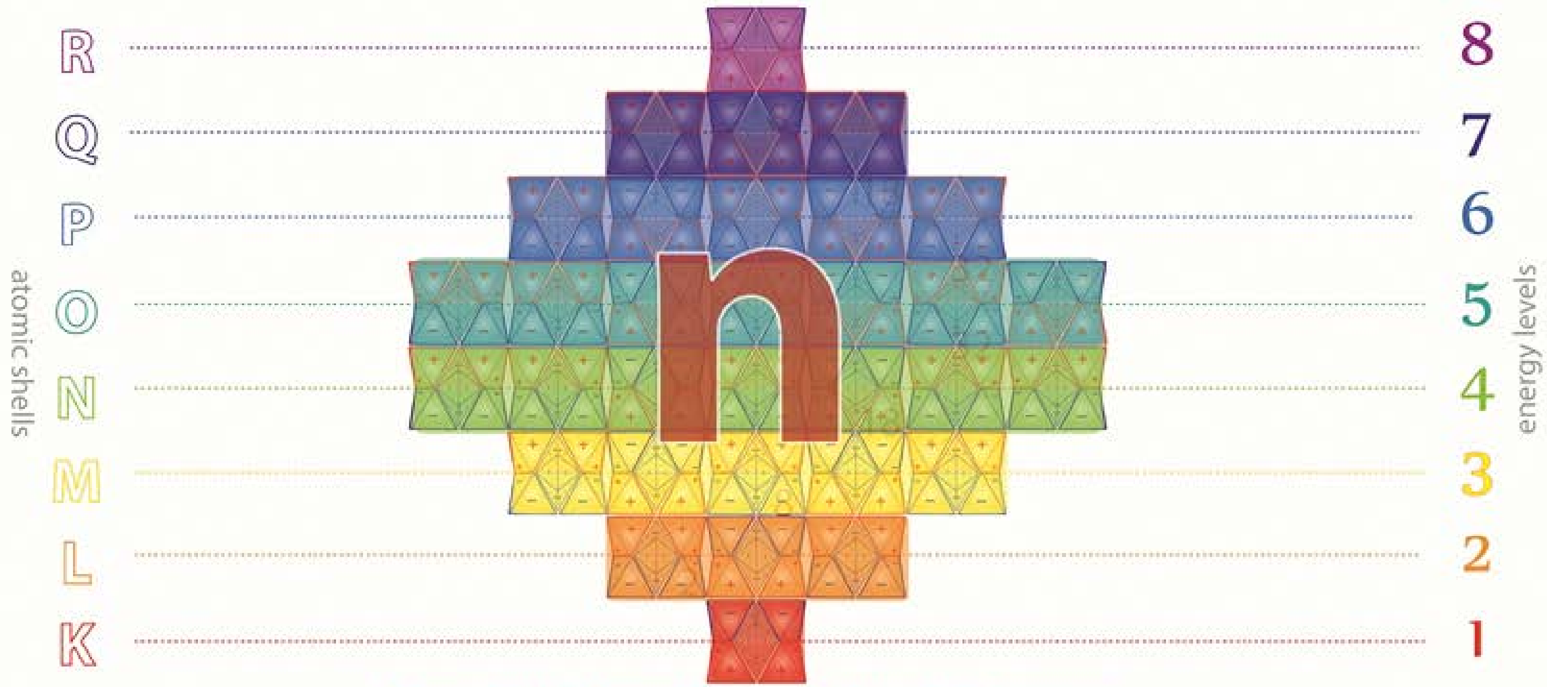
The principal quantum number can only have positive integer values

atomic shells

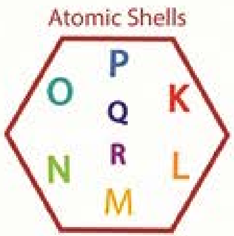
n(1-8)

(n = 1, 2, 3, 4 ...)

energy levels



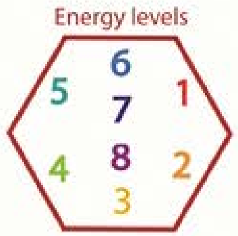
As energies of the Baryons comprising the atomic nuclei increases, the electron bound to each nuclei also possesses more KEM field energies and is therefore less tightly bound to the nucleus

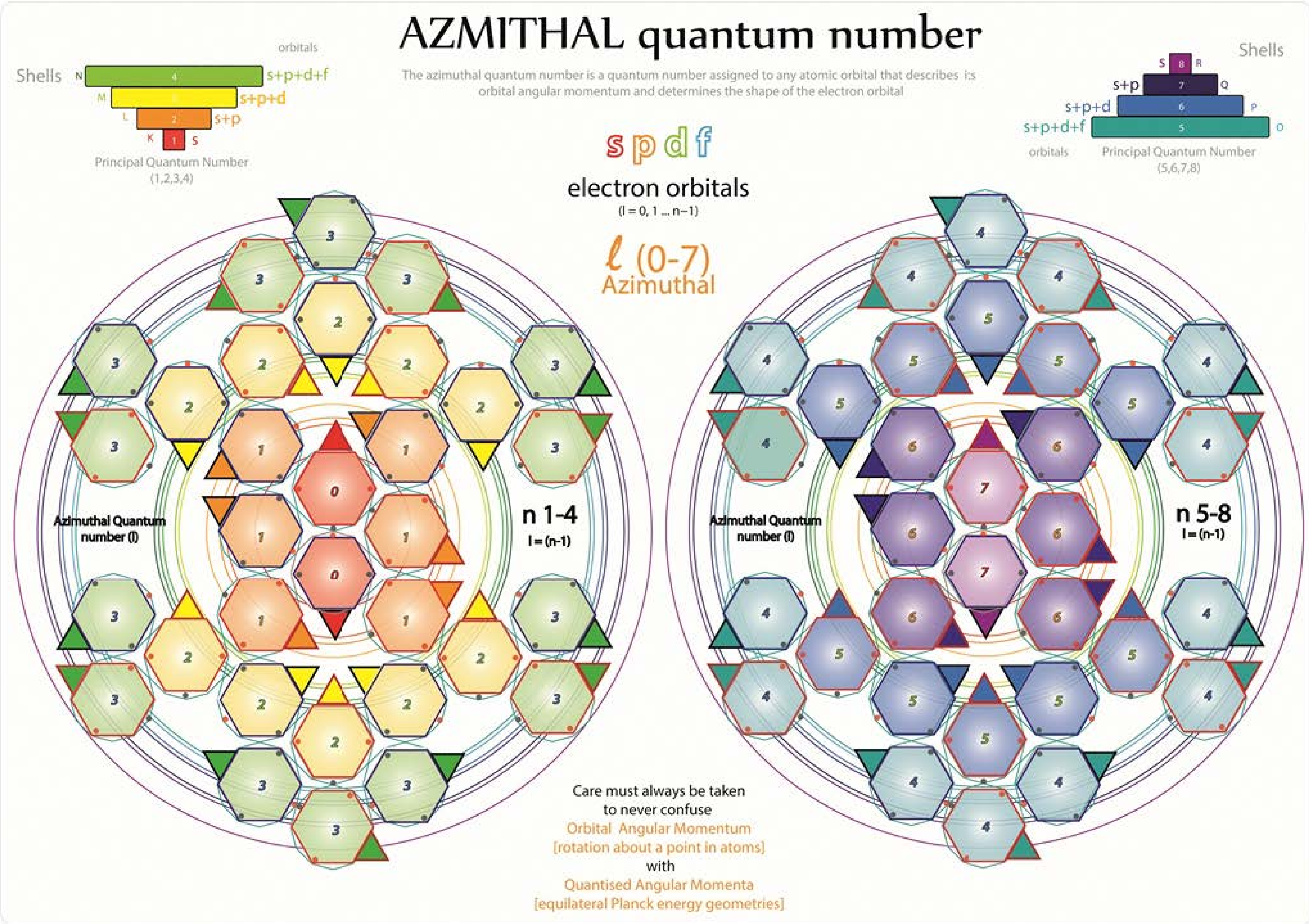


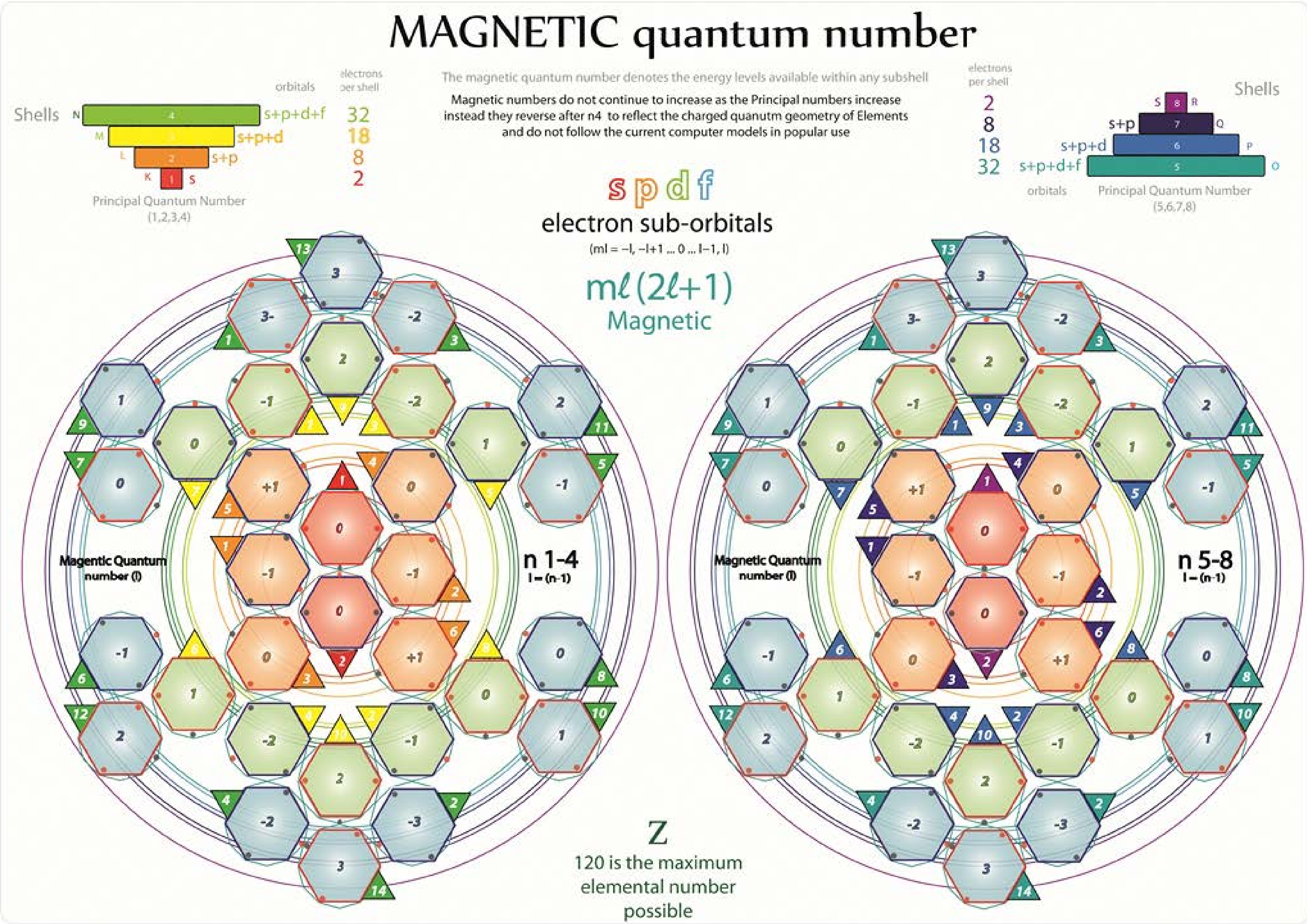
(K, L, M, N, O, P, Q, R)

Atomic shells relate directly to Principal quantum numbers

(1, 2, 3, 4, 5, 6, 7, 8)

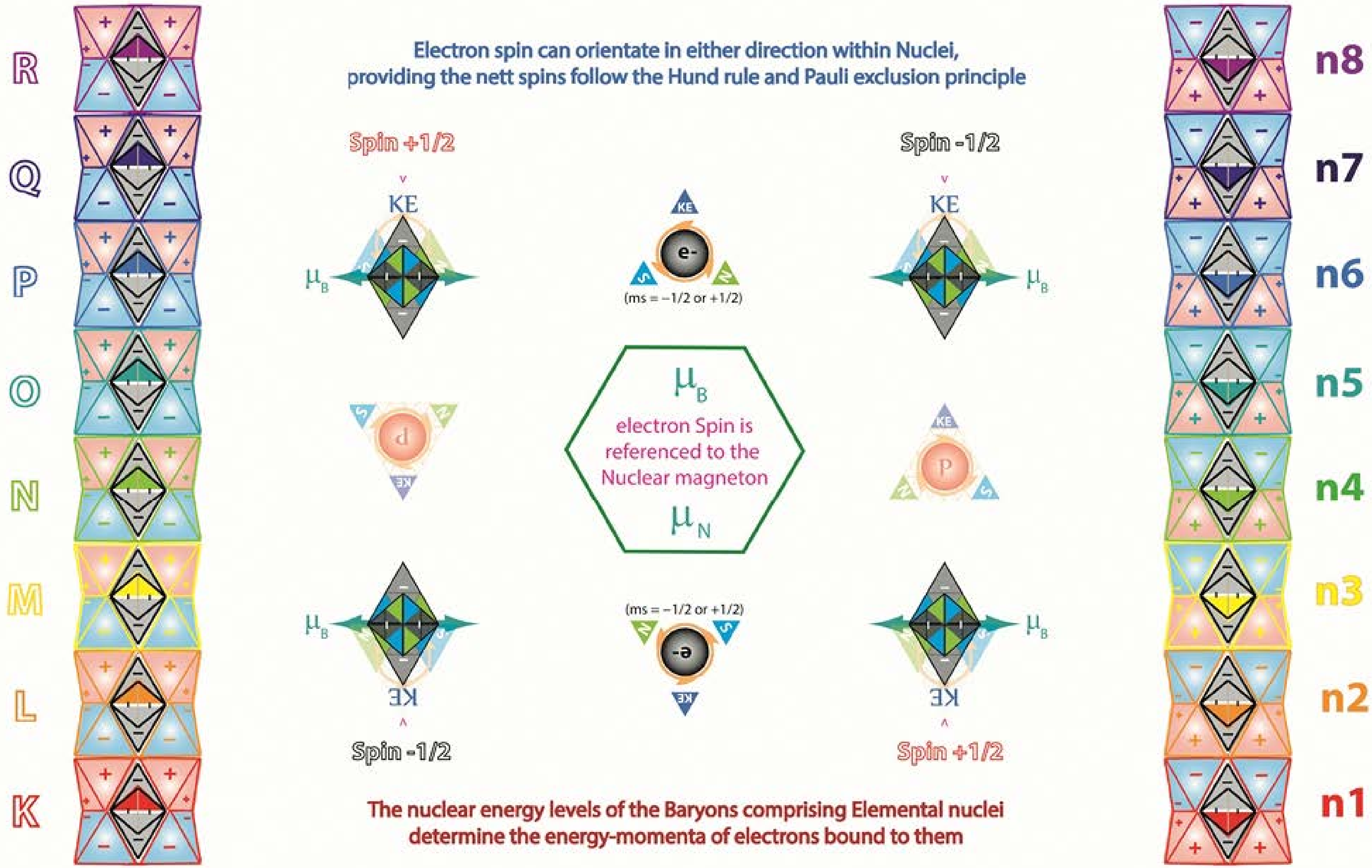



AZMITHAL quantum number
The azimuthal quantum number is a quantum number assigned to any atomic orbital that describes its orbital angular momentum and determines the shape of the electron orbital
Shells
orbitals
s+p+d+f
s+p+d
s+p
s
Principal Quantum Number (1,2,3,4)
Shells
s+p
s+p+d
s+p+d+f
orbitals
Principal Quantum Number (5,6,7,8)
s p d f
electron orbitals
(l = 0, 1 ... n−1)
ℓ (0-7)
Azimuthal
Azimuthal Quantum number (l)
n 1-4
l = (n-1)
Azimuthal Quantum number (l)
n 5-8
l = (n-1)
Care must always be taken
to never confuse
Orbital Angular Momentum
[rotation about a point in atoms]
with
Quantised Angular Momenta
[equilateral Planck energy geometries]


MAGNETIC quantum number
The magnetic quantum number denotes the energy levels available within any subshell
Magnetic numbers do not continue to increase as the Principal numbers increase instead they reverse after n4 to reflect the charged quanutm geometry of Elements and do not follow the current computer models in popular use
Shells
orbitals
electrons per shell
N 4 s+p+d+f 32
M 3 s+p+d 18
L 2 s+p 8
K 1 s 2
Principal Quantum Number
(1,2,3,4)
electrons per shell
Shells
2 S 8 R
8 s+p 7 Q
18 s+p+d 6 P
32 s+p+d+f 5 O
orbitals
Principal Quantum Number
(5,6,7,8)
s p d f
electron sub-orbitals
(ml = –l, –l+1 ... 0 ... l–1, l)
mℓ (2ℓ+1)
Magnetic
Magentic Quantum number (l)
n 1-4
l = (n-1)
Magentic Quantum number (l)
n 5-8
l = (n-1)
Z
120 is the maximum elemental number possible
3
3-
-2
2
-1
1
0
+1
-3

SPIN quantum number

The spin quantum number is a quantum number that parameterizes the intrinsic angular momentum (or spin angular momentum), of any given electron anywhere in an atomic nucleus



Modifying Hund's Rule

Electrons fill orbitals in an alternating sequential numbering pattern due to nucleon placement creating opposed direction electron spins

The increased stability of the atom, most commonly manifested in a lower energy state, arises because the high-spin state forces the unpaired electrons to reside in different spatial orbitals.

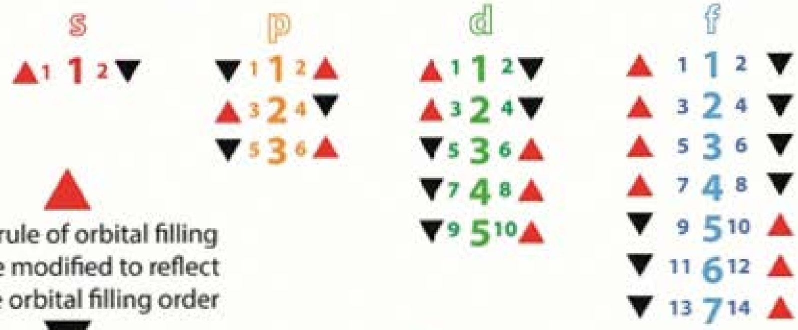
A commonly given reason for the increased stability of high multiplicity states is that the different occupied spatial orbitals create a larger average distance between electrons, reducing electron-electron repulsion energy. In reality, it has been shown that the actual reason behind the increased stability is a decrease in the screening of electron-nuclear attractions[1].

The total spin state is calculated as the total number of unpaired electrons + 1, or twice the total spin + 1 written as 2s+1.

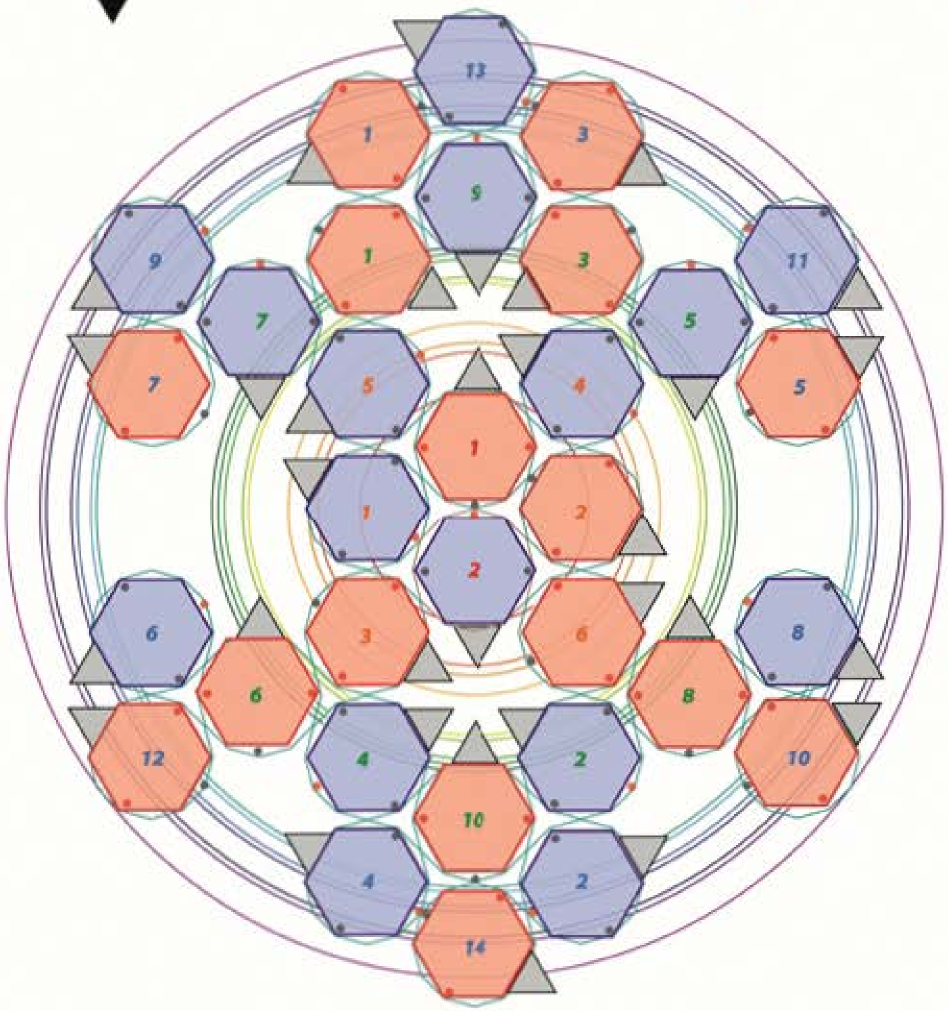
As a result of Hund's rule, constraints are placed on the way atomic orbitals are filled using the Aufbau principle.

Before any two electrons occupy an orbital in a subshell, other orbitals in the same subshell must first each contain one electron. Also, the electrons filling a subshell will have parallel spin before the shell starts filling up with the opposite spin electrons (after the first orbital gains a second electron).

As a result, when filling up atomic orbitals, the maximum number of unpaired electrons (and hence maximum total spin state) is assured



Hund's rule of orbital filling must be modified to reflect the true orbital filling order

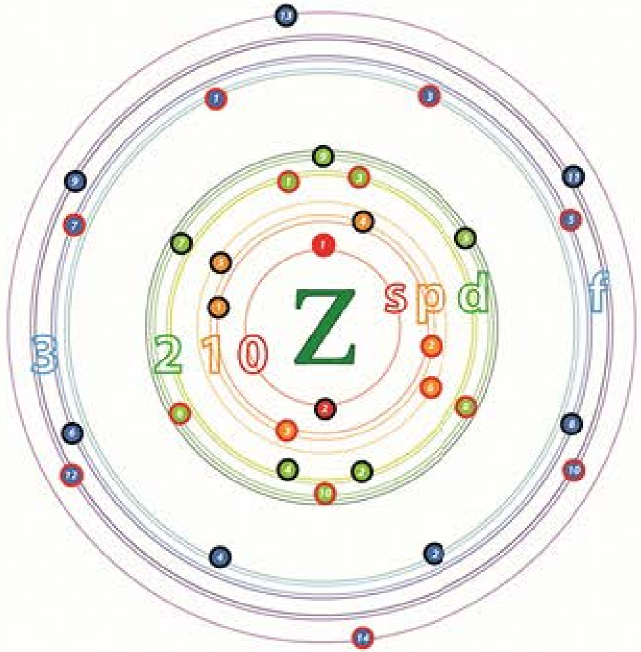


Sub-orbitals fill in order of numbering

Electrons spins pair before next orbital is filled

ie.
p1 [DOWN] and p2 [UP] fill
before
p3 [UP] and p4 [DOWN]
before
p5 [DOWN] and p6 [UP] etc

Principle quantum Energies



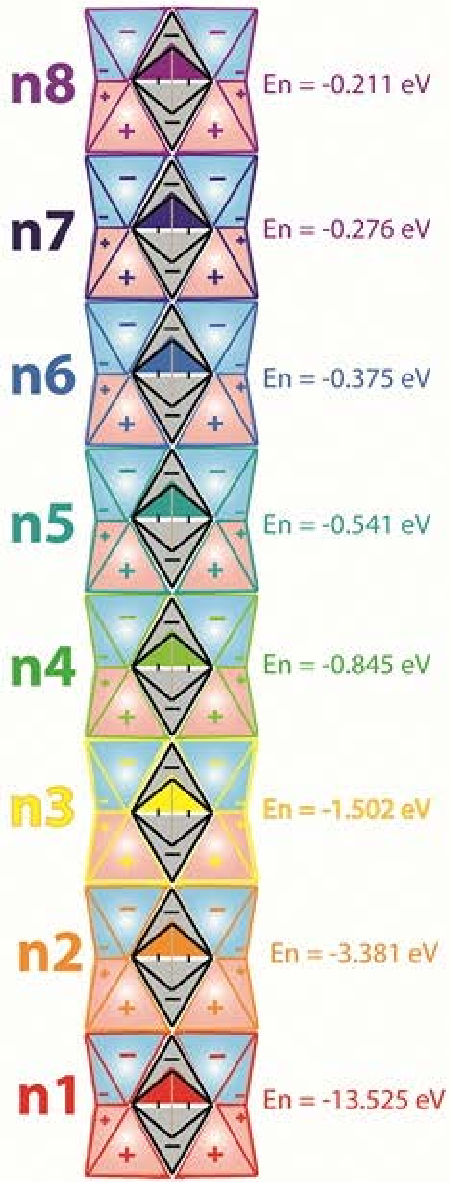
In an atom - electron energies are proportional to their intrinsic Kinetic Energies - which in turn are directly proportional to the quantum energy level of the nuclei which the electron binds to in their respective atomic shel s

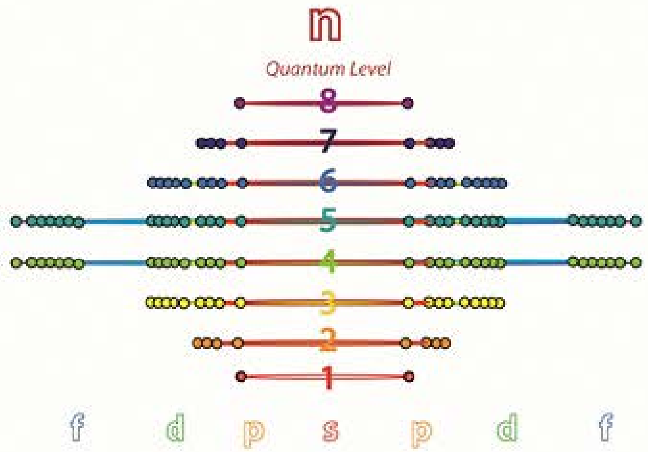
In a nucleus, lower energy orbits have less 'paired' nuclei supplying energy. The more energy you give a nuclei the faster it casuses the bound electron to rotate. If you give the nuclei enough energy, it will impart eneough energy to its electron for it to leave the system entirely.

The same is true for an electron orbital. Higher values of n mean more energy for the electron and the corresponding KEM field enegies of the electron is larger, resulting in increased angular momentum.

Values of n start at 1 and go up by integer amounts.

If enough energy is added to the system by incident Photons a electron will leave the atom creating a positively charged nuclei [ionisation].





s orbits n1-8
p orbits n2-7
d orbits n3-6
f orbits n4-5

Eigenstate value

KEM field energy [per n] required to exceed 13.525 eV at which point the photo-electron has sufficient KE to break free of the Nucleus

$$E_n = \frac{E_1}{n^2} = \frac{-13.6eV}{n^2}, n = 1, 2, 3...$$

The possible Kinetic Energies (quantum levels) of an electron are directly related to the energy level of the Nuclei in each Quantum Level

Quantum Level 1

K shell

n1

Ground State electron

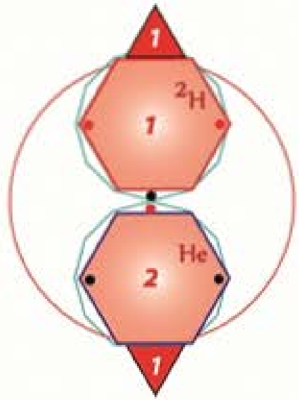
$iE = -13.313\ eV$

The energy levels of bound electrons is determined by Baryons

Z#		Name	Protons	electrons	Neutrons
1	1s1	Deuterium	1	1	1
2	1s2	Helium	2	2	2

2

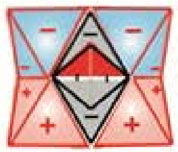
Deuterium [not Hydrogen] is the building block of elements



Z#		Name	Protons	electrons	Neutrons
1	1s1	Hydrogen	1	1	0

Hydrogen is a free radical element

n1



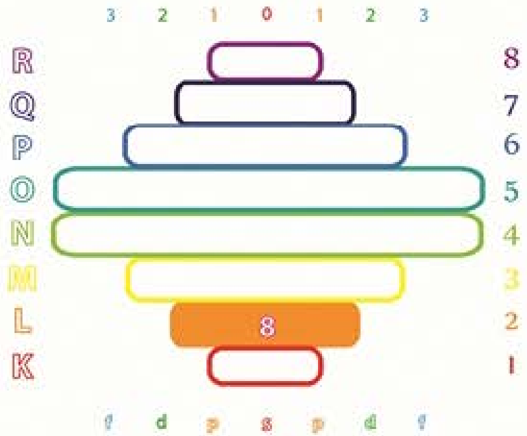
Quantum Level 2

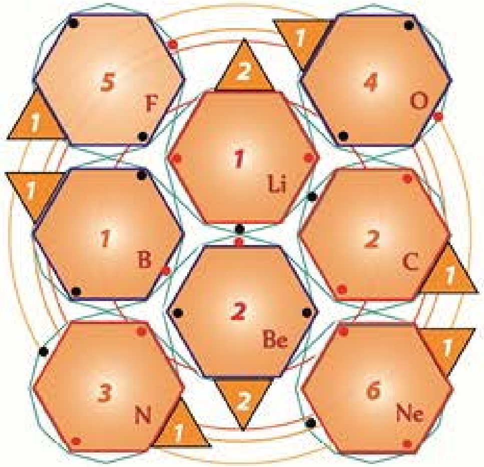
The energy levels of bound electrons is determined by Baryons

Z#		Name	Protons	electrons	Neutrons
3	2s1	Lithium	3	3	3
4	2s2	Beryllium	4	4	4
5	1p1	Boron	5	5	5
6	1p2	Carbon	6	6	6
7	1p3	Nitrogen	7	7	7
8	1p4	Oxygen	8	8	8
9	1p5	Fluorine	9	9	9
10	1p6	Neon	10	10	10

8

Deuterium [not Hydrogen] is the building block of elements



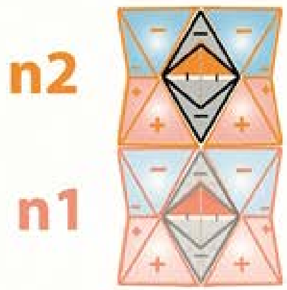


L shell

n2

Ground State electron

$iE = -12.679$ eV



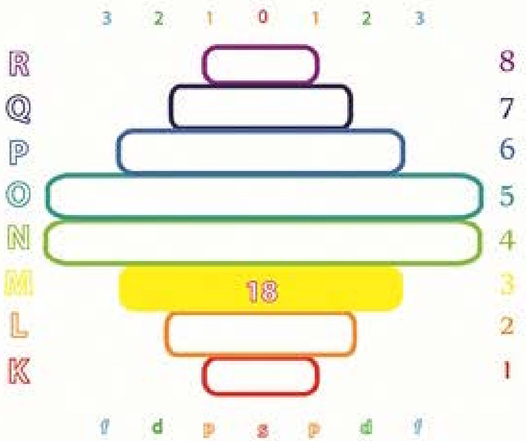
Quantum Level 3

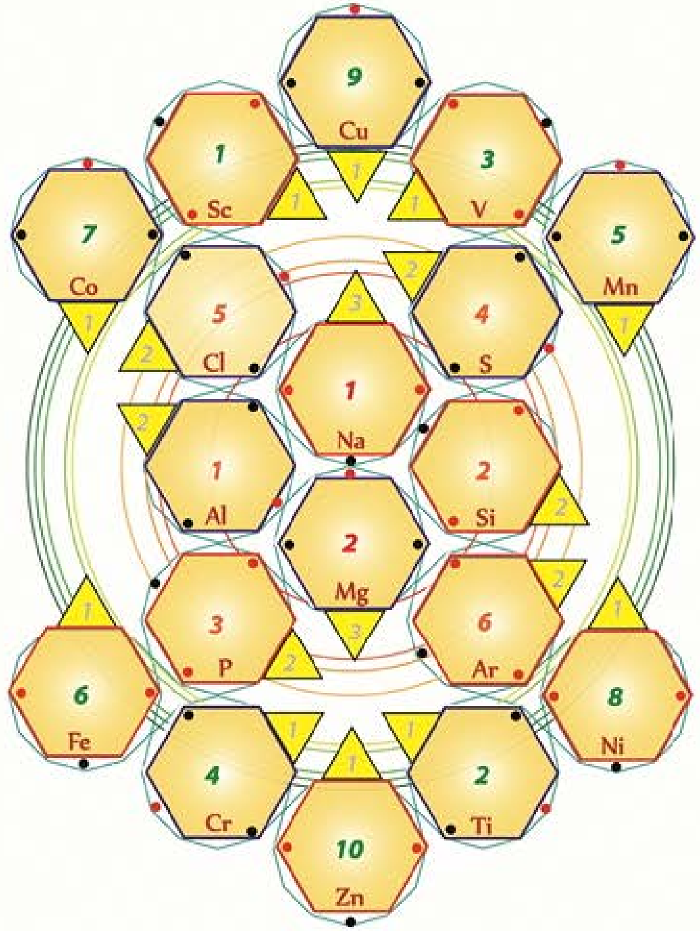
The energy levels of bound electrons is determined by Baryons

Z #		Name	Protons	electrons	Neutrons
11	3s1	Sodium	11	11	11
12	3s2	Magnesium	12	12	12
13	2p1	Aluminium	13	13	13
14	2p2	Silicon	14	14	14
15	2p3	Phosphorus	15	15	15
16	2p4	Sulfur	16	16	16
17	2p5	Chlorine	17	17	17
18	2p6	Argon	18	18	18
21	3d1	Scandium	21	21	21
22	3d2	Titanium	22	22	22
23	3d3	Vanadium	23	23	23
24	3d4	Chromium	24	24	24
25	3d5	Manganese	25	25	25
26	3d6	Iron	26	26	26
27	3d7	Cobalt	27	27	27
28	3d8	Nickel	28	28	28
29	3d9	Copper	29	29	29
30	3d10	Zinc	30	30	30

18

Deuterium [not Hydrogen] is the building block of elements

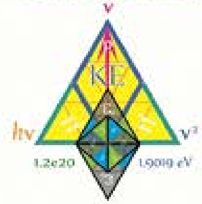




M shell

n3

Ground State electron



$iE = -11.623$ eV

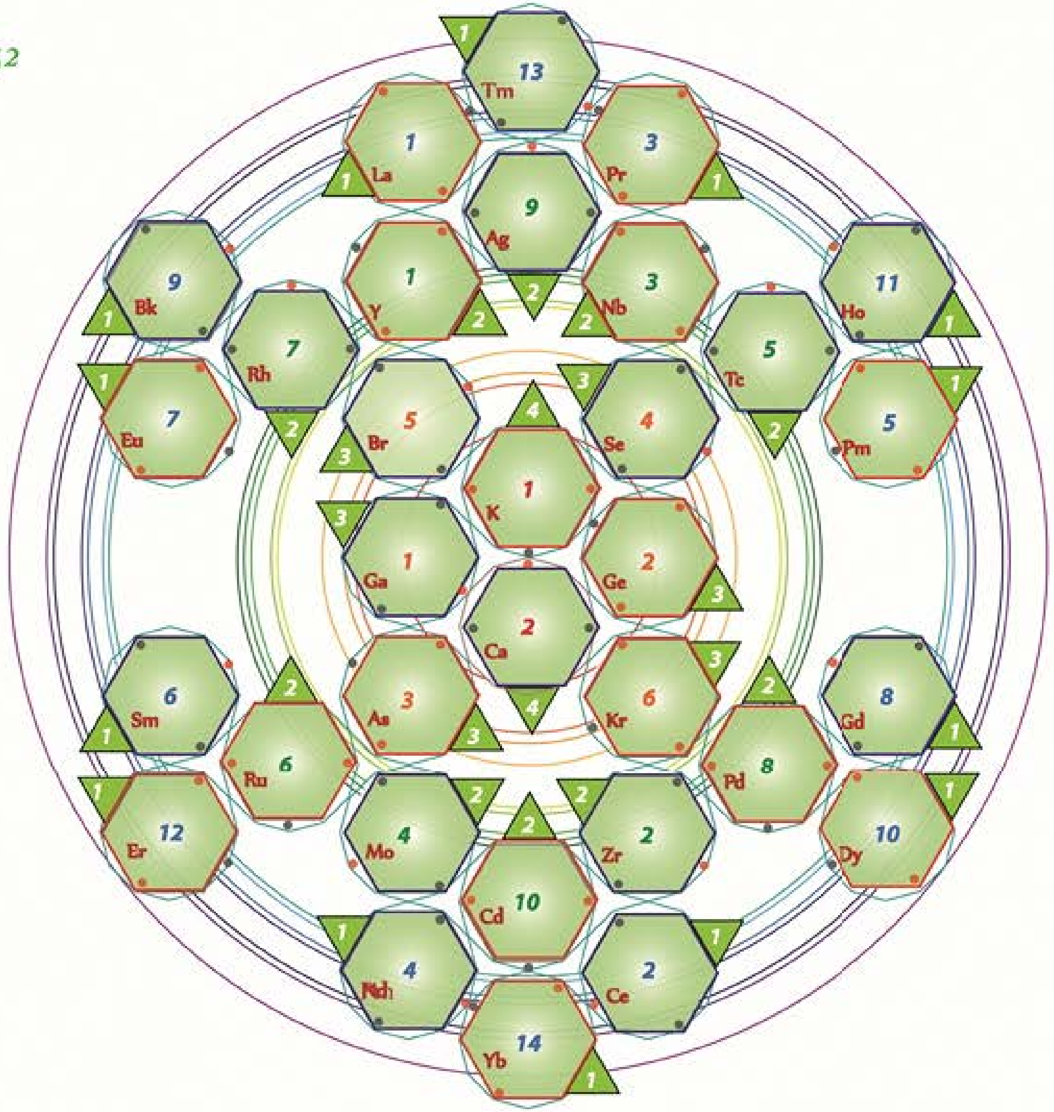
Quantum Level 4

The energy levels of bound electrons is determined by Baryons

Z #		Name	Protons	electrons	Neutrons
19	4s1	Potassium	19	19	19
20	4s2	Calcium	20	20	20
31	4p1	Gallium	31	31	31
32	4p2	Germanium	32	32	32
33	4p3	Arsenic	33	33	33
34	4p4	Selenium	34	34	34
35	4p5	Bromine	35	35	35
36	4p6	Krypton	36	36	36
39	4d1	Yttrium	39	39	39
40	4d2	Zirconium	40	40	40
41	4d3	Niobium	41	41	41
42	4d4	Molybdenum	42	42	42
43	4d5	Technetium	43	43	43
44	4d6	Ruthenium	44	44	44
45	4d7	Rhodium	45	45	45
46	4d8	Palladium	46	46	46
47	4d9	Silver	47	47	47
48	4d10	Cadmium	48	48	48
57	4f1	Lanthanum	57	57	57
58	4f2	Cerium	58	58	58
59	4f3	Praseodymium	59	59	59
60	4f4	Neodymium	60	60	60
61	4f5	Promethium	61	61	61
62	4f6	Samarium	62	62	62
63	4f7	Europium	63	63	63
64	4f8	Gadolinium	64	64	64
65	4f9	Terbium	65	65	65
66	4f10	Dysprosium	66	66	66
67	4f11	Holium	67	67	67
68	4f12	Erbium	68	68	68
69	4f13	Thulium	69	69	69
70	4f14	Ytterbium	70	70	70

32

Deuterium [not Hydrogen] is the building block of elements

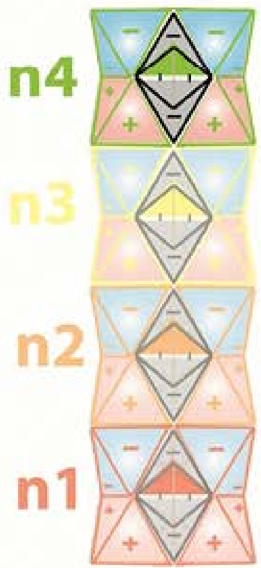


N shell

n4

Ground State electron

$iE = -10.143\ eV$



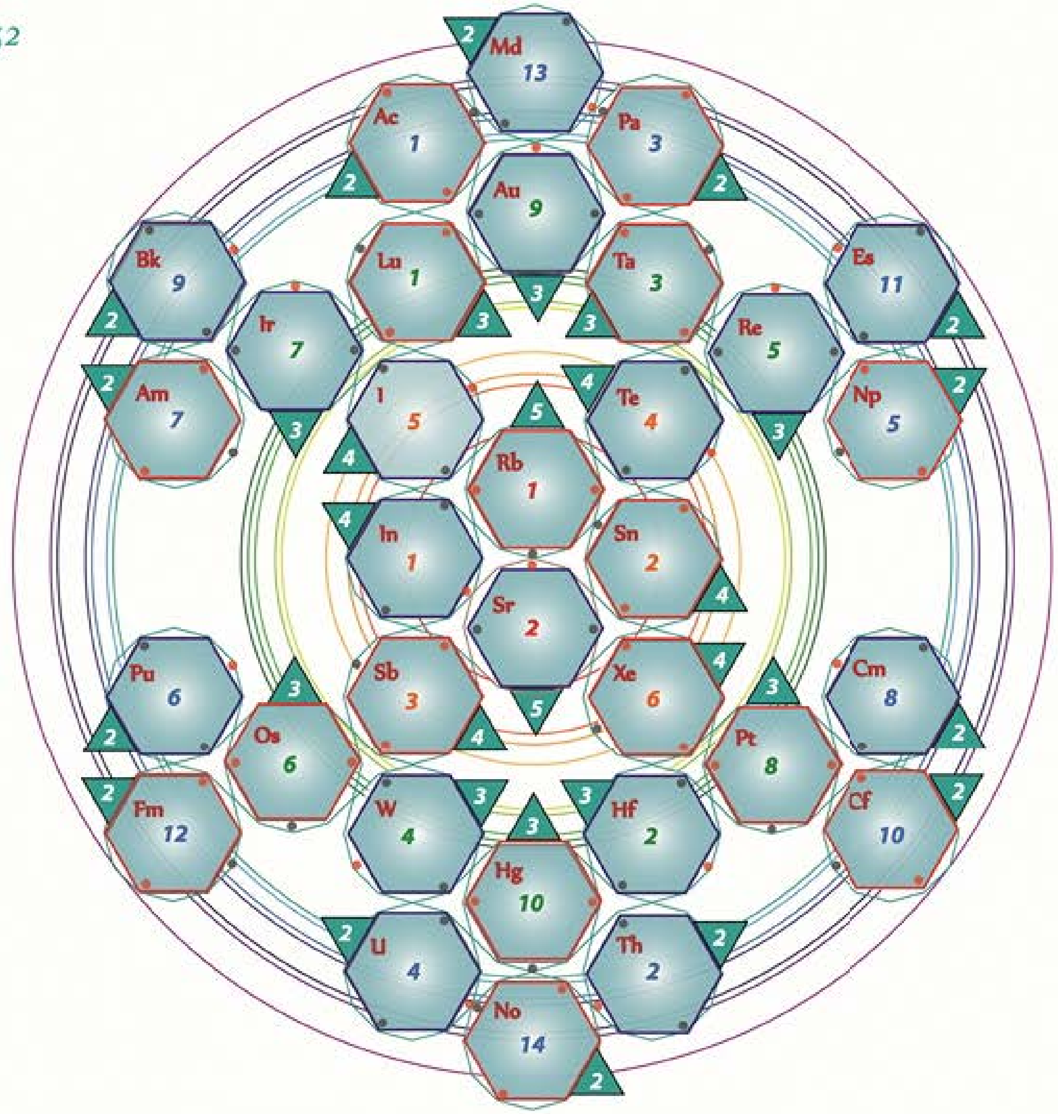
Quantum Level 5

The energy levels of bound electrons is determined by Baryons

32

Z #		Name	Protons	electrons	Neutrons
37	5s1	Rubidium	37	37	37
38	5s2	Strontium	38	38	38
49	5p1	Indium	49	49	49
50	5p2	Tin	50	50	50
51	5p3	Antimony	51	51	51
52	5p4	Tellurium	52	52	52
53	5p5	Iodine	53	53	53
54	5p6	Xenon	54	54	54
71	5d1	Lutetium	71	71	71
72	5d2	Hafnium	72	72	72
73	5d3	Tantalum	73	73	73
74	5d4	Tungsten	74	74	74
75	5d5	Rhenium	75	75	75
76	5d6	Osmium	76	76	76
77	5d7	Iridium	77	77	77
78	5d8	Platinum	78	78	78
79	5d9	Gold	79	79	79
80	5d10	Mercury	80	80	80
89	5f1	Actinium	89	89	89
90	5f2	Thorium	90	90	90
91	5f3	Protactium	91	91	91
92	5f4	Uranium	92	92	92
93	5f5	Neptunium	93	93	93
94	5f6	Plutonium	94	94	94
95	5f7	Americium	95	95	95
96	5f8	Curium	96	96	96
97	5f9	Berkelium	97	97	97
98	5f10	Californium	98	98	98
99	5f11	Einsteinium	99	99	99
100	5f12	Fermium	100	100	100
101	5f13	Mendelevium	101	101	101
102	5f14	Nobelium	102	102	102

Deuterium [not Hydrogen] is the building block of elements



O shell

n5

Ground State electron

$iE = -8.241\ eV$

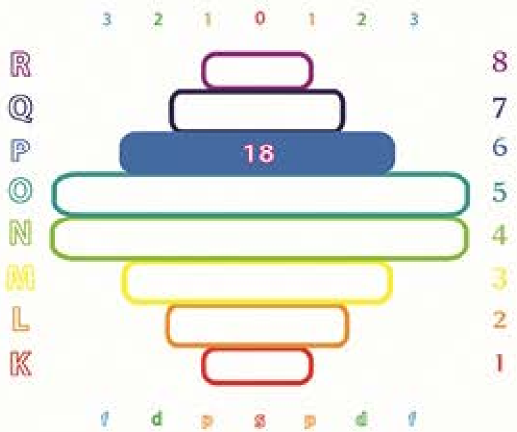
Quantum Level 6

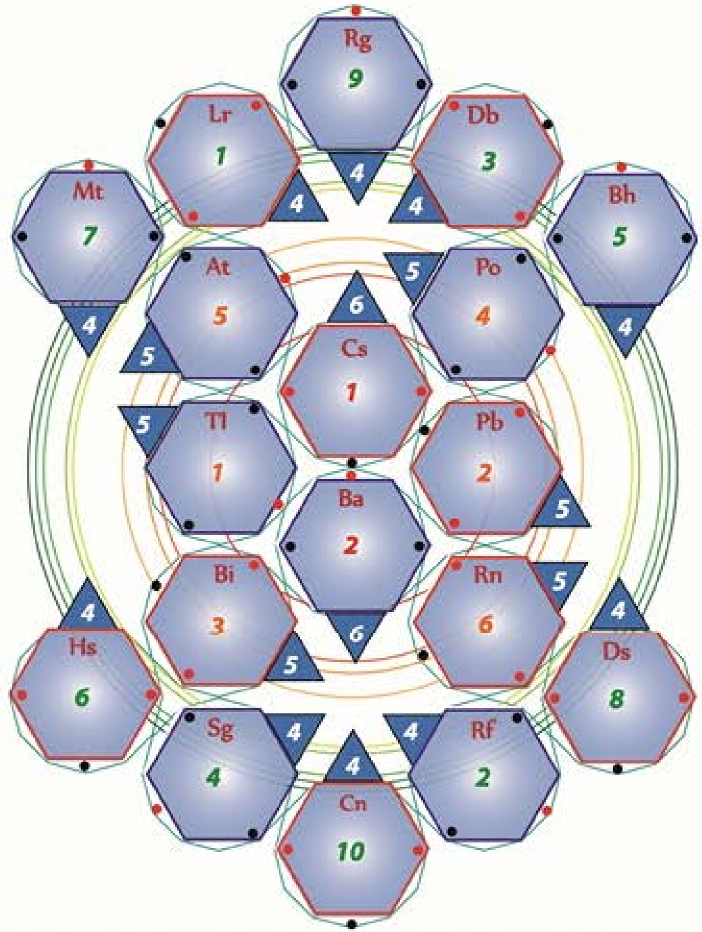
The energy levels of bound electrons is determined by Baryons

Z #		Name	Protons	electrons	Neutrons
55	6s1	Caesium	55	55	55
56	6s2	Barium	56	56	56
81	6p1	Thallium	81	81	81
82	6p2	Lead	82	82	82
83	6p3	Bismuth	83	83	83
84	6p4	Polonium	84	84	84
85	6p5	Astatine	85	85	85
86	6p6	Radon	86	86	86
103	6d1	Lawrencium	103	103	103
104	6d2	Rutherfordium	104	104	104
105	6d3	Dubnium	105	105	105
106	6d4	Seaborgium	106	106	106
107	6d5	Bohrium	107	107	107
108	6d6	Hassium	108	108	108
109	6d7	Meitnerium	109	109	109
110	6d8	Darmstadtium	110	110	110
111	6d9	Roetgenium	111	111	111
112	6d10	Copernicium	112	112	112

18

Deuterium [not Hydrogen] is the building block of elements



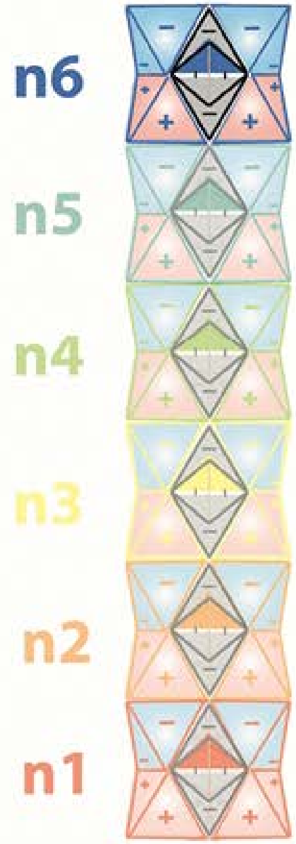


P shell

n6

Ground State electron

iE = -5.917 eV



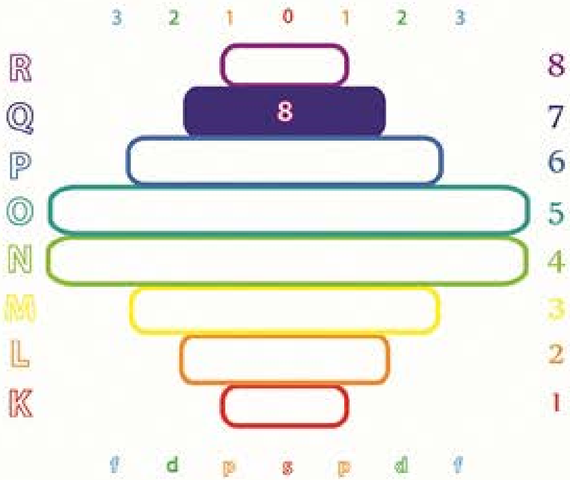
Quantum Level 7

The energy levels of bound electrons is determined by Baryons

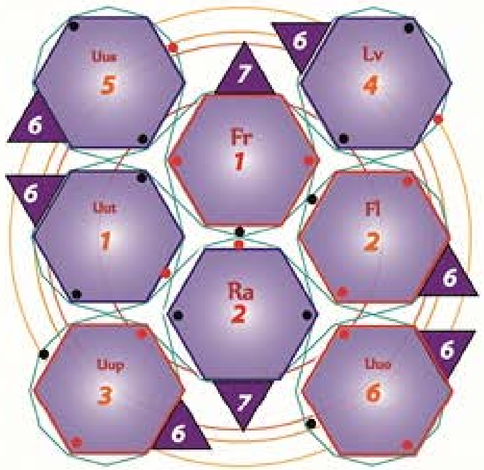
Z #		Name	Protons	electrons	Neutrons
87	7s1	Francium	87	87	87
88	7s2	Radium	88	88	88
113	7p1	Ununtrium	113	113	113
114	7p2	Flerovium	114	114	114
115	7p3	Ununpentium	115	115	115
116	7p4	Livermorium	116	116	116
117	7p5	Ununseptium	117	117	117
118	7p6	Ununoctium	118	118	118

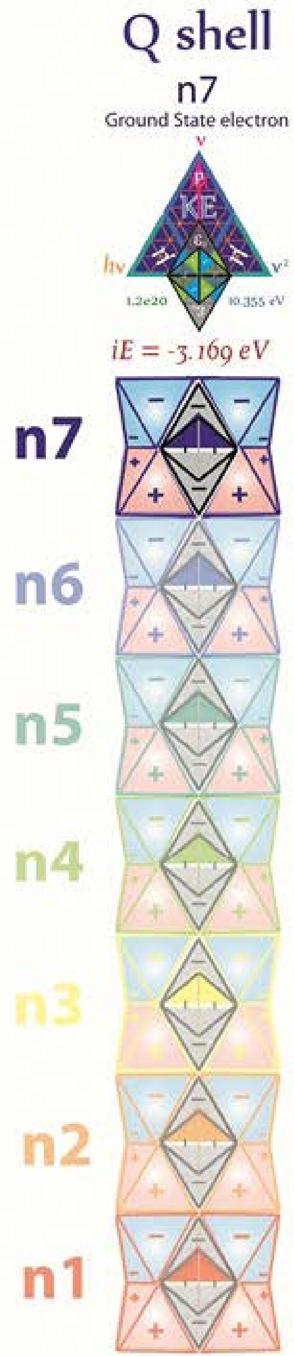
8

Deuterium [not Hydrogen] is the building block of elements



Energy level





Quantum Level 8

The energy levels of bound electrons is determined by Baryons

Z #		Name	Protons	electrons	Neutrons
119	8s1	Ununnonium	119	119	119
120	8s2	Unbinilium	120	120	120

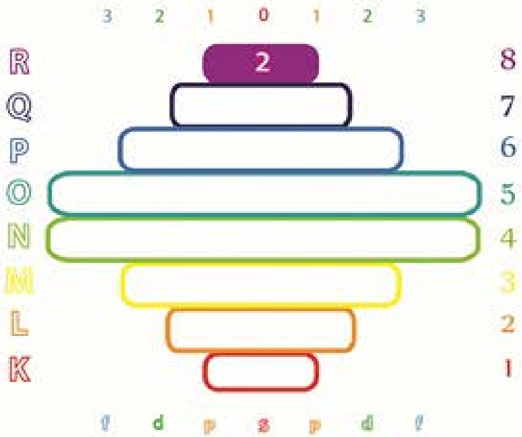
2

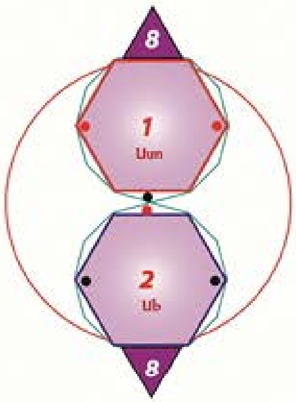
Deuterium [not Hydrogen] is the building block of elements

R shell

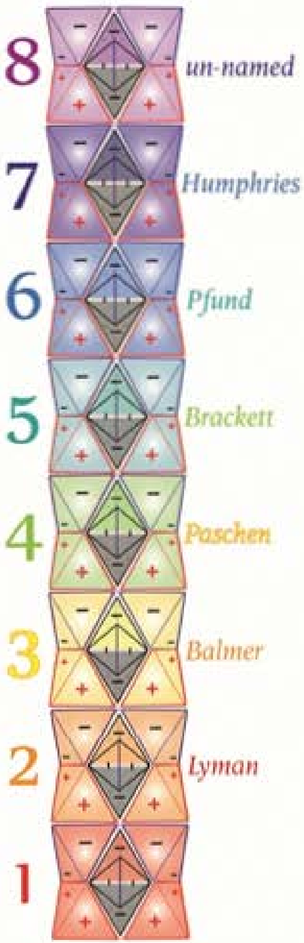
n8

Ground State electron

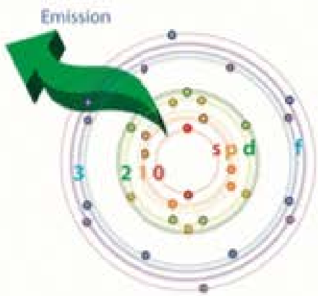




Spectral line transitions



Quantum level jumps



Quantum Level Jumps

Photon Absorption and Release

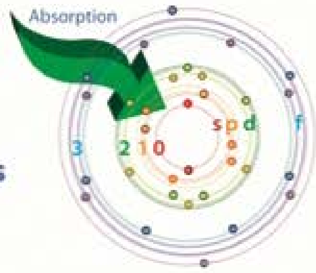


Photo-electrons can only transition between principal energy Baryons in the atomic nuclei in discrete steps [or quantum jumps] because Baryons determine the KEM energy levels of electrons in nuclei

[see Tetryonic QED for full details on spectral line mechanics]

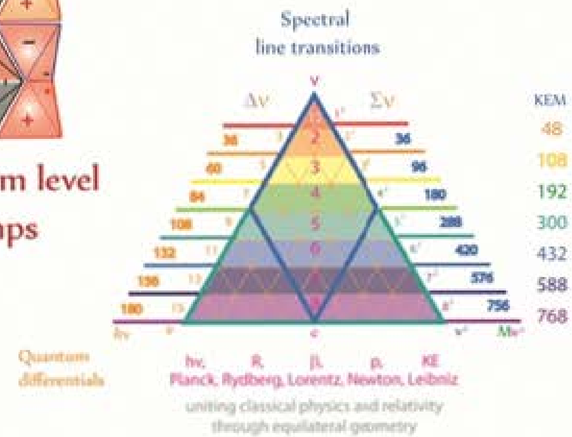
Initial Quantum level

8	768	756	720	660	576	468	336	180	0
7	588	576	540	480	396	288	156	0	
6	432	420	384	324	240	132	0		
5	300	288	252	192	108	0			
4	192	180	144	84	0				
3	108	96	60	0					
2	48	36	0						
1	12	0							
		12	48	108	192	300	432	588	768
		1	2	3	4	5	6	7	8

Final Quantum level

$$\Delta p = \Delta Mv = hf$$

accelerating photo-electrons produce spectral lines



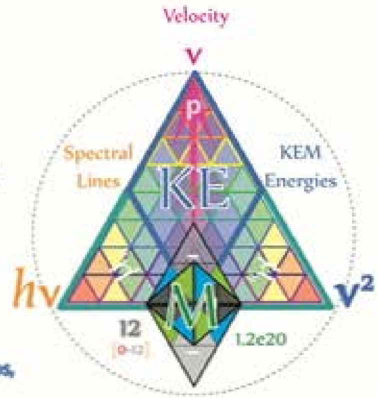
Nuclear energy emission~absorption

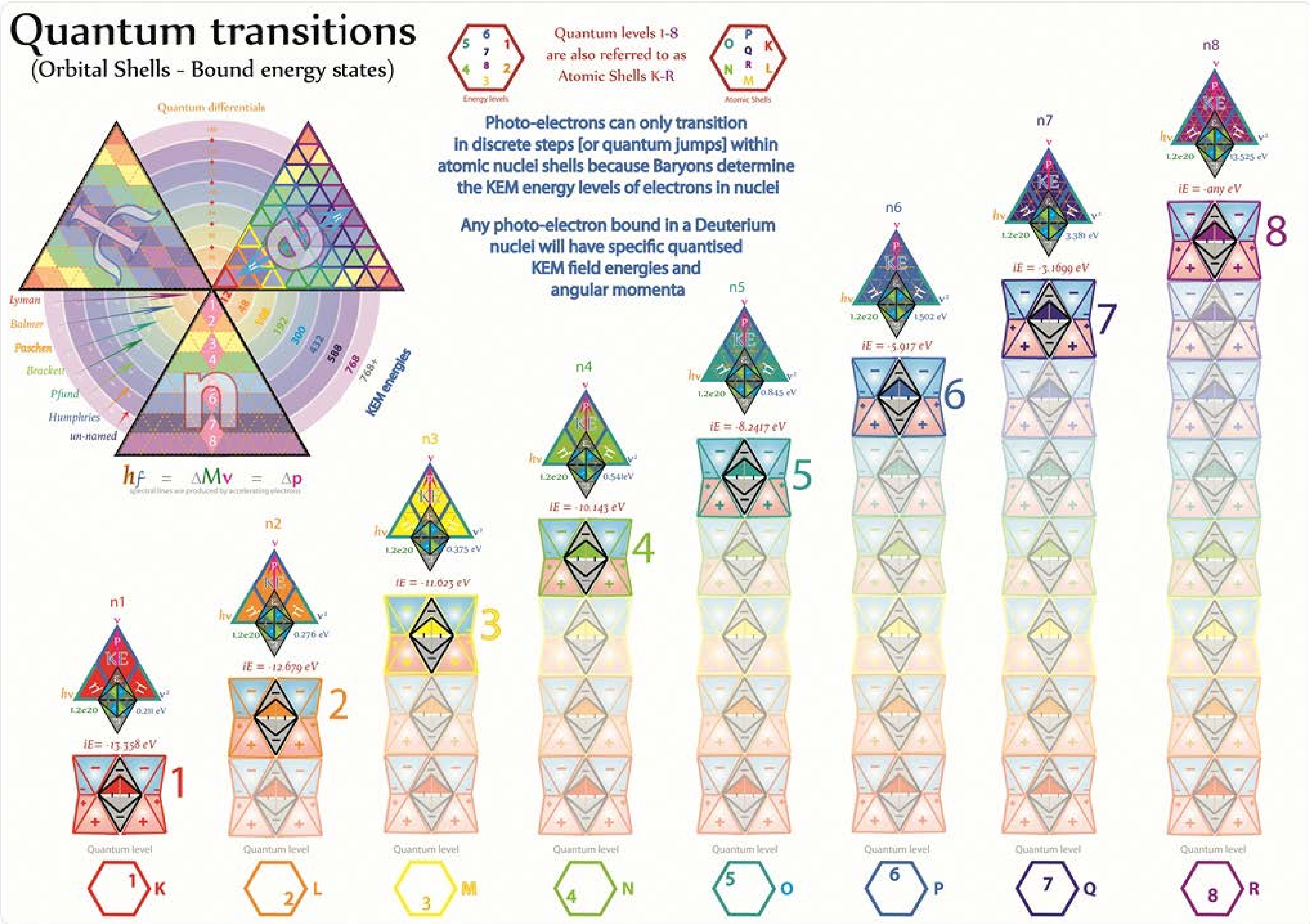
If atoms are left undisturbed, their electrons usually fill the lowest available energy levels and stay there, in their "ground state."

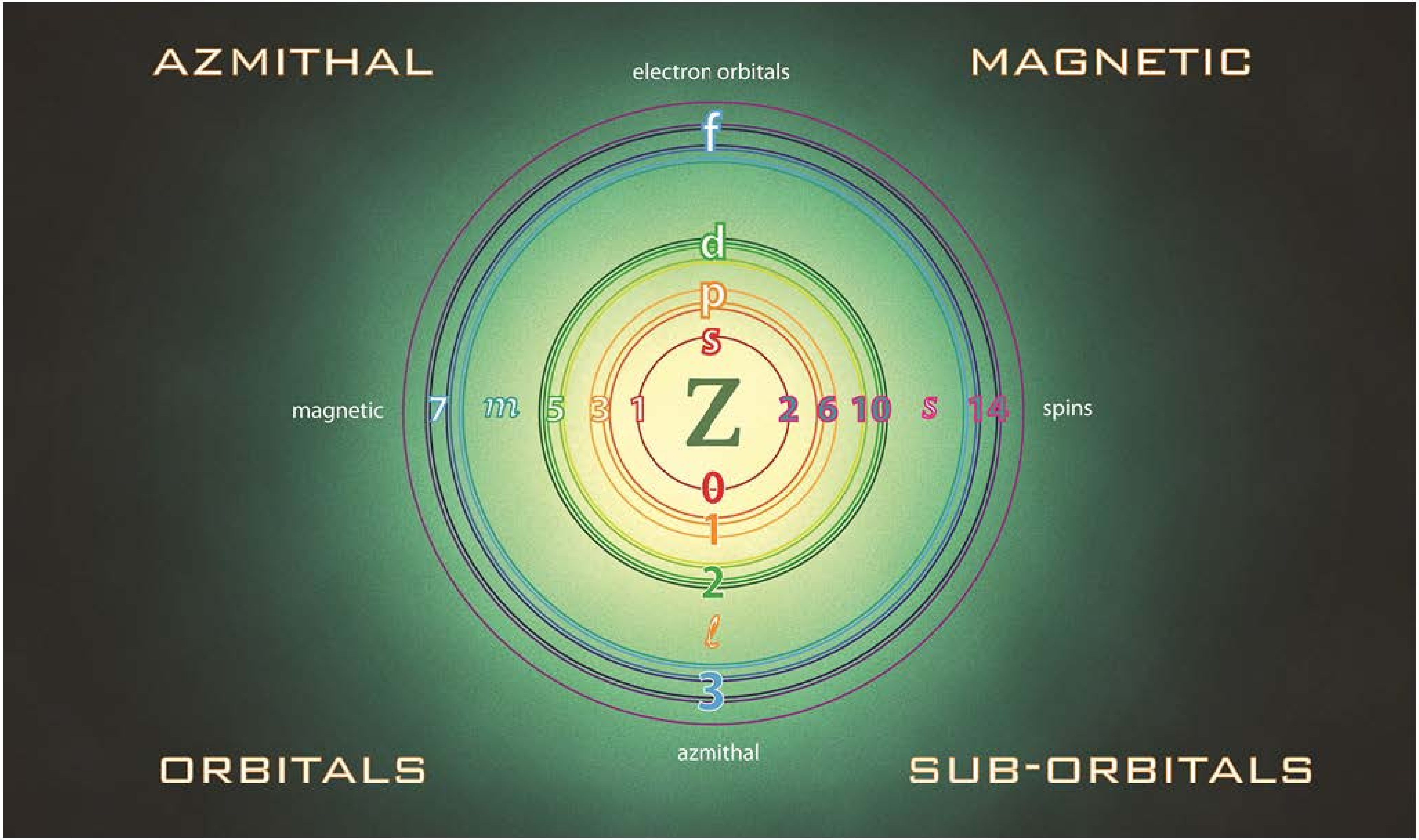
Occasionally, however, they may also be pushed up to some higher energy ("become excited") e.g. by a collision with a fast atom or electron, one which got extra speed from an electric voltage or from some source of heat.

An atom/electron elevated to one of its higher "excited levels" soon falls back to a lower level ("undergoes a quantum jump"), emitting a photon whose energy corresponds to the difference between the levels.

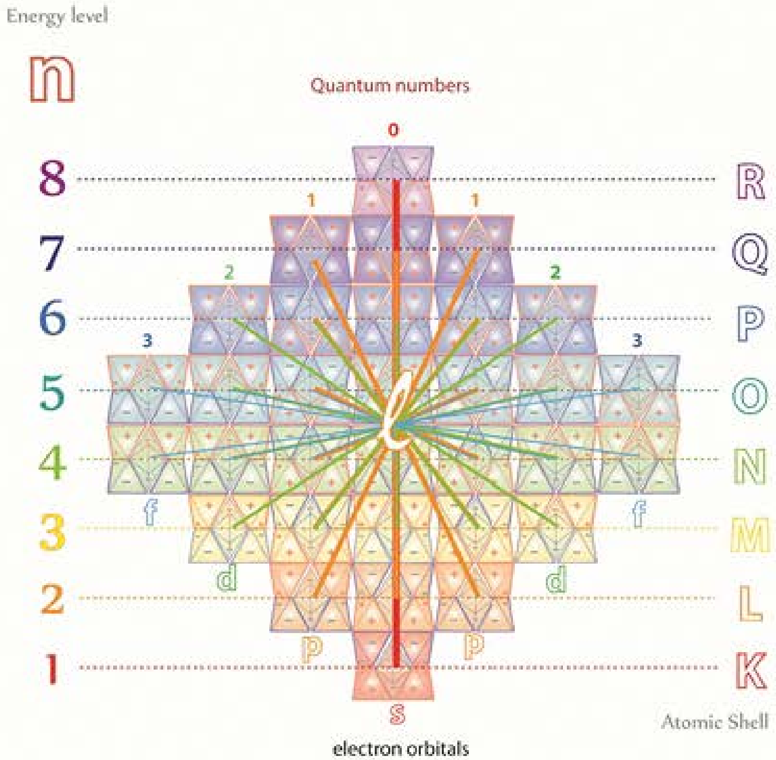
That need not be the ground state: the atom/electron might descend to that state in several steps, emitting a photon at each step on the way.

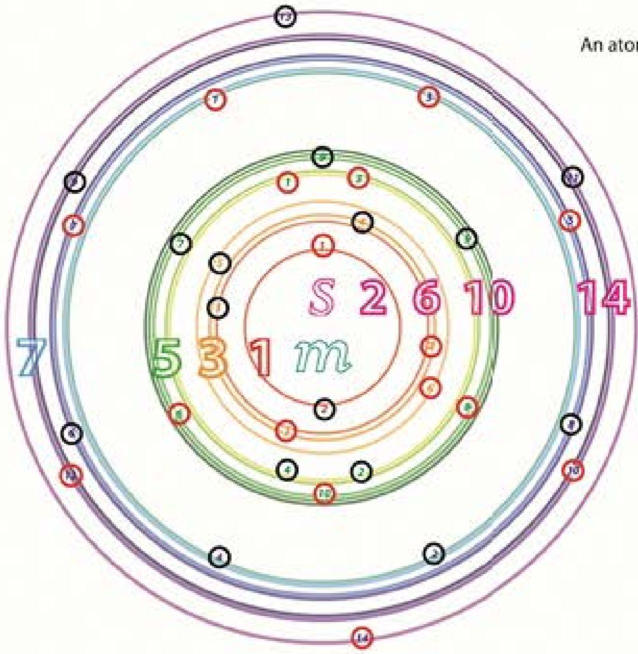



Quantum transitions
(Orbital Shells - Bound energy states)
Energy levels
Quantum levels 1-8 are also referred to as Atomic Shells K-R
Atomic Shells
Photo-electrons can only transition in discrete steps [or quantum jumps] within atomic nuclei shells because Baryons determine the KEM energy levels of electrons in nuclei
Any photo-electron bound in a Deuterium nuclei will have specific quantised KEM field energies and angular momenta
Quantum differentials
Lyman
Balmer
Paschen
Brackett
Pfund
Humphries
un-named
KEM energies
hf = ΔMv = Δp
n1
iE= -13.358 eV
n2
iE = -12.679 eV
n3
iE = -11.623 eV
n4
iE = -10.143 eV
n5
iE = -8.2417 eV
n6
iE = -5.917 eV
n7
iE = -3.1699 eV
n8
iE = -any eV
Quantum level
K
L
M
N
O
P
Q
R


AZMITHAL
MAGNETIC
electron orbitals
f
d
p
s
magnetic
7
m
5
3
1
Z
2
6
10
s
14
spins
0
1
2
l
3
azmithal
ORBITALS
SUB-ORBITALS

Atomic Orbitals





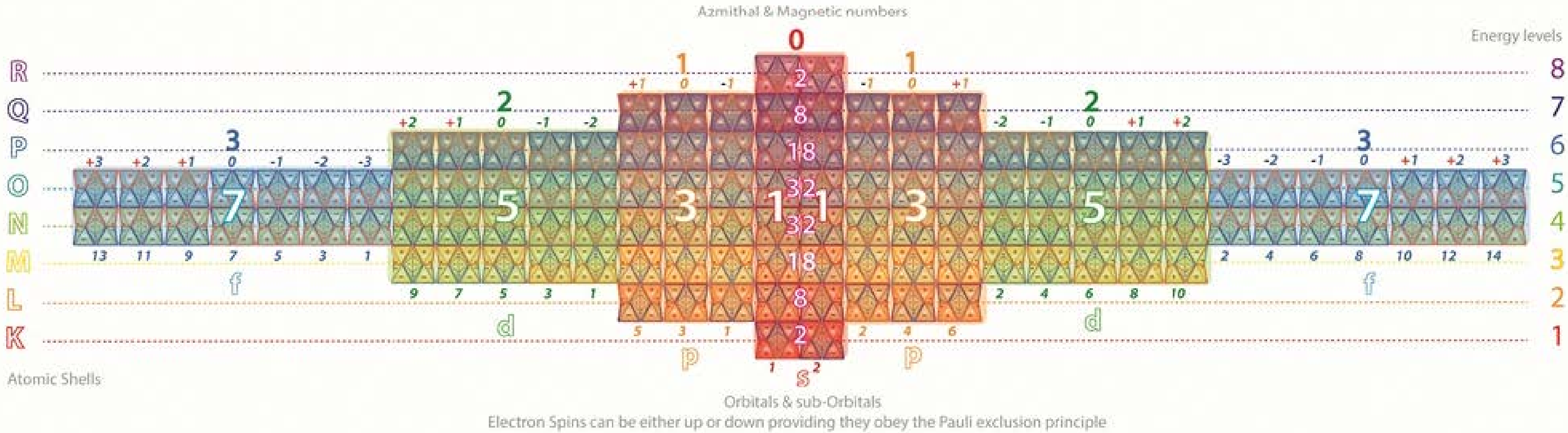
An atomic orbital is a mathematical function that describes the wave-like behavior of either one electron or a pair of electrons in an atom

Atomic orbitals are typically categorized by n, l, and m quantum numbers, which correspond to the electron's energy, angular momentum, and an angular momentum vector component, respectively.

Historically used to define the pedagogical electron cloud model of an atom Tetryonics reveals the true geometry of atomic nuclei

Each orbital is defined by a different set of quantum numbers and contains a maximum of two spin opposed electrons.

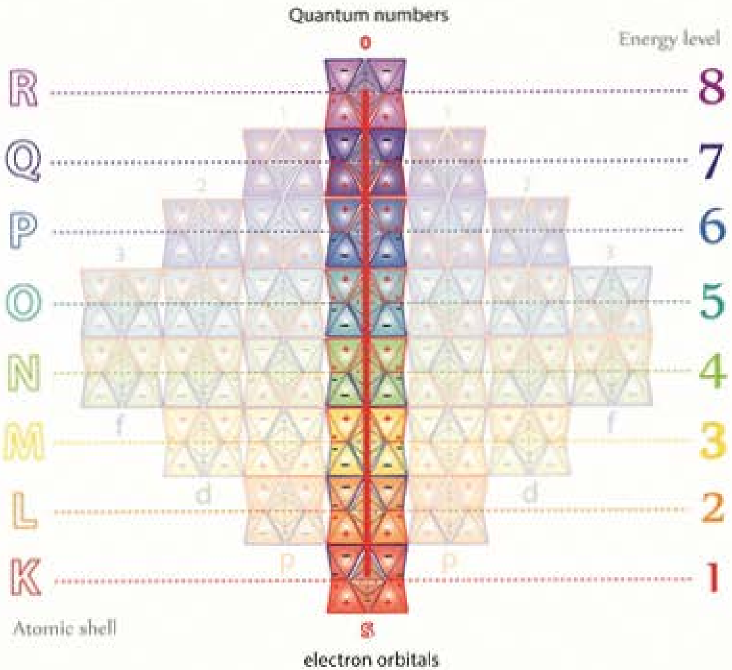
Aufbau

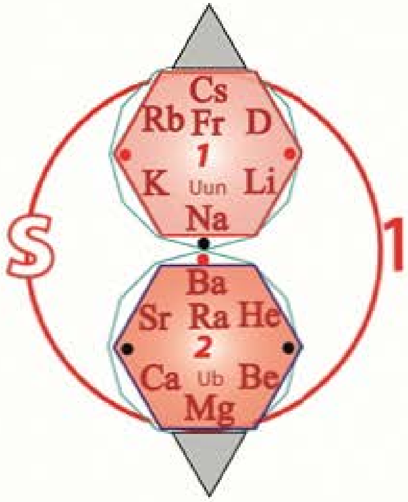


S Orbital

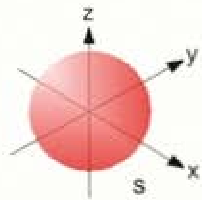
1 Orbit (2 electrons max)

Alkali Metals & Alkali Earths





n



azmithal number — 0 — *l*

magnetic numbers — 0 — m

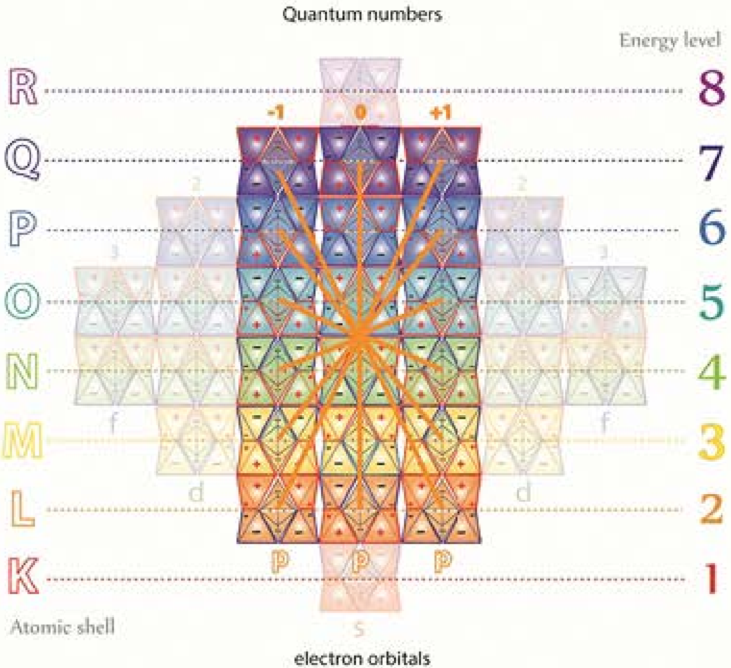
erroneous computer model of 's' electron orbitals

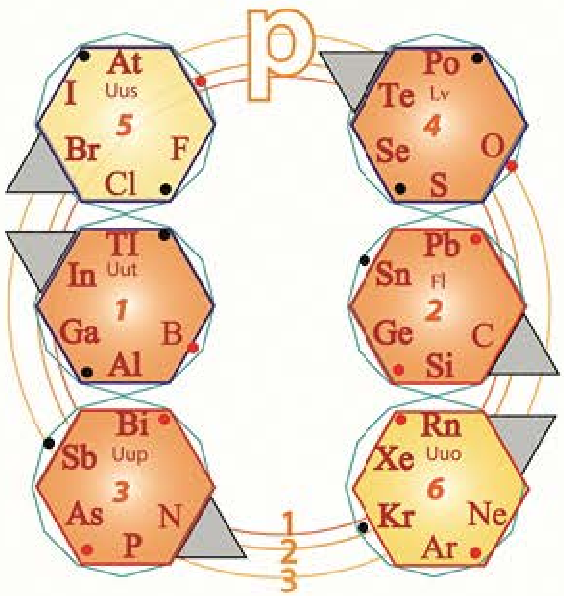
spins — -1/2, +1/2 — S

p Orbital

3 Orbits (6 electrons max)

Non-Metals, Halogens & Nobel gases





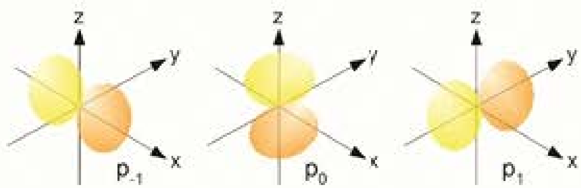
n

ℓ

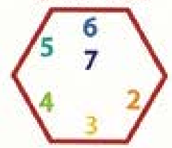
m

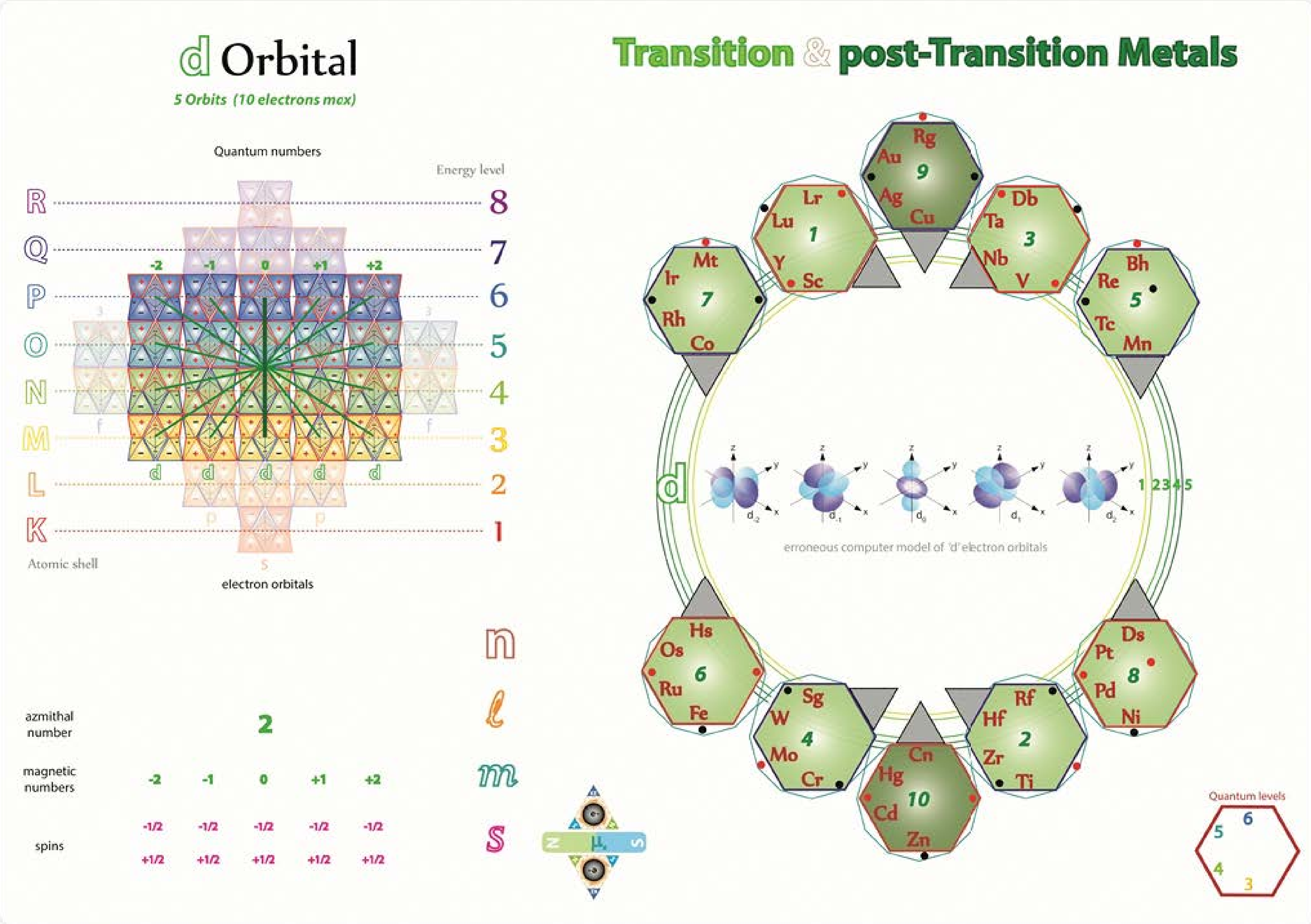
S

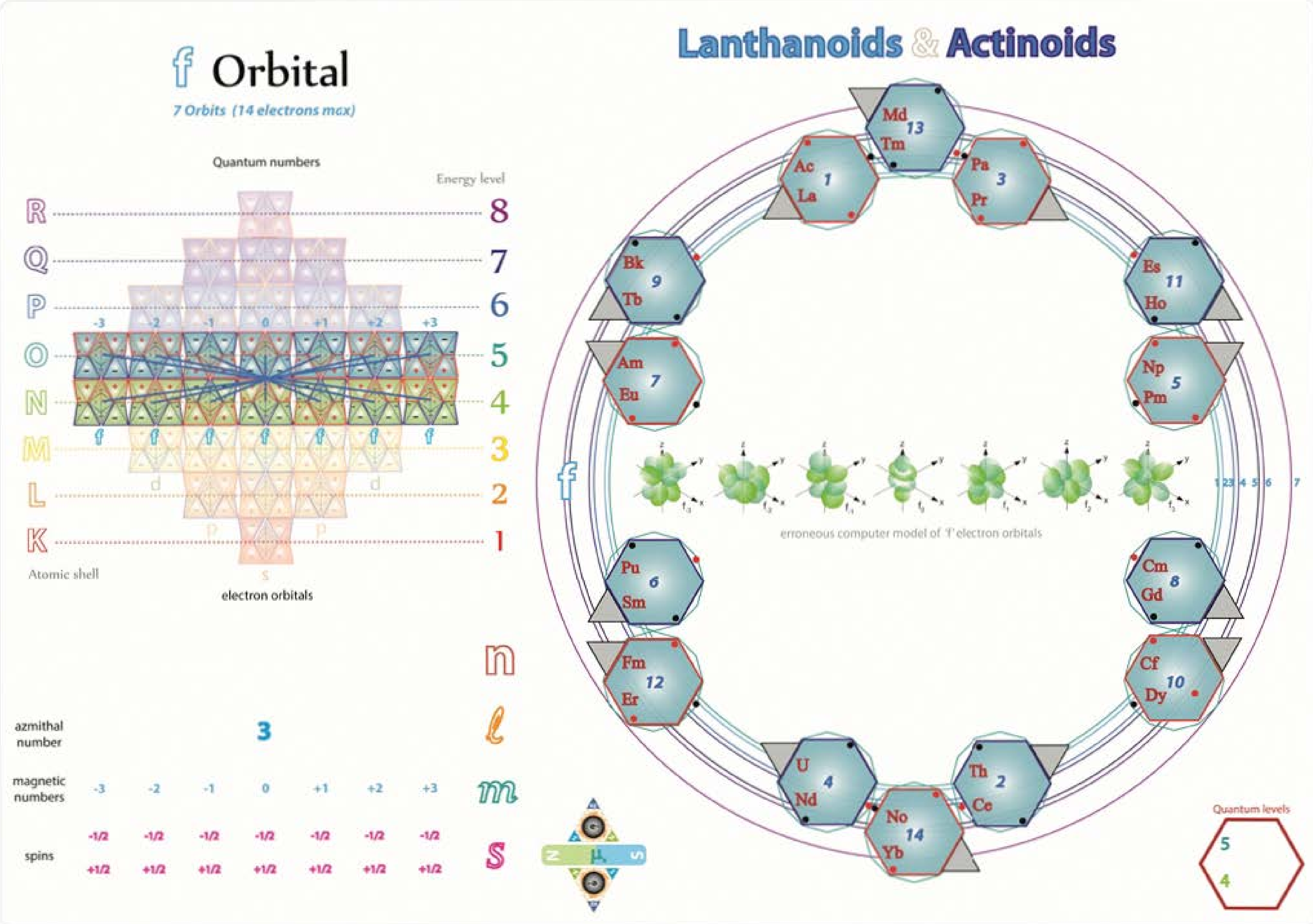
azmithal number		1		ℓ
magnetic numbers	-1	0	+1	m
spins	-1/2 +1/2	-1/2 +1/2	-1/2 +1/2	S



erroneous computer model of 'p' electron orbitals

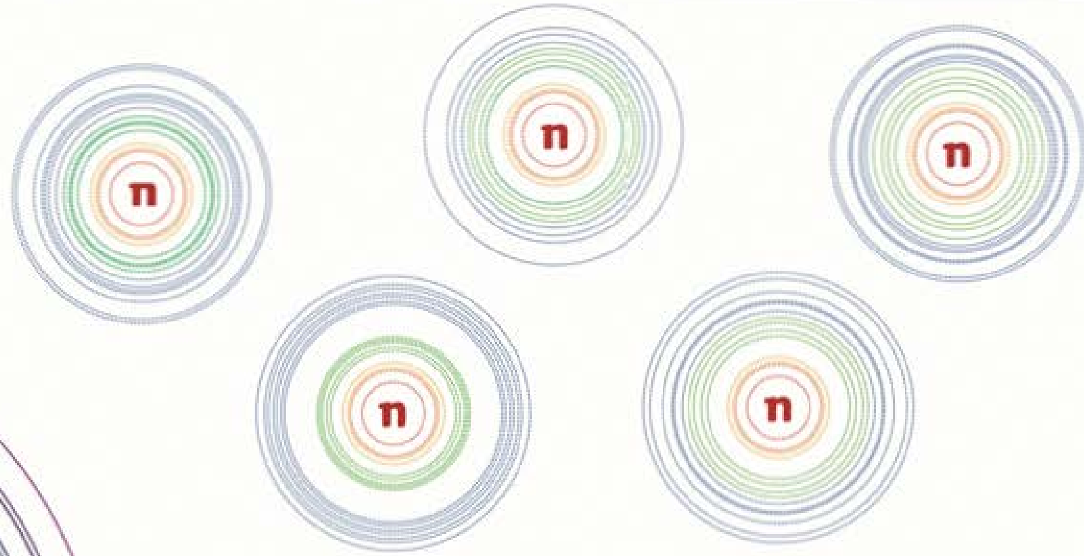


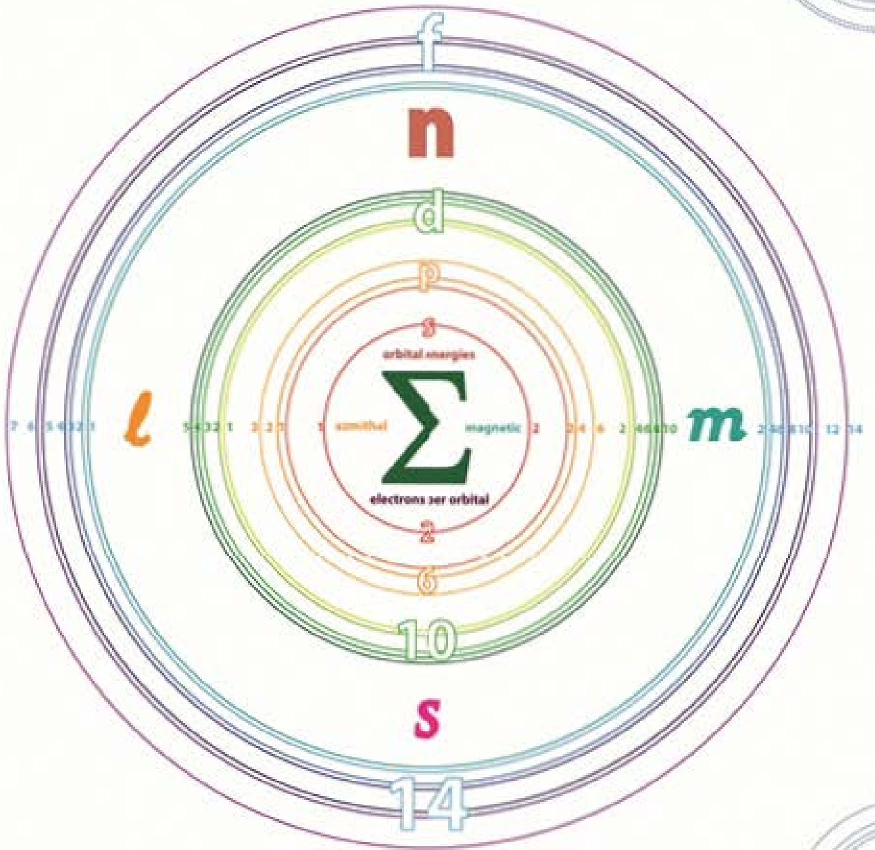

d Orbital
5 Orbits (10 electrons max)
Transition & post-Transition Metals
Quantum numbers
Energy level
R Q P O N M L K
8 7 6 5 4 3 2 1
Atomic shell
electron orbitals
-2 -1 0 +1 +2
d d d d d
azmithal number
2
magnetic numbers
-2 -1 0 +1 +2
spins
-1/2 -1/2 -1/2 -1/2 -1/2
+1/2 +1/2 +1/2 +1/2 +1/2
n
l
m
s
erroneous computer model of 'd' electron orbitals
1 2 3 4 5
Quantum levels
Sc Y Lu Lr 1
Ti Zr Hf Rf 2
V Nb Ta Db 3
Cr Mo W Sg 4
Mn Tc Re Bh 5
Fe Ru Os Hs 6
Co Rh Ir Mt 7
Ni Pd Pt Ds 8
Cu Ag Au Rg 9
Zn Cd Hg Cn 10


f Orbital
7 Orbits (14 electrons max)
Quantum numbers
Energy level
R Q P O N M L K
8 7 6 5 4 3 2 1
-3 -2 -1 0 +1 +2 +3
f f f f f f f
d d
p p
s
Atomic shell
electron orbitals
n
azmithal number
3
ℓ
magnetic numbers
-3 -2 -1 0 +1 +2 +3
m
spins
-1/2 -1/2 -1/2 -1/2 -1/2 -1/2 -1/2
+1/2 +1/2 +1/2 +1/2 +1/2 +1/2 +1/2
s
Lanthanoids & Actinoids
Md 13 Tm
Ac 1 La
Pa 3 Pr
Bk 9 Tb
Es 11 Ho
Am 7 Eu
Np 5 Pm
f
erroneous computer model of 'f' electron orbitals
Pu 6 Sm
Cm 8 Gd
Fm 12 Er
Cf 10 Dy
U 4 Nd
Th 2 Ce
No 14 Yb
Quantum levels
5
4

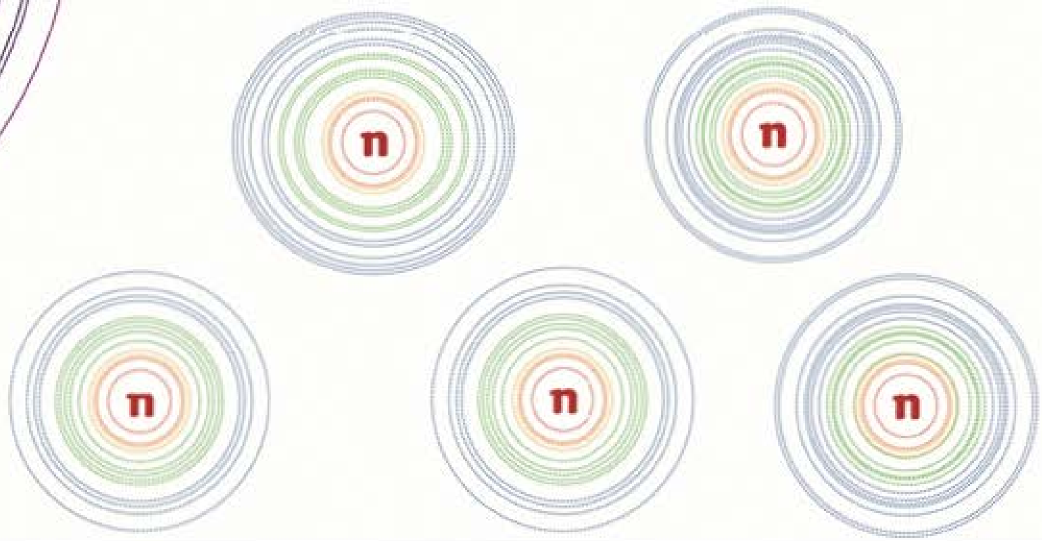
Orbital energy variations

All Elements have stable core electron configurations of s & p orbitals for each energy level as revealed through diffraction studies



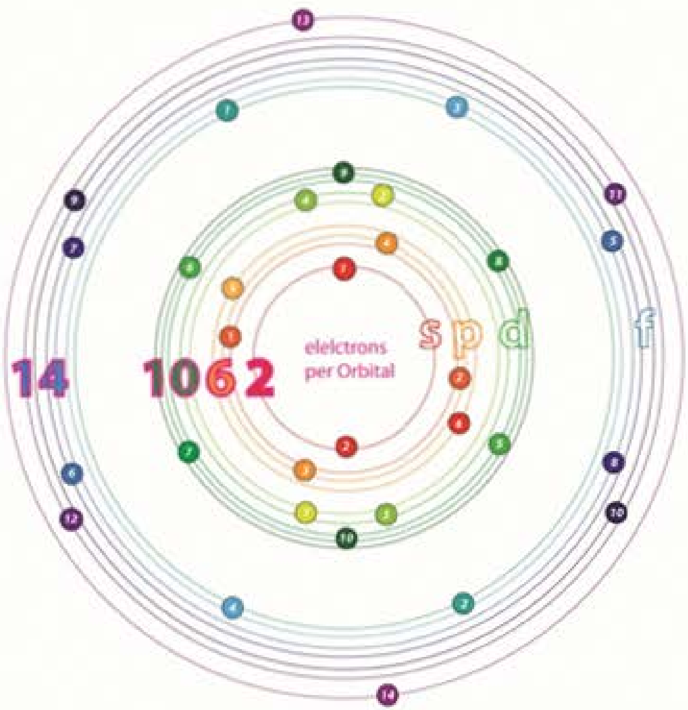


As additional nuclei bind to form d & f orbitals they can do so by bonding in many positions, with each location producing different orbital energies for each electron that binds to nuclei in that position

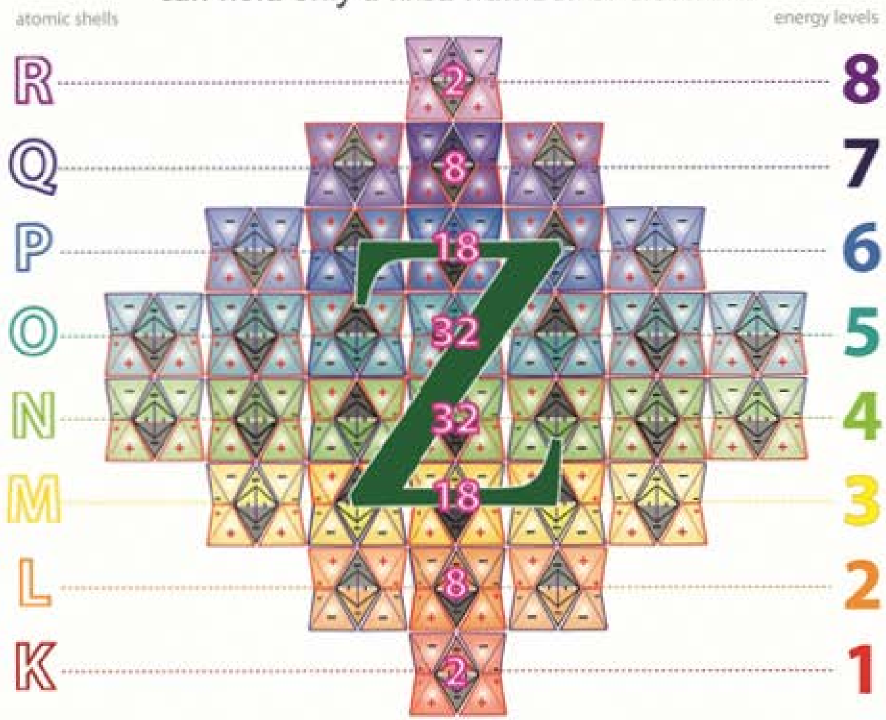


The final energy levels of each orbital is the result of the energy of the Baryons in the nuclei and the spin coupling energies of the photo-electrons bound to them

Electrons per shell



Each energy shell of a periodic element
can hold only a fixed number of electrons



Atomic Orbitals

f	d	p	s	p	d	f
5, 11, 3, 13, 1, 9, 7	8, 2, 10, 4, 6	5, 1, 3	1-2	6, 2, 4	7, 1, 9, 3, 5	6, 12, 4, 14, 2, 10, 8

7 + 5 + 3 + 2 + 3 + 5 + 7

Rules governing the allowed combinations of Quantum Numbers

The three quantum numbers (n, l, and m)
that describe an orbital are integers: 0, 1, 2, 3, and so on

n (1-8) Principal	The principal quantum number (n) cannot be zero.	1, 2, 3, 4, 5, 6, 7, 8
ℓ (0-3) Azimuthal	The angular quantum number (l) can be any integer between 0 and n - 1.	s, p, d, f
mℓ (2ℓ+1) Magnetic	The magnetic quantum number (m) can be any integer between -l and +l.	1 / 1, 3, 5 / 1, 3, 5, 7, 9 / 1, 3, 5, 7, 9, 11, 13 — 2 / 2, 4, 6 / 2, 4, 6, 8, 10 / 2, 4, 6, 8, 10, 12, 14
m_s : $^1/_2$ Spin Projection	The Spin of electrons in any nuclear sub-orbital can only be +1/2 (Spin UP) or -1.2 (Spin DOWN).	down up — up down

Z

Quantum Numbers

n	4-5	3-6	2-7	1-8	2-7	3-6	4-5
ℓ	3	2	1	0	1	2	3
m	-3	-2	-1	1	+1	+2	+3
s	+1/2 -1/2	+1/2 -1/2	+1/2 -1/2	+1/2 -1/2	+1/2 -1/2	+1/2 -1/2	+1/2 -1/2

Erwin Schrödinger

(12 August 1887 – 4 January 1961)

Using Tetryonic charged geometries for mass-ENERGY-Matter,
an electron's position and velocity CAN be modelled simultaneously
(but any attempt to measure or interact with it, will affect its component energy-momenta)

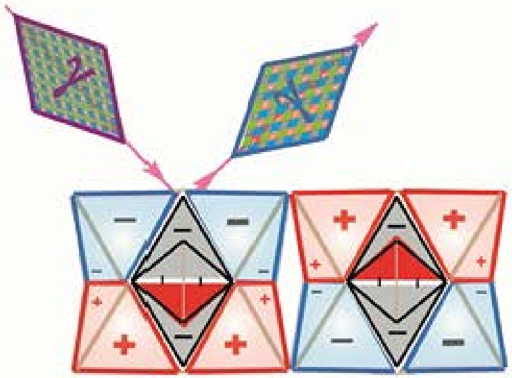
Electron Position Uncertainty

Atomic orbitals are typically described as "hydrogen-like" (meaning one-electron) wave functions over any spatial region of measurement, categorized by n, l, and m quantum numbers, which correspond to the electron's energy, angular momentum, and a vector momentum component, respectively

Werner Heisenberg

(5 December 1901 – 1 February 1976)

Lepton's are physically Spin 1 fermion particles that can easily be misconstrued as having entirely different spin numbers without the correct physical topologies to base the observed measurements on

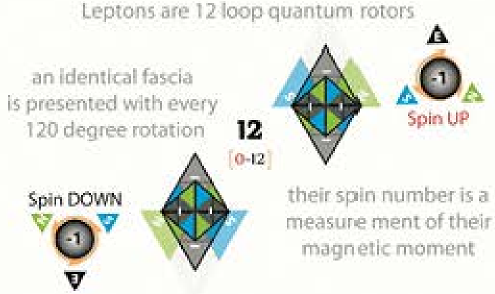


The energies of photo-electrons are determined by the Baryons they bind to & incident photons

Quantum Mechanics is a mathematical representation of equilateral energy momenta interactions and the charged geometries of mass-ENERGY-Matter

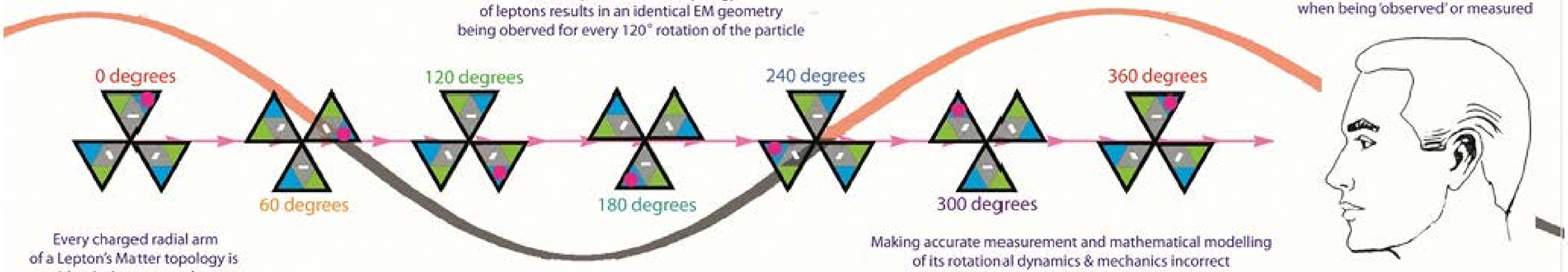
Determining the motion of electrons bound to atomic nuclei is akin to measuring the motion of variable speed electric fan blades mounted at various heights within a rotating carousel

Leptons are 12 loop quantum rotors



The unique 12 faceted topology of leptons results in an identical EM geometry being oberved for every 120° rotation of the particle

Leading to the interpretation that the Lepton disappears and re-appears when being 'observed' or measured

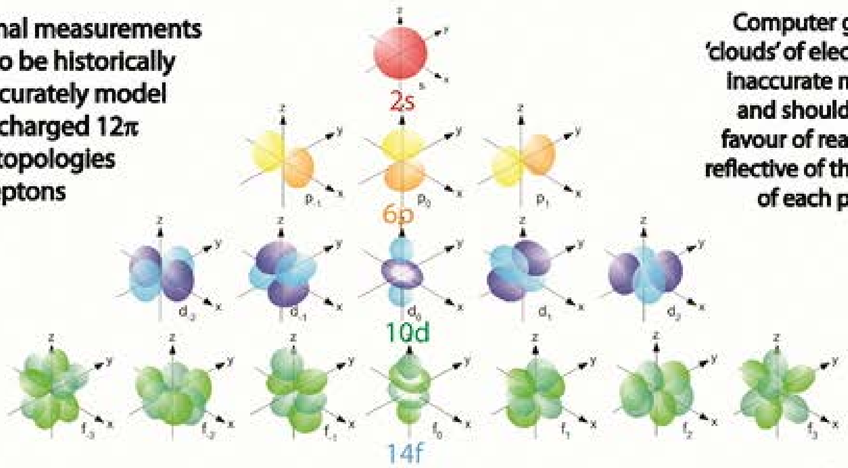


Every charged radial arm of a Lepton's Matter topology is identical to every other

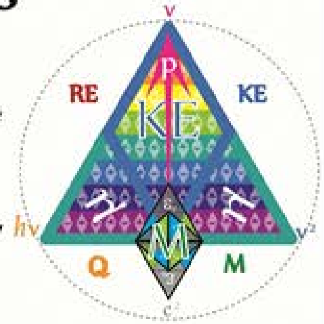
Making accurate measurement and mathematical modelling of its rotational dynamics & mechanics incorrect without the correct physical topologies

Electron modelling & probability calculations

Electron positional measurements have proven to be historically difficult to accurately model due to the charged 12π rotating topologies of leptons



Computer generated plots of 'clouds' of electron probabilites are inaccurate mis-representations and should be abandoned in favour of realistic atomic models reflective of the charged geometry of each periodic element

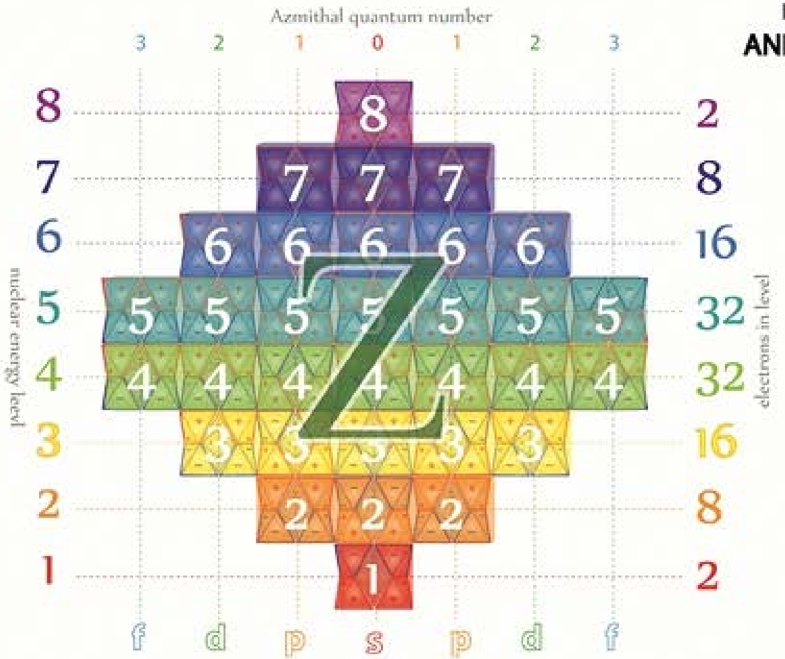


Every elemental atom can be viewed as a quantum carousel with a unique number of oscillating fans positioned around it.

Each fan has 3 blades and a fixed speed n[1-8] related to its height above ground level, AND the carousel is turning around on its axis

All periodic elements are made form Deuterium nuclei

The baryonic energies of nuclei determines the energies of bound photo-electrons

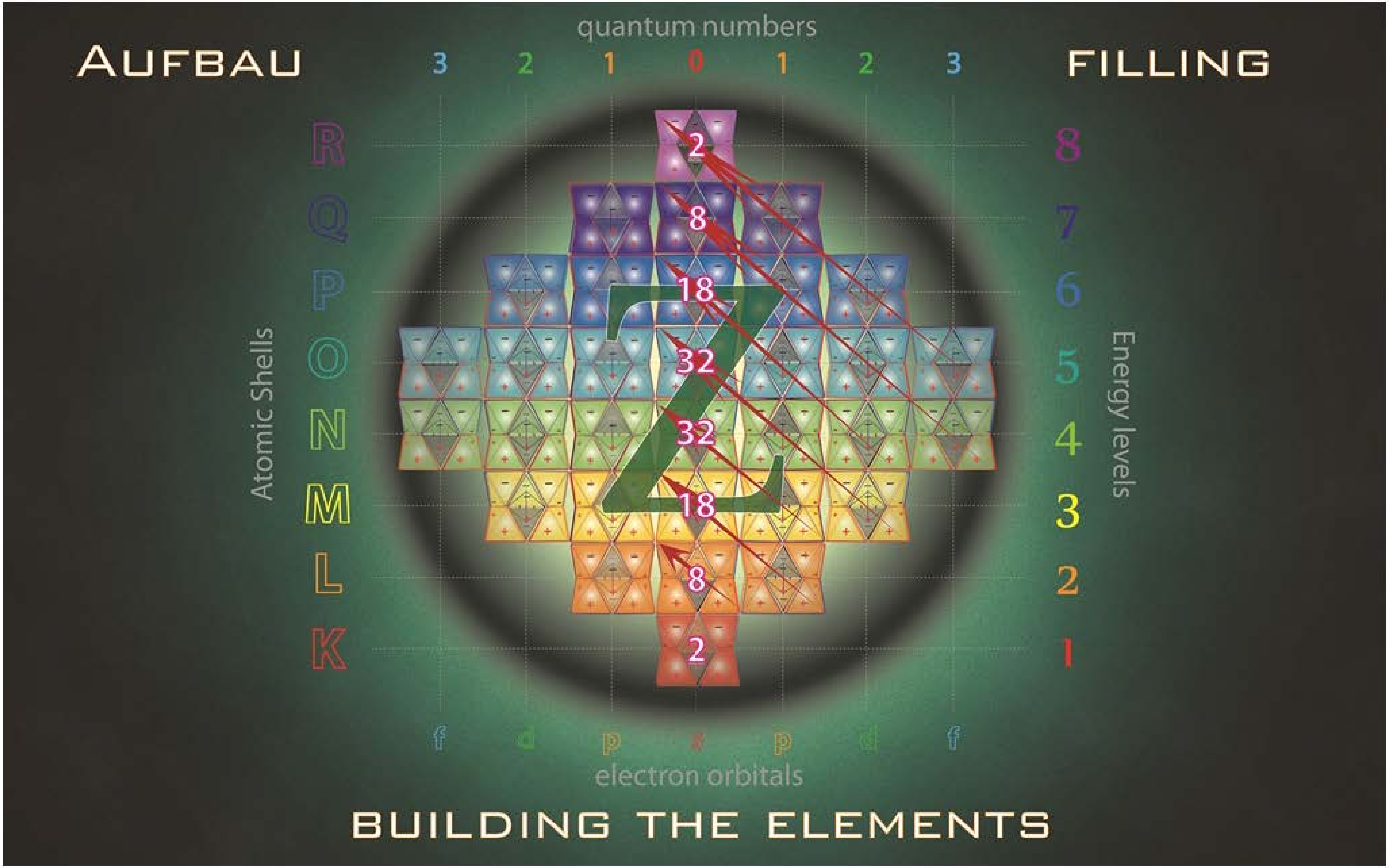


The current computer generated electron probability diagrams in popular use at present can now be show to be a misrepresentative model of mathematical modelling of electron sub-orbital energies

The nuclear quantum levels [n], intrinsic quantised angular momentum [ħ] and orbital angular momentum [l] of each electron bound within atomic nuclei are all the direct result of the Baryonic energies of the nuclei they are bound to

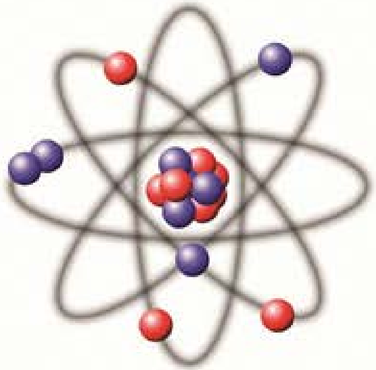
Each level of the quantum carousel can contain only a limited number of fans each running at a specific speed

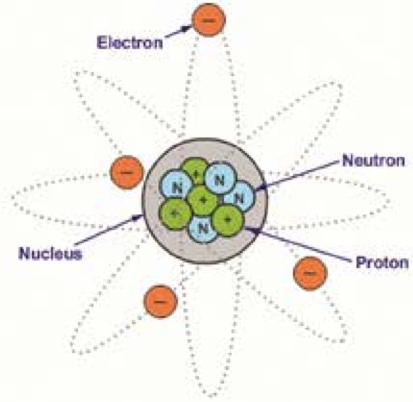
Imagine trying to measure (or model) the motion of any 1 quantum scale blade while the carousel rotates

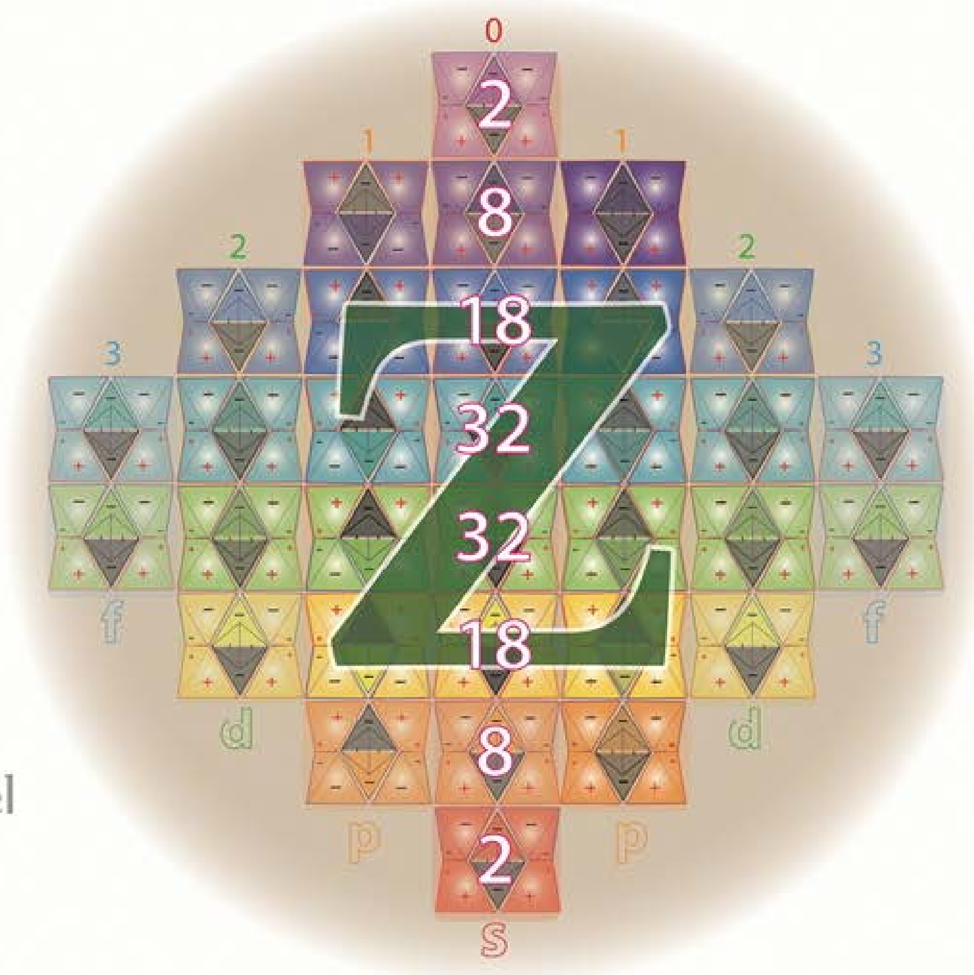


Tetryonics 48.01 - aufbau geometry

Quantum Topologies





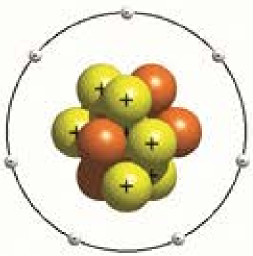


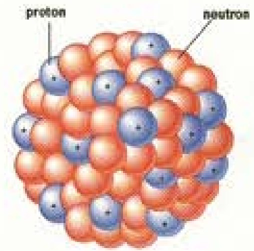
Dalton Model

Quantum Model

Thomson Model

Rutherford Model





Historically viewed as a spherical object
Tetryonic charge geometry has finally revealed the true quantum topology of all atoms

Element numbers

The rule dictating how many nuclei form each Atomic shell is known as the Aufbau principle.

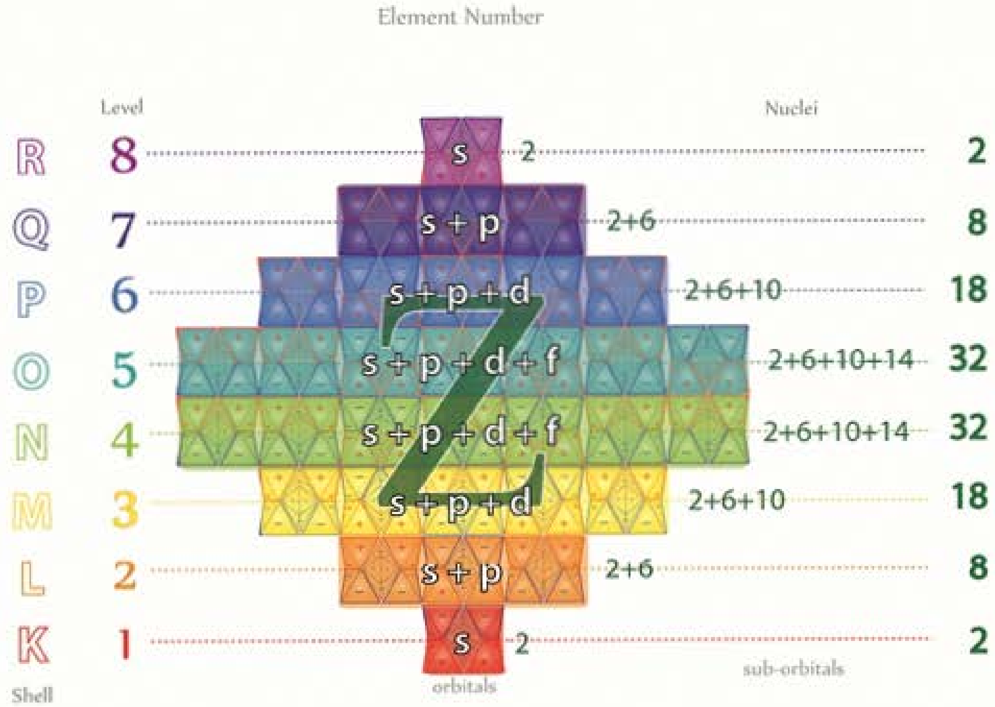
The physical and chemical properties of elements is determined by the atomic structure. The atomic structure is, in turn, determined by the electrons and which shells, subshells and orbitals they reside in.

The number of possible nuclei in each Quantum level follows aufbau principle 'numbers' which can be determined using the following summation formula

The maximum periodic elemental number is 120

$$Z = \sum_{1,2,3,4,4,3,2,1} 2(n^2) = 2 + 8 + 18 + 32 + 32 + 18 + 8 + 2$$

Number of nuclei per level	Element #
2	120, 119
8	118, 111
18	110, 93
32	92, 61
32	60, 29
18	28, 11
8	10, 3
2	2, 1



Deuterium is the building block of all elements

The number of nuclei per quantum level is reflective of photonic energy levels and provides the foundational geometry for all of the periodic elements

Each element has equal numbers of Protons, electron & Neutrons with their stored mass-energies making up the molar masses of elements not excess neutron as currently modelled

Aufbau Principle

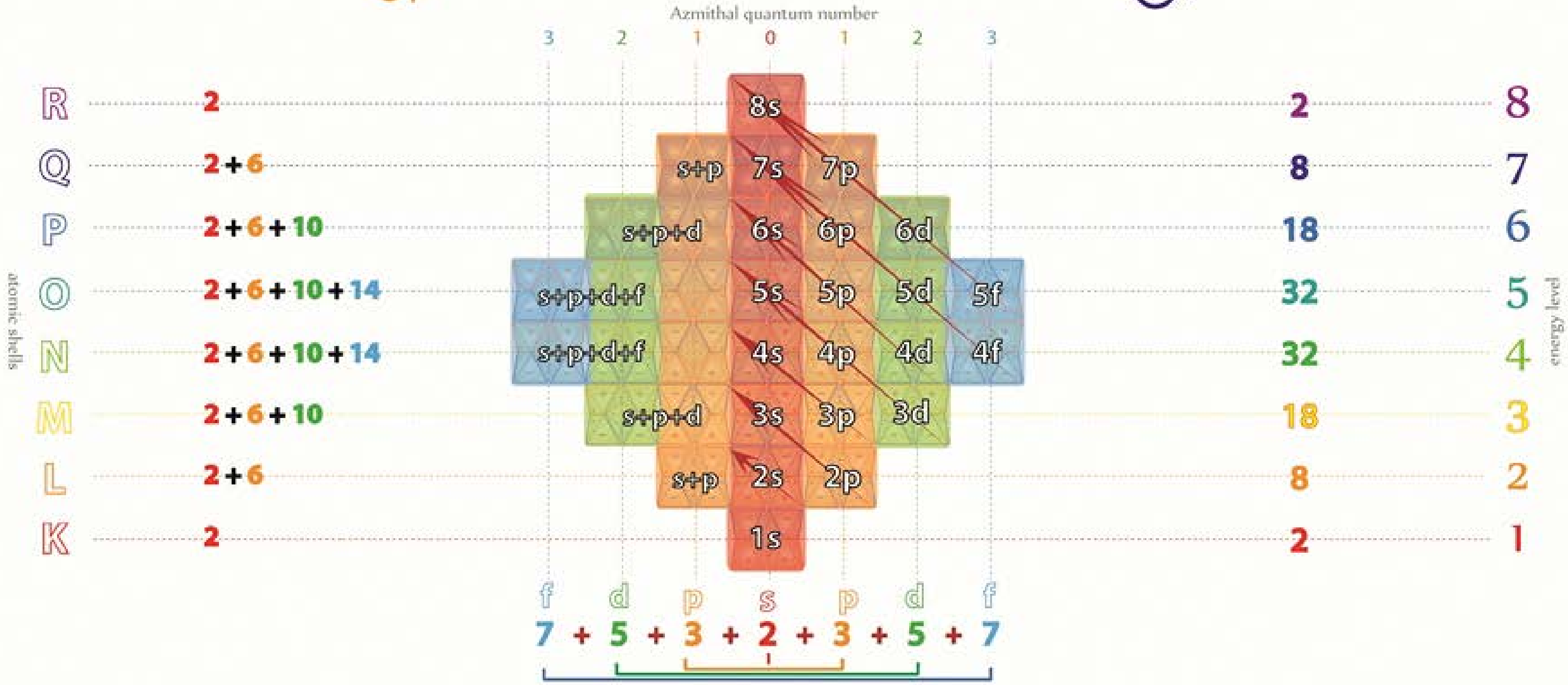
(Nuclei number and position)

1 Sub-Orbit (2 electrons max) — s

3 Sub-Orbits (6 electrons max) — p

5 Sub-Orbits (10 electrons max) — d

7 Sub-Orbits (14 electrons max) — f



2 6 10 14

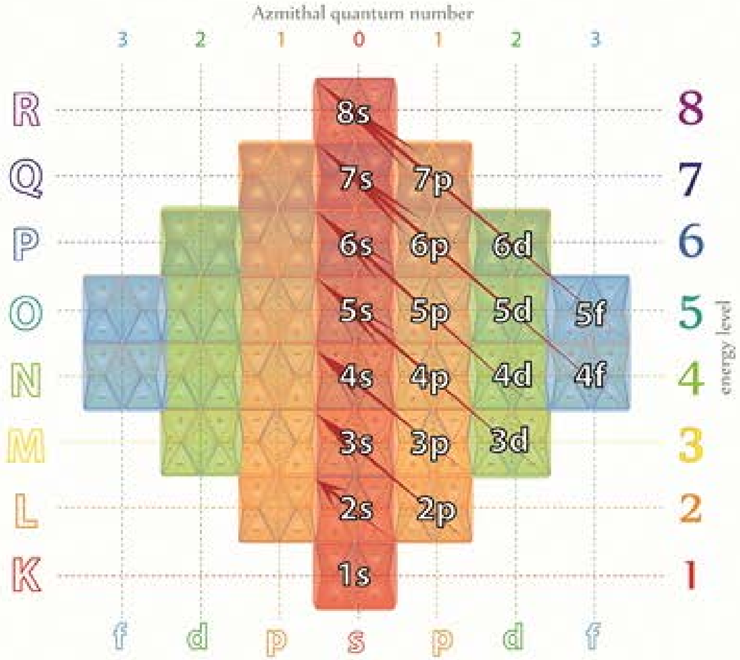
Nuclei	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	per level	Quantum number
R	119	120																															2	8
Q	87	88	113	114	115	116	117	118																									8	7
P	55	56	81	82	83	84	85	86	103	104	105	106	107	108	109	110	111	112															18	6
O	37	38	49	50	51	52	53	54	71	72	73	74	75	76	77	78	79	80	89	90	91	92	93	94	95	96	97	98	99	100	101	102	32	5
N	19	20	31	32	33	34	35	36	39	40	41	42	43	44	45	46	47	48	57	58	59	60	61	62	63	64	65	66	67	68	69	70	32	4
M	11	12	13	14	15	16	17	18	21	22	23	24	25	26	27	28	29	30															18	3
L	3	4	5	6	7	8	9	10																									8	2
K	1	2																															2	1
Shells / sub-orbitals	s1	s2	p1	p2	p3	p4	p5	p6	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	f1	f2	f3	f4	f5	f6	f7	f8	f9	f10	f11	f12	f13	f14		

A specific nuclear energy is associated with each electron configuration and, upon certain conditions, bound electrons are able to move from one orbital to another by emission or absorption of a quantum of energy, in the form of a photon.

The Aufbau principle can also be used to model the binding configuration of Protons and Neutrons in an atomic nucleus, according to their specific Baryonic Energy levels, in turn revealing the quantum geometry of all periodic Elements

Wolfgang Pauli

(25 April 1900 – 15 December 1958)



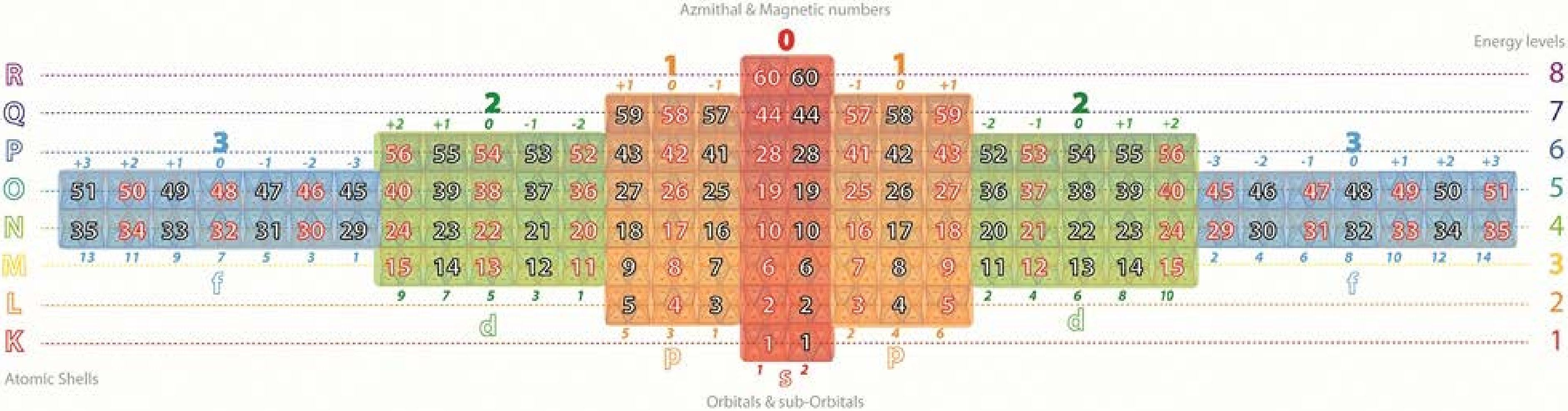
Friedrich Hermann Hund

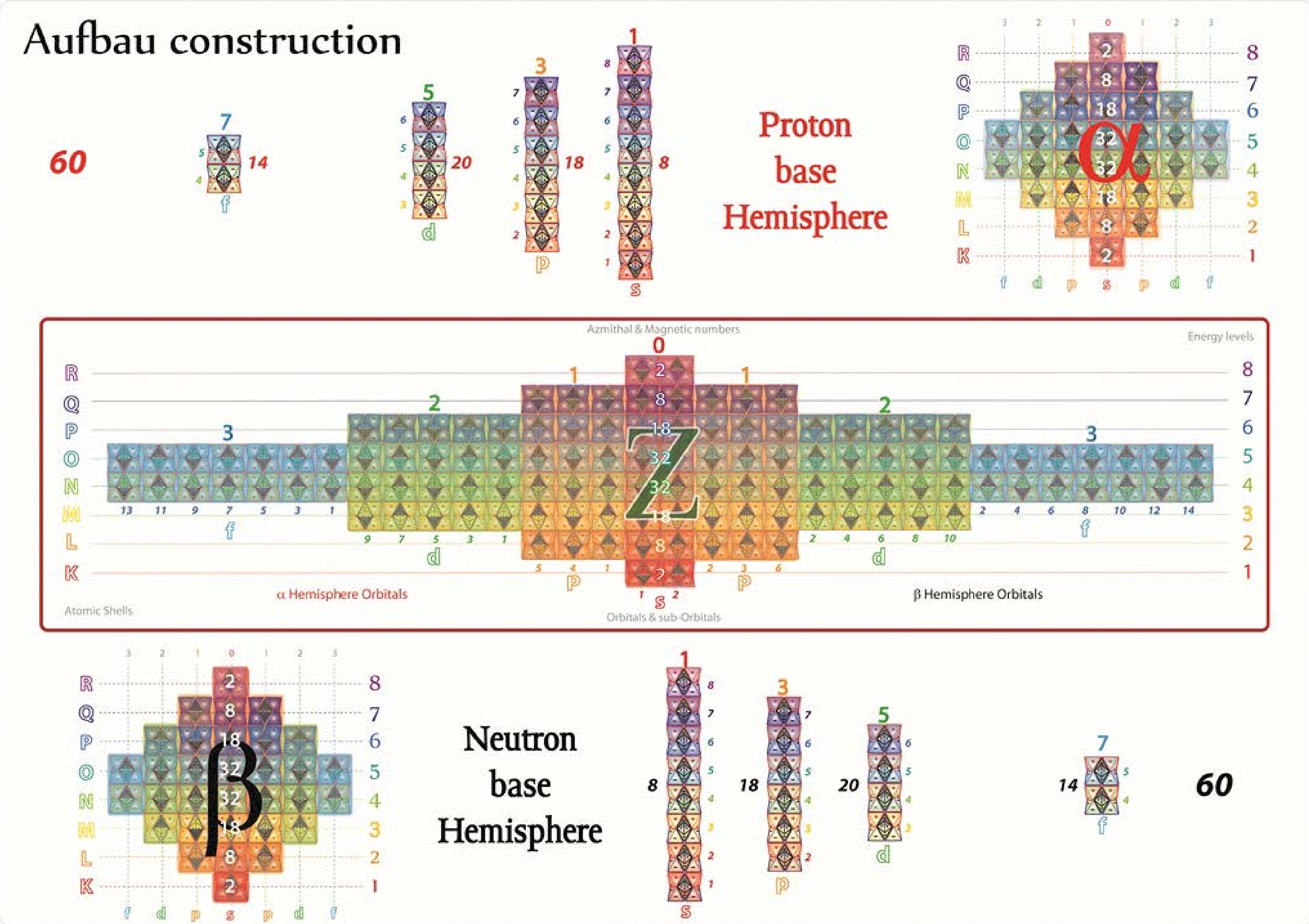
(4 February 1896 - 31 March 1997)

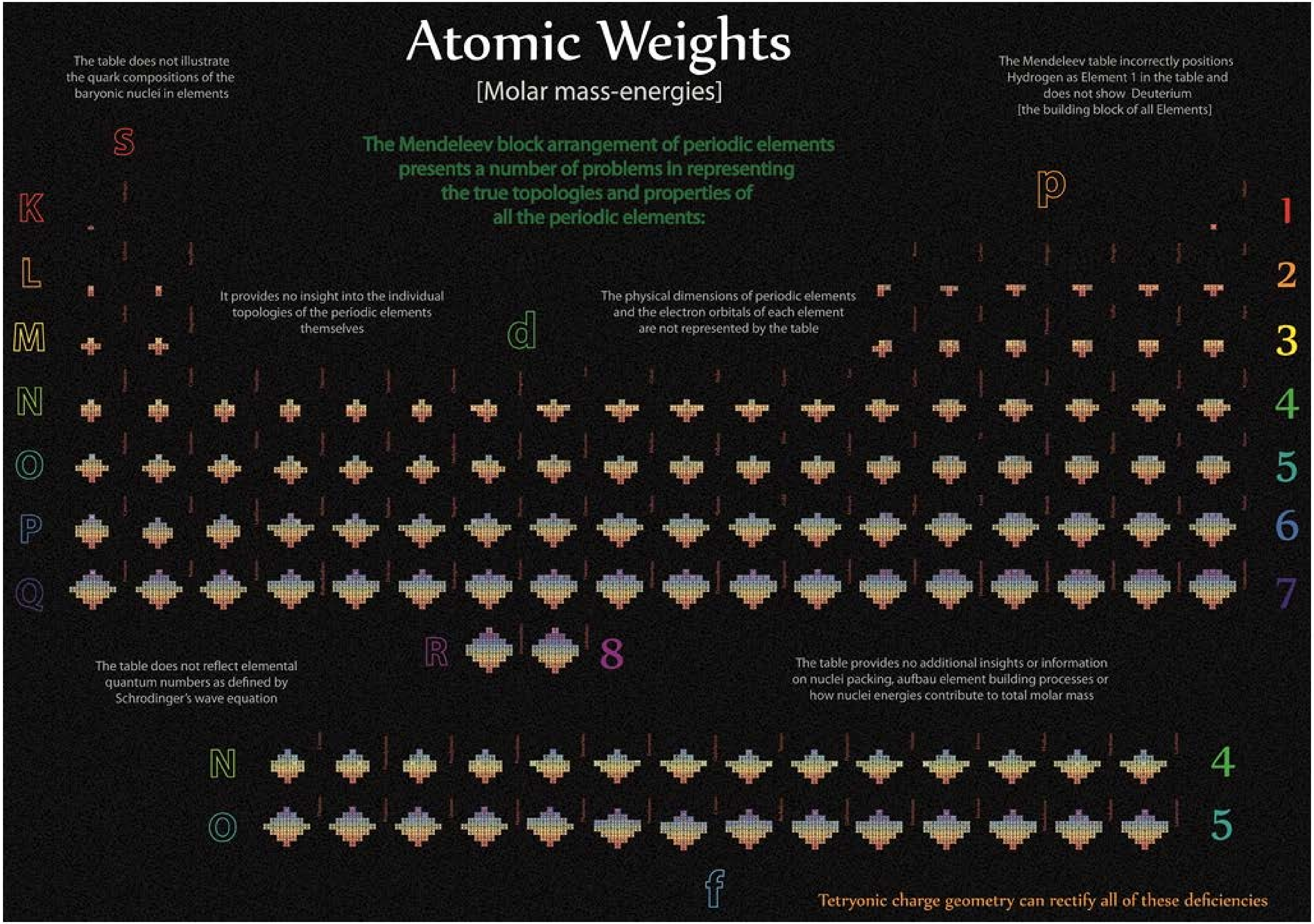
The orbitals of lower energy are filled in first with the electrons and only then are the higher energy orbitals filled.

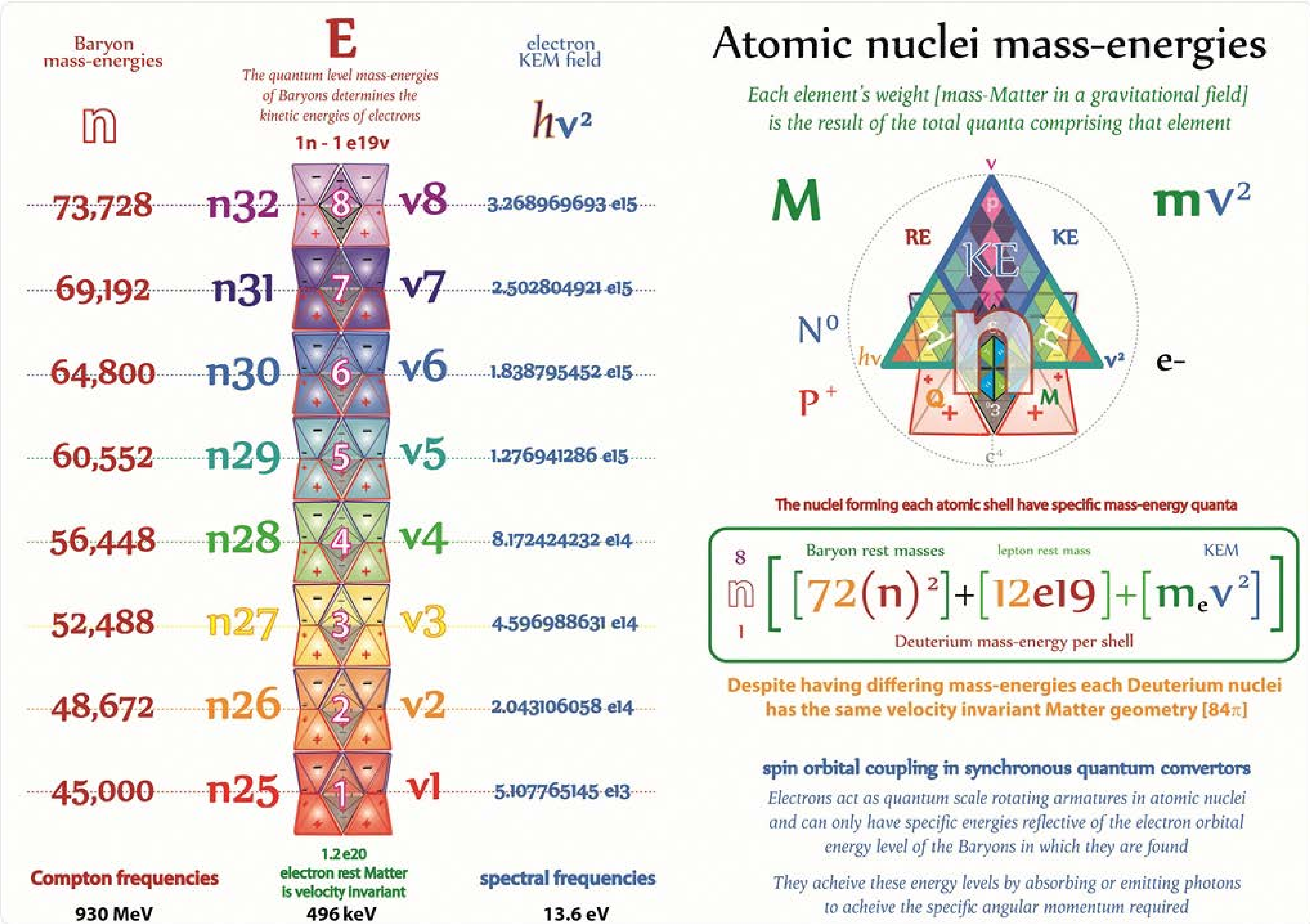
aufbau electron orbital filling

Orbitals of equal energy are each occupied by one electron before any orbital is occupied by a second electron, and all electrons in singly occupied orbitals must have the same spin state

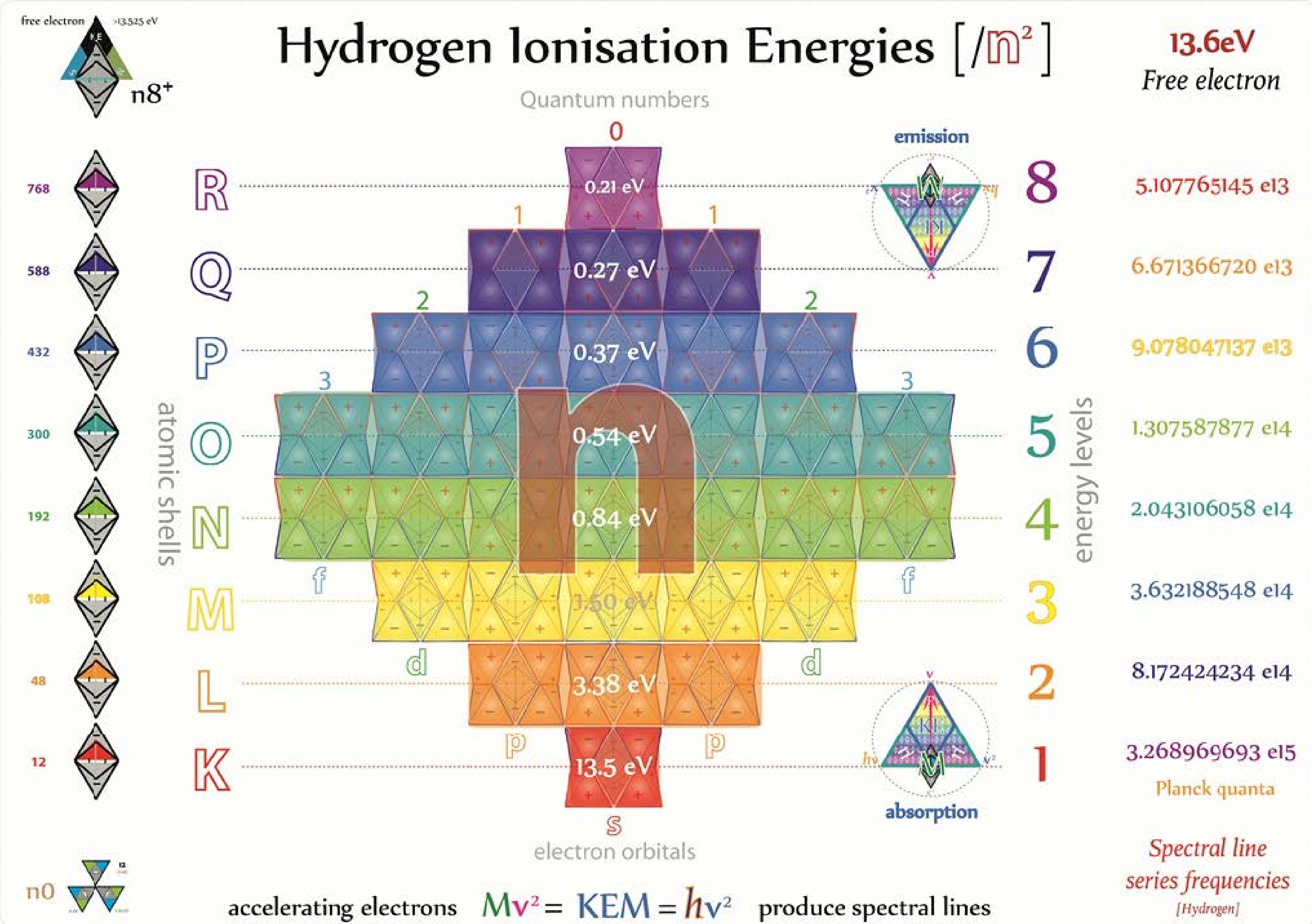



Aufbau construction
60
Proton
base
Hemisphere
Azmithal & Magnetic numbers
Energy levels
α Hemisphere Orbitals
β Hemisphere Orbitals
Atomic Shells
Orbitals & sub-Orbitals
Neutron
base
Hemisphere
60


Atomic Weights
[Molar mass-energies]
The table does not illustrate the quark compositions of the baryonic nuclei in elements
The Mendeleev table incorrectly positions Hydrogen as Element 1 in the table and does not show Deuterium [the building block of all Elements]
The Mendeleev block arrangement of periodic elements presents a number of problems in representing the true topologies and properties of all the periodic elements:
s
p
d
f
K
L
M
N
O
P
Q
R
1
2
3
4
5
6
7
8
It provides no insight into the individual topologies of the periodic elements themselves
The physical dimensions of periodic elements and the electron orbitals of each element are not represented by the table
The table does not reflect elemental quantum numbers as defined by Schrodinger's wave equation
The table provides no additional insights or information on nuclei packing, aufbau element building processes or how nuclei energies contribute to total molar mass
Tetryonic charge geometry can rectify all of these deficiencies



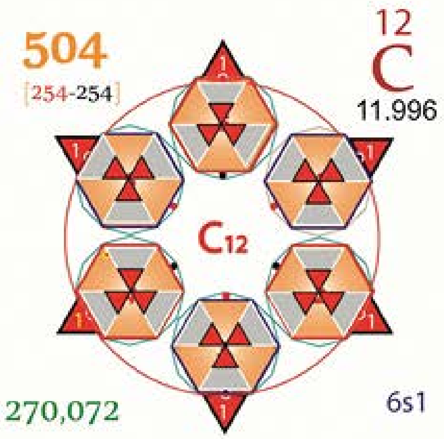
Baryon mass-energies
n
E
The quantum level mass-energies of Baryons determines the kinetic energies of electrons
1n - 1 e19v
electron KEM field
hv²
73,728 n32 8 v8 3.268969693 e15
69,192 n31 7 v7 2.502804921 e15
64,800 n30 6 v6 1.838795452 e15
60,552 n29 5 v5 1.276941286 e15
56,448 n28 4 v4 8.172424232 e14
52,488 n27 3 v3 4.596988631 e14
48,672 n26 2 v2 2.043106058 e14
45,000 n25 1 v1 5.107765145 e13
Compton frequencies
930 MeV
1.2 e20
electron rest Matter is velocity invariant
496 keV
spectral frequencies
13.6 eV
Atomic nuclei mass-energies
Each element's weight [mass-Matter in a gravitational field] is the result of the total quanta comprising that element
M
mv²
RE
KE
KE
N⁰
P⁺
hv
v²
e-
Q
M
c⁴
The nuclei forming each atomic shell have specific mass-energy quanta
Baryon rest masses
lepton rest mass
KEM
8 n 1 [[72(n)²]+[12e19]+[mₑv²]]
Deuterium mass-energy per shell
Despite having differing mass-energies each Deuterium nuclei has the same velocity invariant Matter geometry [84π]
spin orbital coupling in synchronous quantum convertors
Electrons act as quantum scale rotating armatures in atomic nuclei and can only have specific energies reflective of the electron orbital energy level of the Baryons in which they are found
They acheive these energy levels by absorbing or emitting photons to acheive the specific angular momentum required


Hydrogen Ionisation Energies [/n²]
free electron
>13.525 eV
n8+
13.6eV
Free electron
Quantum numbers
0
1
1
2
2
3
3
emission
absorption
R
Q
P
O
N
M
L
K
768
588
432
300
192
108
48
12
atomic shells
0.21 eV
0.27 eV
0.37 eV
0.54 eV
0.84 eV
1.50 eV
3.38 eV
13.5 eV
f
f
d
d
p
p
s
electron orbitals
8
7
6
5
4
3
2
1
energy levels
5.107765145 e13
6.671366720 e13
9.078047137 e13
1.307587877 e14
2.043106058 e14
3.632188548 e14
8.172424234 e14
3.268969693 e15
Planck quanta
Spectral line series frequencies
[Hydrogen]
n0
accelerating electrons Mv² = KEM = hv² produce spectral lines

Redefining Atomic weights

Atomic weight (symbol: Ar) is a dimensionless physical quantity,
the ratio of the average mass of atoms of an element (from a given source) to
1/12 of the mass of an atom of carbon-12 (known as the unified atomic mass unit)

Carbon 12

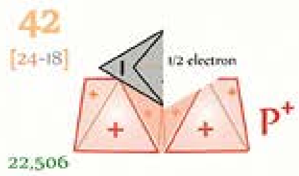


6 Protons [24-12]
6 Neutrons [18-18] n1
6 electrons [0-12]

The 'unified atomic mass unit' currently in use is known to be inaccurate and must be corrected in order to bring clarity & increased accuracy to the atomic weights of all elements

1/12 C12

Ar = 22,506



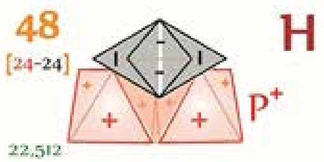
1.660096209e-27 kg

1 Proton [24-12]
.5 electron 0-6 n1

A_r = 22,512
Hydrogen

Defining Hydrogen as having an exact atomic Planck mass of 22512n quanta provides uniformity with Tetryonics

Unified atomic Matter unit



1.660538783e-27 kg

1 Proton [24-12]
1 electron [0-12] n1

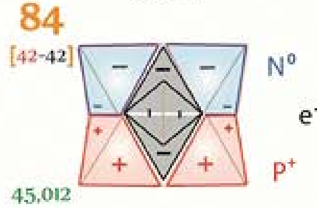
Deuterium is the building block of all elements in the period table

A_r = 45,012
Deuterium

Defining Deuterium as having an exact atomic Planck mass of 45012n quanta reflects the true charged geometries of all Elements & their topologies

D

1/6 C



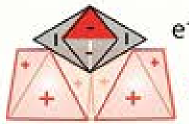
3.320192418e-27 kg

1 Proton [24-12]
1 Neutron [18-18] n1
1 electron [0-12]

Planck mass-energy units

NAu = 0.001 kg

48
[24-24]



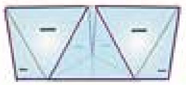
^{1}H

22,512

1.660538841 e-27 kg

One Da is approximately equal to the mass of one proton or one neutron

36
[18-18]

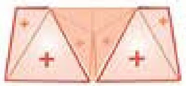


N^{0} 0.499866702 H

22,500

1.659653693 e-27 kg

36
[24-12]

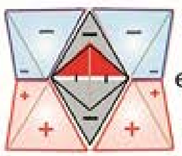


P^{+} 0.499866702 H

22,500

Deuterium is the building block of all elements

84
[42-42]



^{2}H

45,012

3.320192534 e-27 kg

The unified atomic mass unit (symbol: u) or Dalton (symbol: Da) is a unit that is used for indicating mass on an atomic or molecular scale

270,072

1/12 the mass of a C12 graphene atom at rest in its electronic ground state

1.660538782(83)×10−27 kg

22,506

is an inaccurate means of determining the exact rest mass of a Hydrogen atom

22,512

Carbon 12 has 270,072n planck quanta
(270,072 / 12 = 22,506)

Hydrogen has a mass of 22,512n (22,500+12) requiring all mass to be calculated directly using the Planck mass-energy quantum (.001kg / N_A / 22,512) & Tetryonic charge geometries

Using Tetryonic theory to define
n Planck mass = 7.376238634 x 10^{-32} Kg
(see Tetryonics QM 15.04)

exact atomic rest masses for all particles, elements and compounds can be determined directly from atomic theory

N_A = 6.02214179 e23

The mole is the amount of substance of a system which contains as many elementary entities as there are atoms in 0.012 kilogram of carbon 12; its symbol is "mol".

NA(12u) = 0.012 kg

504
[254-254]

^{12}C
11.996

270,072

6 [s1]

6 Protons [24-12]
6 Neutrons [18-18] n1
6 electrons [0-12]

Carbon has a number of differing atomic configurations (allotropes)

6 Protons [24-12]
6 Neutrons [18-18] n1-2
6 electrons [0-12]

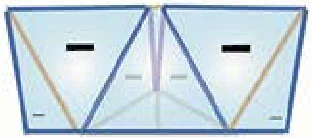
504
[252-252]

^{6}C
12.6493

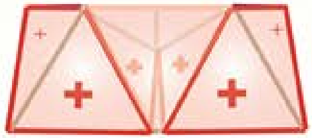
284,760

[He] 2s2 2p2

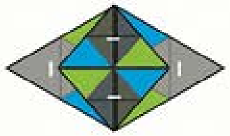
Planck mass-energy contributions to the measured weights of periodic, elementary mass-Matter topologies

36
[18-18]
N^0

45,000n

1.659653693 e-27 kg

36
[24-12]
P^+

45,000n

8.851486361 e-31 kg

12
[0-12]
e-

12n

2.41110961l e-35 kg

n
[v-v]
γ


0
KEM

Baryons have 2,25e23 Planck quanta comprising their rest Matter topologies

[930.974 MeV]

Δ 1875 x

[496.5 keV]

Leptons have 1.2 e20 Planck quanta comprising their rest Matter topologies

[496.5 keV]

Δ 36,711 x

[13.6 eV]

Photons are planar geometries [Matter-less] (purely Kinetic mass-Energy and momenta)

The Lyman alpha spectral line mass-energy contribution to the mass of a Deuterium nucleus is negligible

Electron quantum level energies are determined by the energy of the Nuclei they bind to in elements

D^+

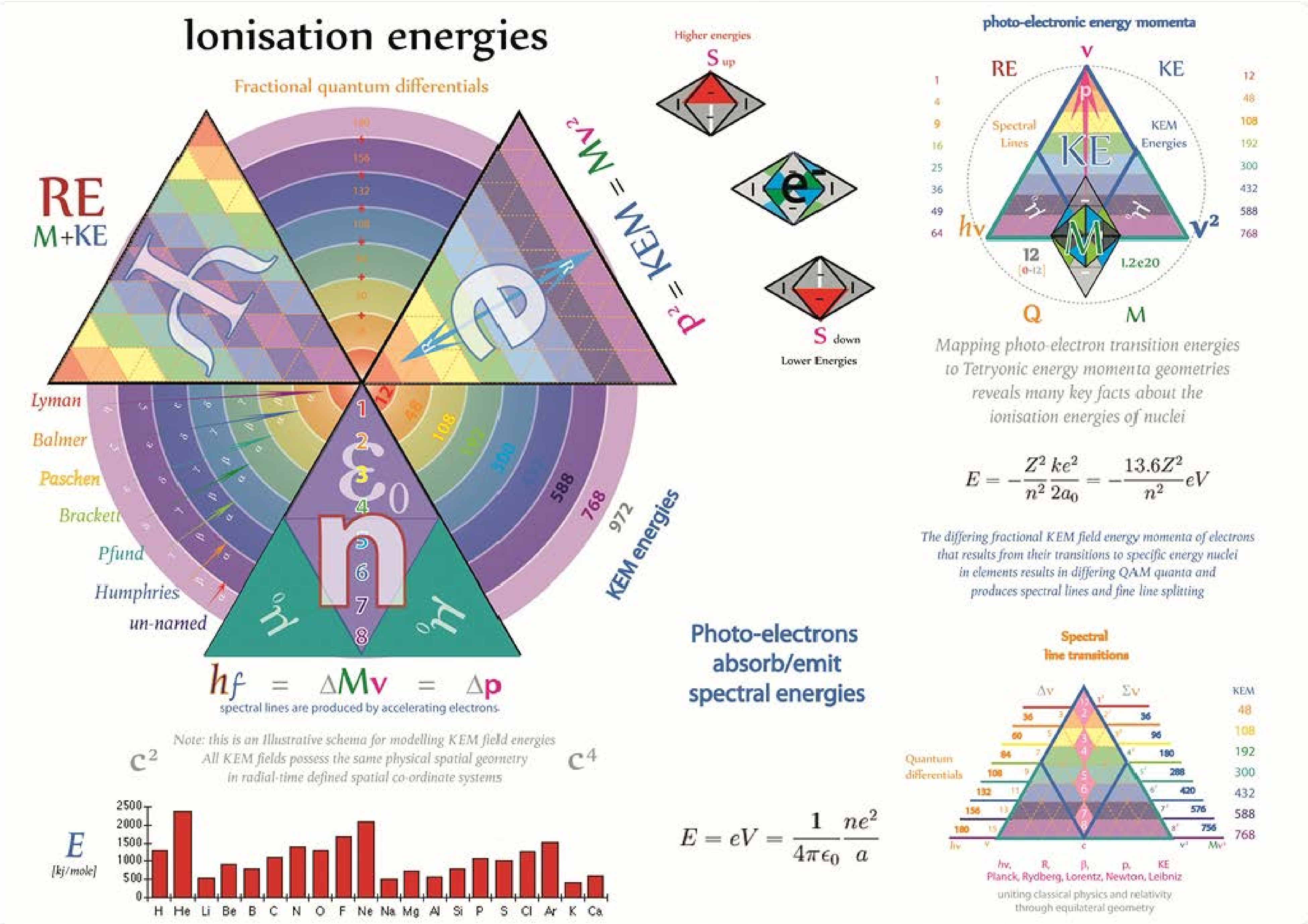
[1.862 GeV]

84
[42-42]

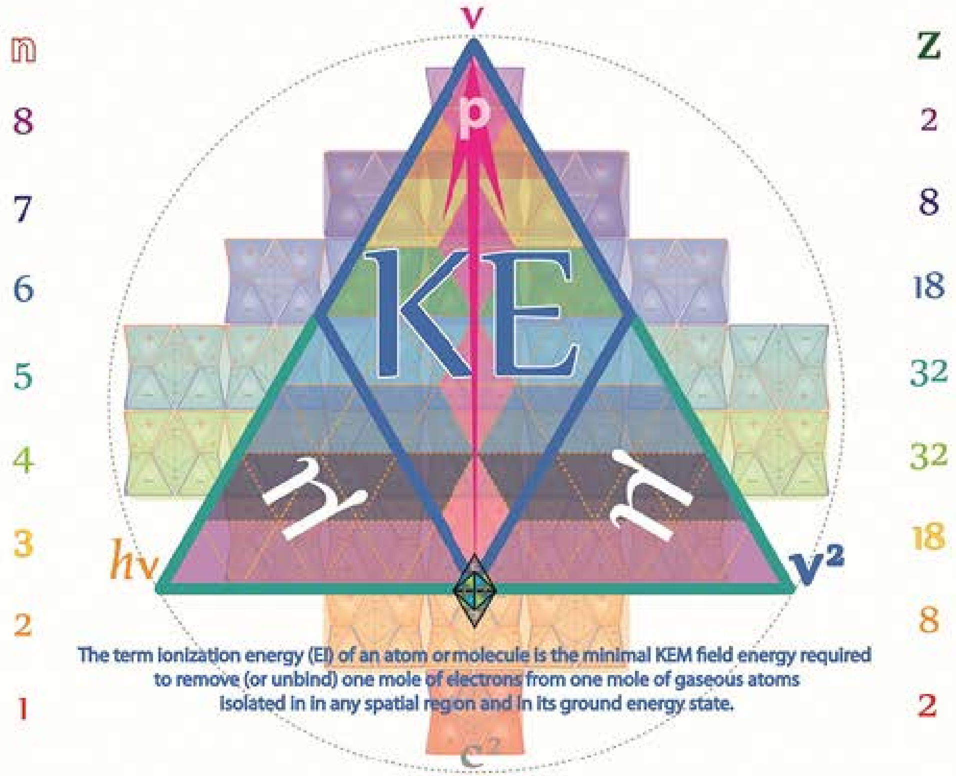

90,012n+

Photons contribute spectral mass-energies to the nuclei mass but are themselves Matterless [2D zero rest mass-energies]

Photons are 2π charge mass-energy geometries


Ionisation energies
Fractional quantum differentials
RE
M+KE
Mv^2 = KEM = p^2
Lyman
Balmer
Paschen
Brackett
Pfund
Humphries
un-named
12
48
108
192
300
432
588
768
972
KEM energies
hf = ΔMv = Δp
spectral lines are produced by accelerating electrons
Note: this is an Illustrative schema for modelling KEM field energies
All KEM fields possess the same physical spatial geometry
in radial-time defined spatial co-ordinate systems
c^2
c^4
E
[kj/mole]
H He Li Be B C N O F Ne Na Mg Al Si P S Cl Ar K Ca
Higher energies
S up
S down
Lower Energies
Photo-electrons
absorb/emit
spectral energies
$E = eV = \frac{1}{4\pi\epsilon_0}\frac{ne^2}{a}$
photo-electronic energy momenta
RE
KE
Spectral Lines
KEM Energies
hv
v^2
Q
M
1.2e20
Mapping photo-electron transition energies
to Tetryonic energy momenta geometries
reveals many key facts about the
ionisation energies of nuclei
$E = -\frac{Z^2}{n^2}\frac{ke^2}{2a_0} = -\frac{13.6Z^2}{n^2}eV$
The differing fractional KEM field energy momenta of electrons
that results from their transitions to specific energy nuclei
in elements results in differing QAM quanta and
produces spectral lines and fine line splitting
Spectral
line transitions
Quantum
differentials
KEM
Planck, Rydberg, Lorentz, Newton, Leibniz
uniting classical physics and relativity
through equilateral geometry

Elementary ionisation energies



The term ionization energy (EI) of an atom or molecule is the minimal KEM field energy required to remove (or unbind) one mole of electrons from one mole of gaseous atoms isolated in in any spatial region and in its ground energy state.

The term "ionization energy" is sometimes used as a name for the work needed to remove (or un-bind) the highest energy photoelectron from an atom or molecule.

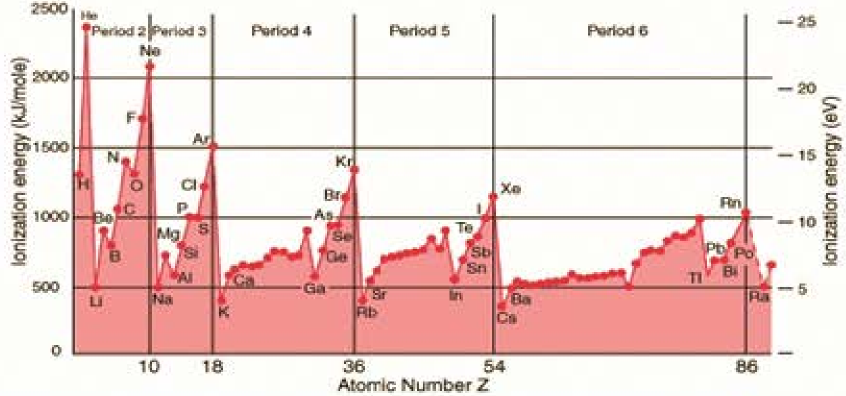
However, due to interactions with surfaces, this value differs from the ionization energy of the atom or molecule in question when it is located by itself in free space.

So, in the case of surface-adsorbed atoms and molecules, it may be better to use the more general term "electron binding energy", in order to avoid confusion.

Both these names are also sometimes used to describe the work needed to remove an electron from a "lower" orbital (i.e., not the topmost orbital) for both free and adsorbed atoms; in such cases it is necessary to specify the orbital from which the electron has been removed

$$E = -\frac{Z^2}{n^2}\frac{ke^2}{2a_0} = -\frac{13.6Z^2}{n^2}eV$$

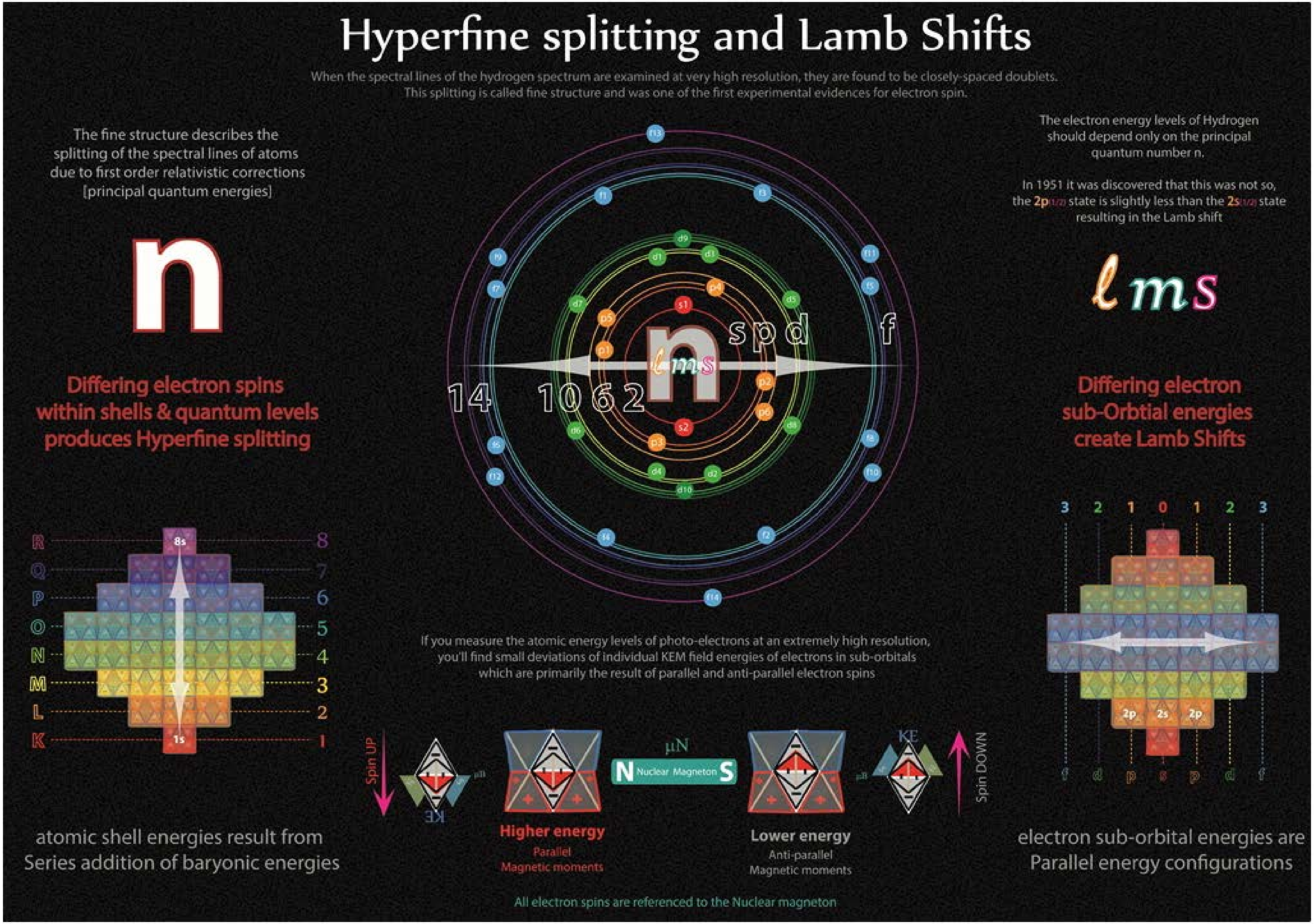
Every electron in each elementary orbit has a unique ionisation energy



Nuclei	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Energy level	per shell
R	119	120																															8	2
Q	87	88	113	114	115	116	117	118																									7	8
P	55	56	81	82	83	84	85	86	103	104	105	106	107	108	109	110	111	112															6	18
O	37	38	49	50	51	52	53	54	71	72	73	74	75	76	77	78	79	80	89	90	91	92	93	94	95	96	97	98	99	100	101	102	5	32
N	19	20	31	32	33	34	35	36	39	40	41	42	43	44	45	46	47	48	57	58	59	60	61	62	63	64	65	66	67	68	69	70	4	32
M	11	12	13	14	15	16	17	18	21	22	23	24	25	26	27	28	29	30															3	18
L	3	4	5	6	7	8	9	10																									2	8
K	1	2																															1	2
Shells	s		p						d										f														Energy level	
sub-orbitals	s1	s2	p1	p2	p3	p4	p5	p6	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	f1	f2	f3	f4	f5	f6	f7	f8	f9	f10	f11	f12	f13	f14		

Element number

Orbitals

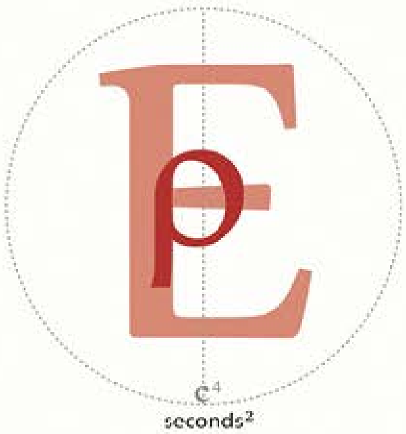


Tetryonics 49.09 - Hyperfine splitting and Lamb Shifts

M_0

3D Matter topologies are comprised of charged 2D mass-energies

Energy per second²



Matter Planck quanta

$$\frac{T\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$$

mass velocity

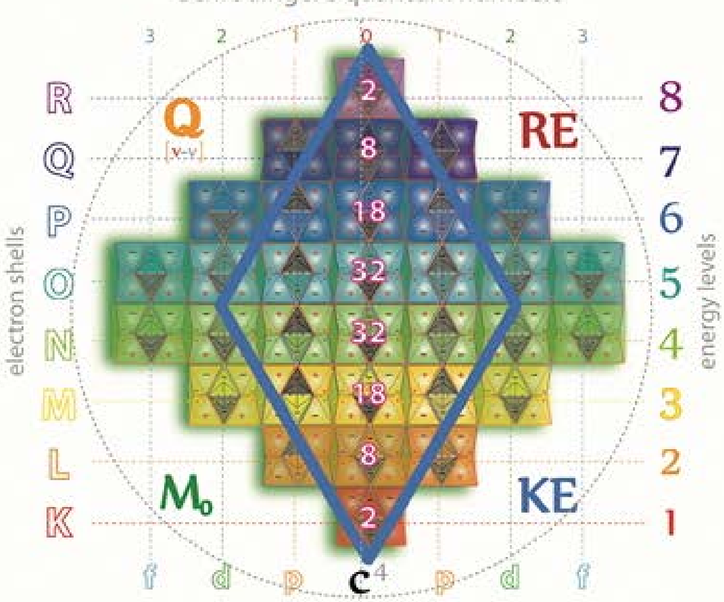
mass-Matter

standing wave mass-energiescreate
the material substance of all chemical elements

RE

Relativistic mass-ENERGY-Matter

Relativity fails at the foundational level to explain and differentiate between mass-ENERGY and Matter in physical systems



Einstein's relativistic [Lorentz corrected] stress energy tensor aggregates all forms of energy into a single energy density gradient

atomic energies $\frac{Tm\text{n}}{c^4} + \frac{mv^2}{c^2}$ *electron spins*

3D rest Matter + Lorentz corrected 2D Kinetic Energies = total Relativistic Energies

KE

2D equilateral mass-energies are euclidean geometries

Energy per second

mass Planck quanta

$$\frac{n\pi}{c^2}\left[\left[m\Omega v^2\right]\right]$$

mass velocity

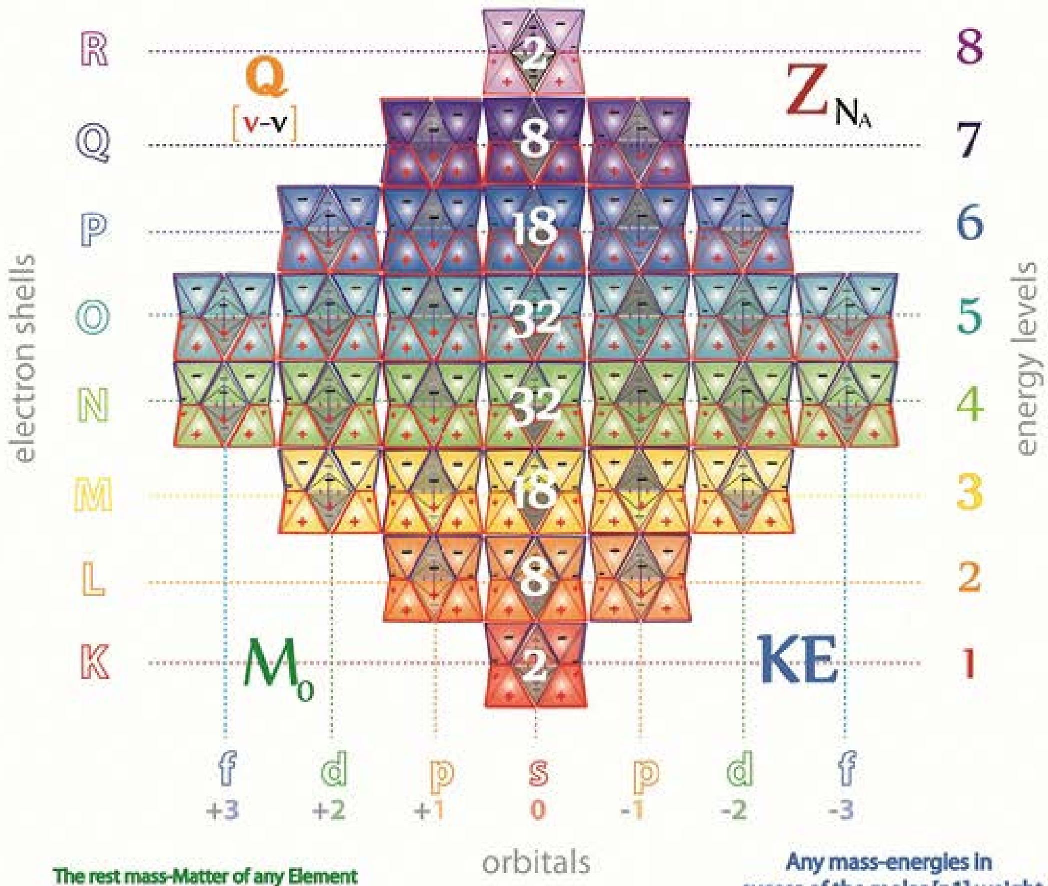
mass-energies

radiant planar mass-energies create
EM fields, spectral lines & chemical interactions

Deuterium is the building block of all Elements (save Hydrogen)

The geometry of any Element is determined by its Charge

The Molar Weight of any Element is a measure of its standing wave mass-energies



The rest mass-Matter of any Element is determined by the total number of quanta making up the Protons, Neutrons and electrons that comprise them (in their respective energy levels)

Any mass-energies in excess of the molar [n1] weight is a measurement of a element's CHEMICAL energies

Important point to note:

The Kinetic Energy difference between any Element's total [n1] Deuteron mass-energies and its Molar mass has historically been incorrectly explained as resulting from an excess number of Neutrons in the atom it is not. Z# = (number of Protons = number of electrons = number of Neutrons)

Elementary mass-Matter

R – K Σ

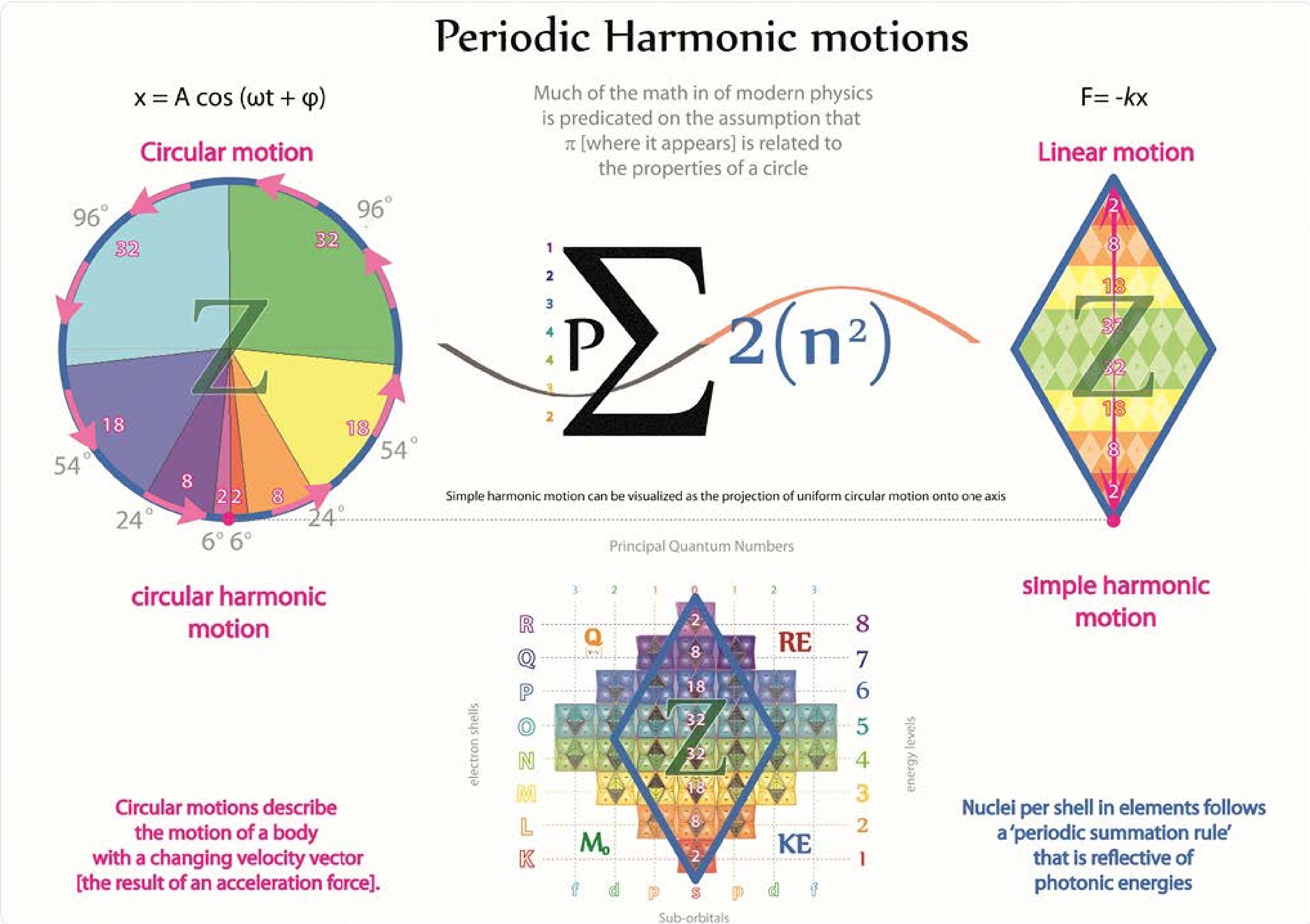
	n per nuclei 1e19v = n	
2	2 nuclei [74,496 ea]	120 Unbinilium; 119 Ununennium
8	+ 8 nuclei [69,780 ea]	118 Ununoctium; 87 Francium
18	+ 18 nuclei [65,232 ea]	112 Copernicium; 55 Caesium
32	+ 32 nuclei [60,852 ea]	102 Nobelium; 37 Rubidium
32	+ 32 nuclei [56,640 ea]	70 Ytterbuim; 19 Potassium
18	+ 18 nuclei [52,596 ea]	30 Zinc; 11 Sodium
8	+ 8 nuclei [48,720 ea]	10 Neon; 3 Lithium
2	+ 2 nuclei [45,012 ea]	2 Helium; 1 Deuterium

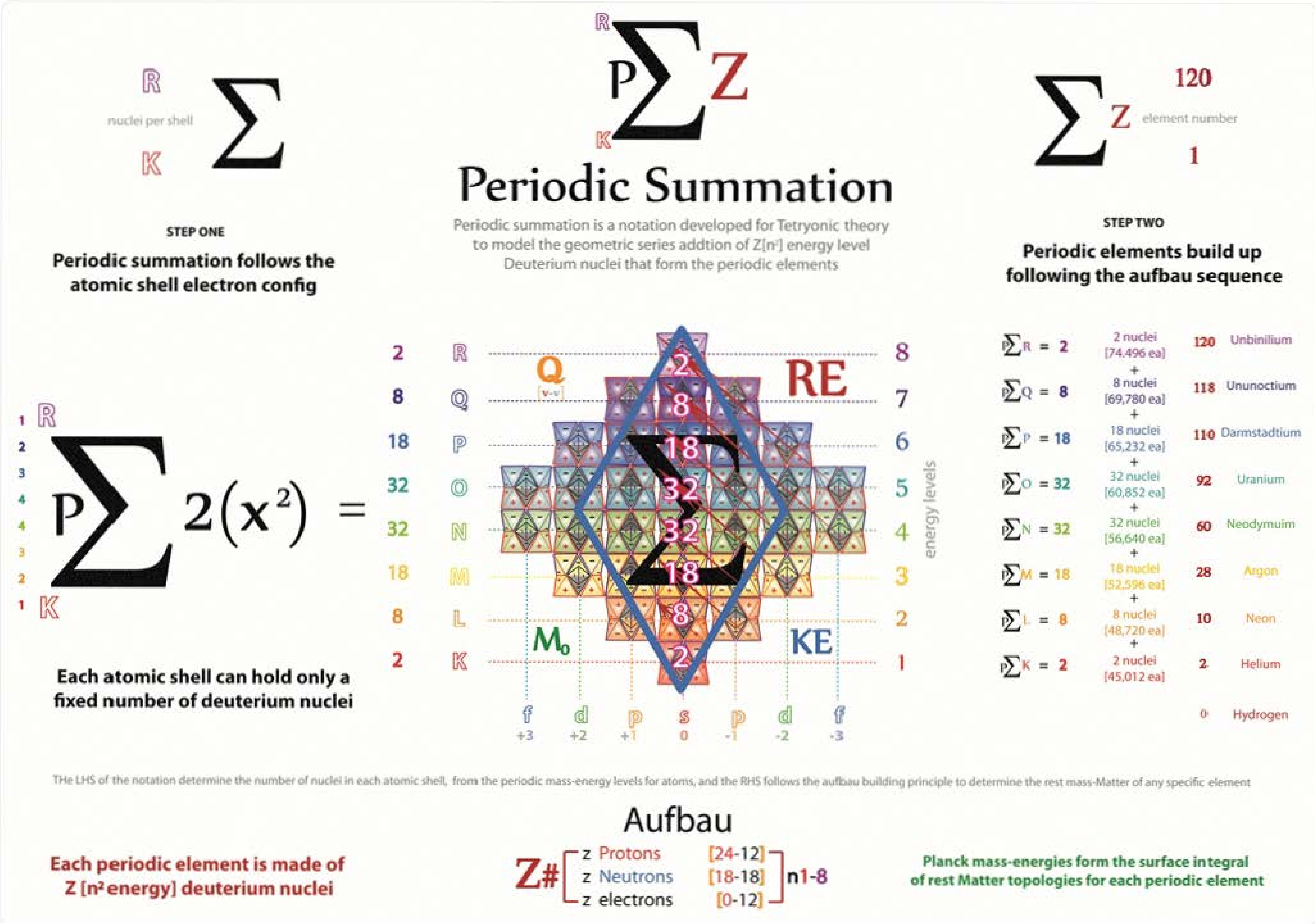
The rest mass-Matter of any Element is the sum total of its constituent Z[n²] energy level Deuterium nuclei

Aufbau

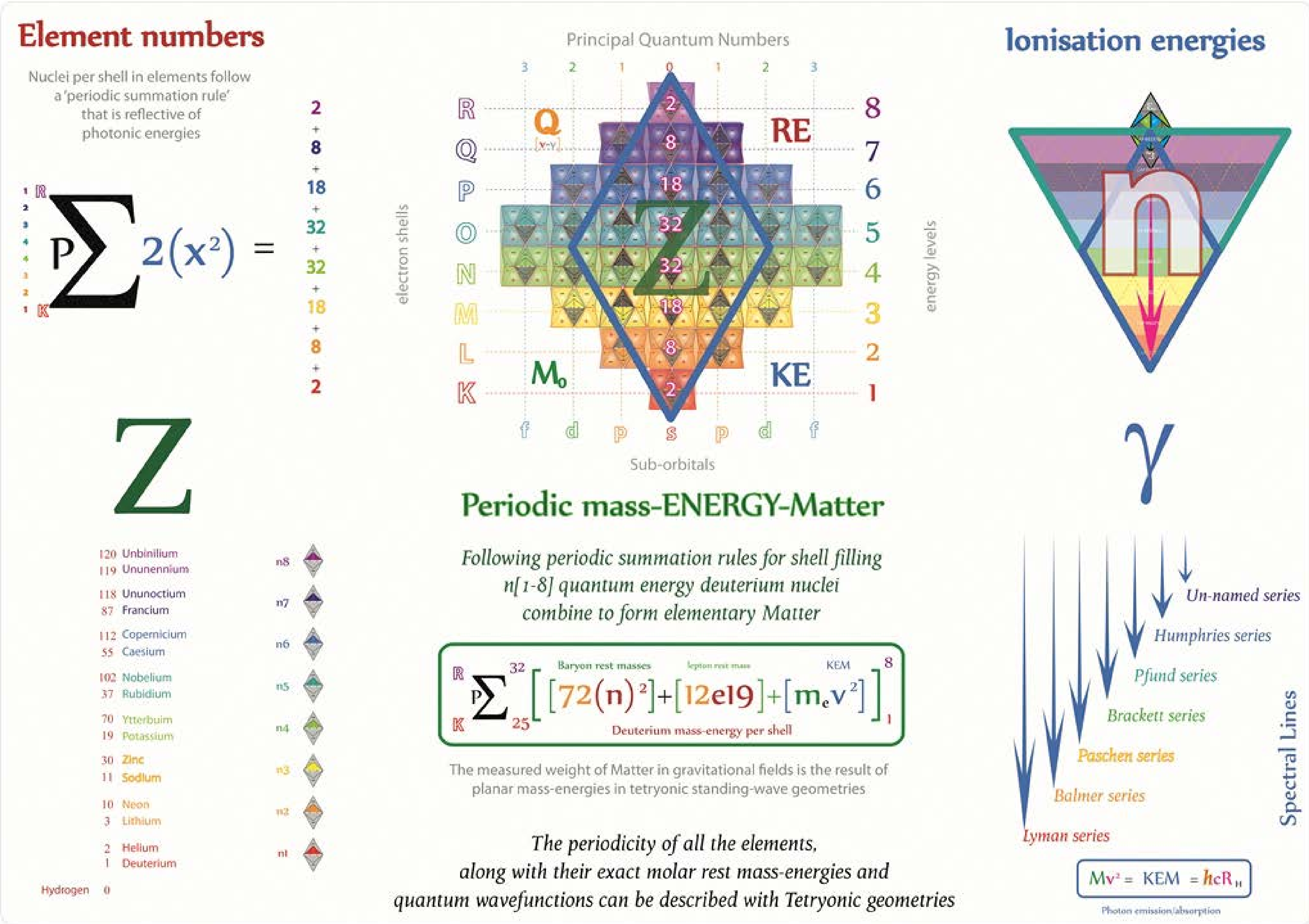
Z# [z Protons [24-12] ; z Neutrons [18-18] ; z electrons [0-12]] n1-8

(ie Calcium [20] = 2+8+10 n level Deuterium nuclei)


Periodic Harmonic motions
x = A cos (ωt + φ)
Circular motion
Much of the math in of modern physics
is predicated on the assumption that
π [where it appears] is related to
the properties of a circle
F= -kx
Linear motion
96°
96°
32
32
18
18
8
8
2 2
54°
54°
24°
24°
6° 6°
Z
P∑2(n²)
Simple harmonic motion can be visualized as the projection of uniform circular motion onto one axis
Principal Quantum Numbers
circular harmonic
motion
simple harmonic
motion
R Q P O N M L K
8 7 6 5 4 3 2 1
RE
KE
electron shells
energy levels
f d p s p d f
Sub-orbitals
Circular motions describe
the motion of a body
with a changing velocity vector
[the result of an acceleration force].
Nuclei per shell in elements follows
a 'periodic summation rule'
that is reflective of
photonic energies



Periodic Summation
Periodic summation is a notation developed for Tetryonic theory to model the geometric series addtion of Z[n²] energy level Deuterium nuclei that form the periodic elements
nuclei per shell
STEP ONE
Periodic summation follows the atomic shell electron config
STEP TWO
Periodic elements build up following the aufbau sequence
120
element number
1
Each atomic shell can hold only a fixed number of deuterium nuclei
2 R
8 Q
18 P
32 O
32 N
18 M
8 L
2 K
8 7 6 5 4 3 2 1
energy levels
Q
RE
M₀
KE
f d p s p d f
+3 +2 +1 0 -1 -2 -3
ΣR = 2 | 2 nuclei [74,496 ea] | 120 Unbinilium
ΣQ = 8 | 8 nuclei [69,780 ea] | 118 Ununoctium
ΣP = 18 | 18 nuclei [65,232 ea] | 110 Darmstadtium
ΣO = 32 | 32 nuclei [60,852 ea] | 92 Uranium
ΣN = 32 | 32 nuclei [56,640 ea] | 60 Neodymuim
ΣM = 18 | 18 nuclei [52,596 ea] | 28 Argon
ΣL = 8 | 8 nuclei [48,720 ea] | 10 Neon
ΣK = 2 | 2 nuclei [45,012 ea] | 2 Helium
0 Hydrogen
THe LHS of the notation determine the number of nuclei in each atomic shell, from the periodic mass-energy levels for atoms, and the RHS follows the aufbau building principle to determine the rest mass-Matter of any specific element
Aufbau
Each periodic element is made of Z [n² energy] deuterium nuclei
Z# z Protons [24-12] z Neutrons [18-18] z electrons [0-12] n1-8
Planck mass-energies form the surface integral of rest Matter topologies for each periodic element


Element numbers
Nuclei per shell in elements follow a 'periodic summation rule' that is reflective of photonic energies
2 + 8 + 18 + 32 + 32 + 18 + 8 + 2
Z
120 Unbinilium
119 Ununennium
118 Ununoctium
87 Francium
112 Copernicium
55 Caesium
102 Nobelium
37 Rubidium
70 Ytterbuim
19 Potassium
30 Zinc
11 Sodium
10 Neon
3 Lithium
2 Helium
1 Deuterium
Hydrogen 0
n8 n7 n6 n5 n4 n3 n2 n1
Principal Quantum Numbers
electron shells
energy levels
R Q P O N M L K
Q
RE
M0
KE
8 7 6 5 4 3 2 1
f d p s p d f
Sub-orbitals
Periodic mass-ENERGY-Matter
Following periodic summation rules for shell filling n[1-8] quantum energy deuterium nuclei combine to form elementary Matter
Baryon rest masses
KEM
Deuterium mass-energy per shell
The measured weight of Matter in gravitational fields is the result of planar mass-energies in tetryonic standing-wave geometries
The periodicity of all the elements, along with their exact molar rest mass-energies and quantum wavefunctions can be described with Tetryonic geometries
Ionisation energies
n
γ
Un-named series
Humphries series
Pfund series
Brackett series
Paschen series
Balmer series
Lyman series
Spectral Lines
Mv² = KEM = hcR_H
Photon emission/absorption

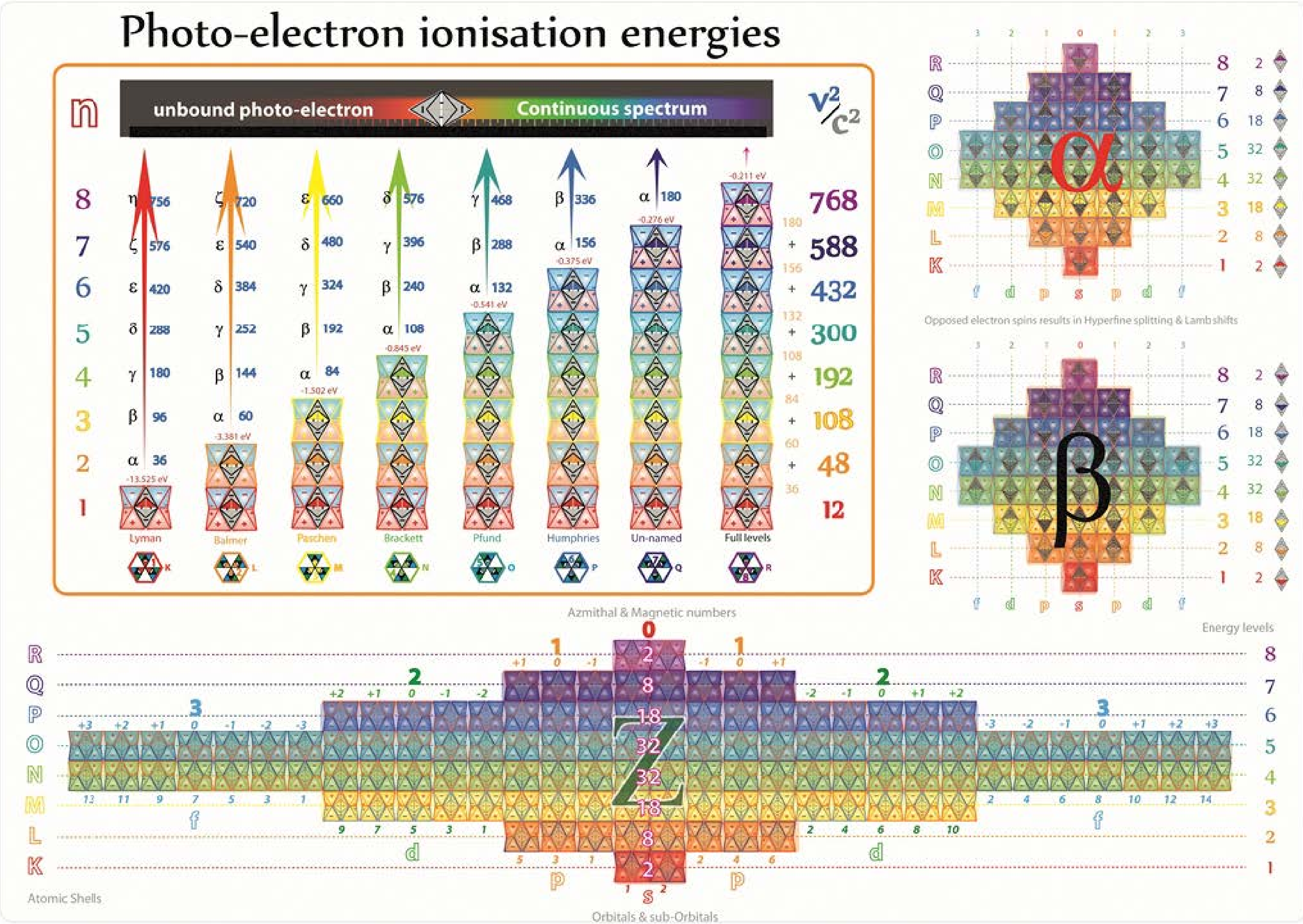
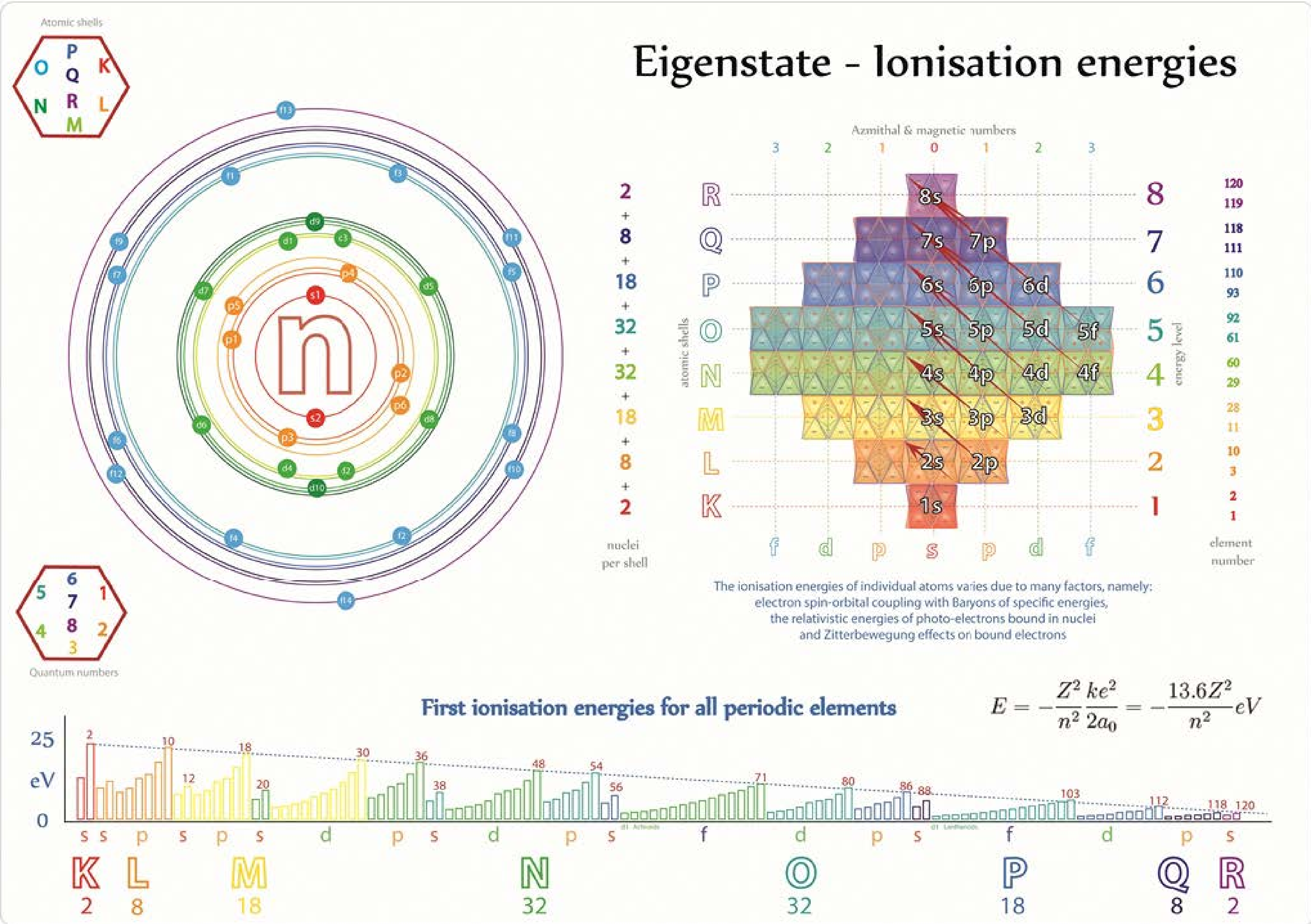
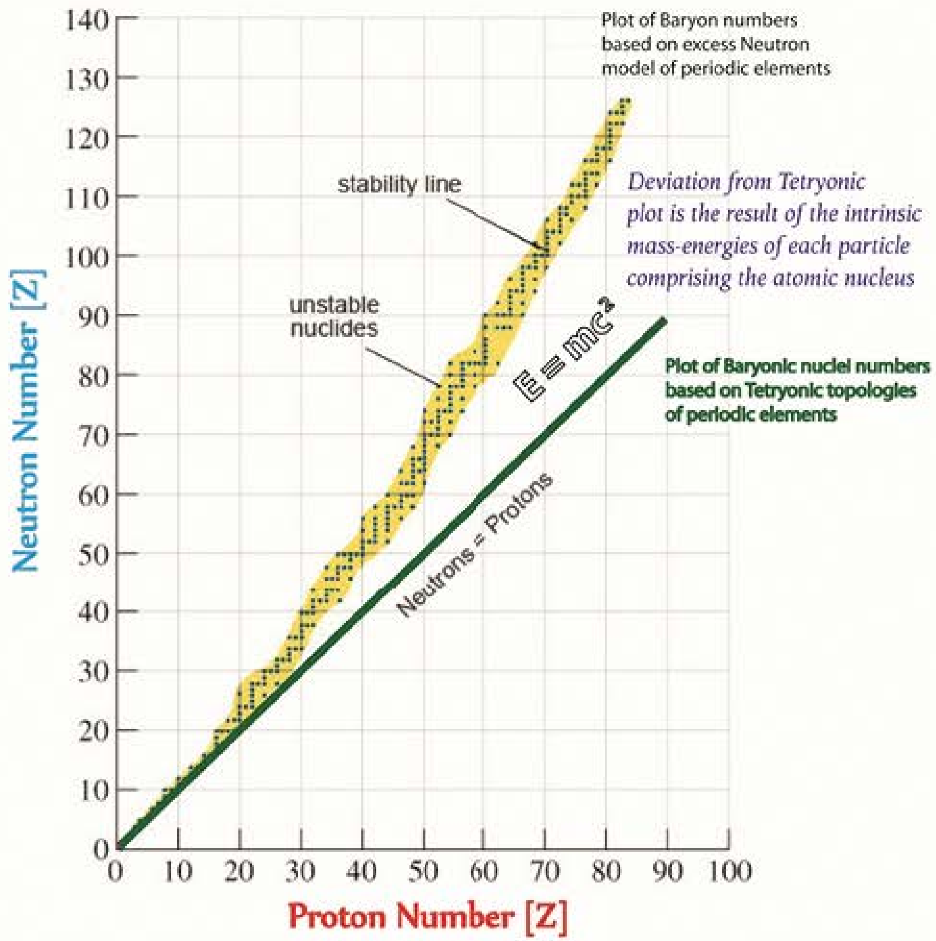


Photo-electron ionisation energies
n
unbound photo-electron
Continuous spectrum
v²/c²
8 7 6 5 4 3 2 1
η 756 ζ 576 ε 420 δ 288 γ 180 β 96 α 36
-13.525 eV
ζ 720 ε 540 δ 384 γ 252 β 144 α 60
-3.381 eV
ε 660 δ 480 γ 324 β 192 α 84
-1.502 eV
δ 576 γ 396 β 240 α 108
-0.845 eV
γ 468 β 288 α 132
-0.541 eV
β 336 α 156
-0.375 eV
α 180
-0.276 eV
-0.211 eV
Lyman
Balmer
Paschen
Brackett
Pfund
Humphries
Un-named
Full levels
K L M N O P Q R
180 + 156 + 132 + 108 + 84 + 60 + 36
768 588 432 300 192 108 48 12
Opposed electron spins results in Hyperfine splitting & Lamb shifts
α
β
R Q P O N M L K
8 7 6 5 4 3 2 1
2 8 18 32 32 18 8 2
f d p s p d f
3 2 1 0 1 2 3
Azmithal & Magnetic numbers
Energy levels
Atomic Shells
Orbitals & sub-Orbitals
Z
0 2 8 18 32 32 18 8 2
1 +1 0 -1
2 +2 +1 0 -1 -2
3 +3 +2 +1 0 -1 -2 -3
13 11 9 7 5 3 1 f
9 7 5 3 1 d
5 3 1 p
1 s 2
2 4 6 8 10 12 14 f
2 4 6 8 10 d
2 4 6 p


Eigenstate - Ionisation energies
Atomic shells
O P Q K N R L M
Quantum numbers
5 6 7 1 4 8 2 3
n
Azmithal & magnetic numbers
3 2 1 0 1 2 3
2 + 8 + 18 + 32 + 32 + 18 + 8 + 2
nuclei per shell
R Q P O N M L K
atomic shells
8s
7s 7p
6s 6p 6d
5s 5p 5d 5f
4s 4p 4d 4f
3s 3p 3d
2s 2p
1s
8 7 6 5 4 3 2 1
energy level
120 119 118 111 110 93 92 61 60 29 28 11 10 3 2 1
element number
f d p s p d f
The ionisation energies of individual atoms varies due to many factors, namely:
electron spin-orbital coupling with Baryons of specific energies,
the relativistic energies of photo-electrons bound in nuclei
and Zitterbewegung effects on bound electrons
First ionisation energies for all periodic elements
$E = -\frac{Z^2}{n^2}\frac{ke^2}{2a_0} = -\frac{13.6Z^2}{n^2}eV$
25 eV 0
2 10 12 18 20 30 36 38 48 54 56 71 80 86 88 103 112 118 120
s s p s p s d p s d p s f d p s f d p s
K 2 L 8 M 18 N 32 O 32 P 18 Q 8 R 2

Proton - Neutron Curve

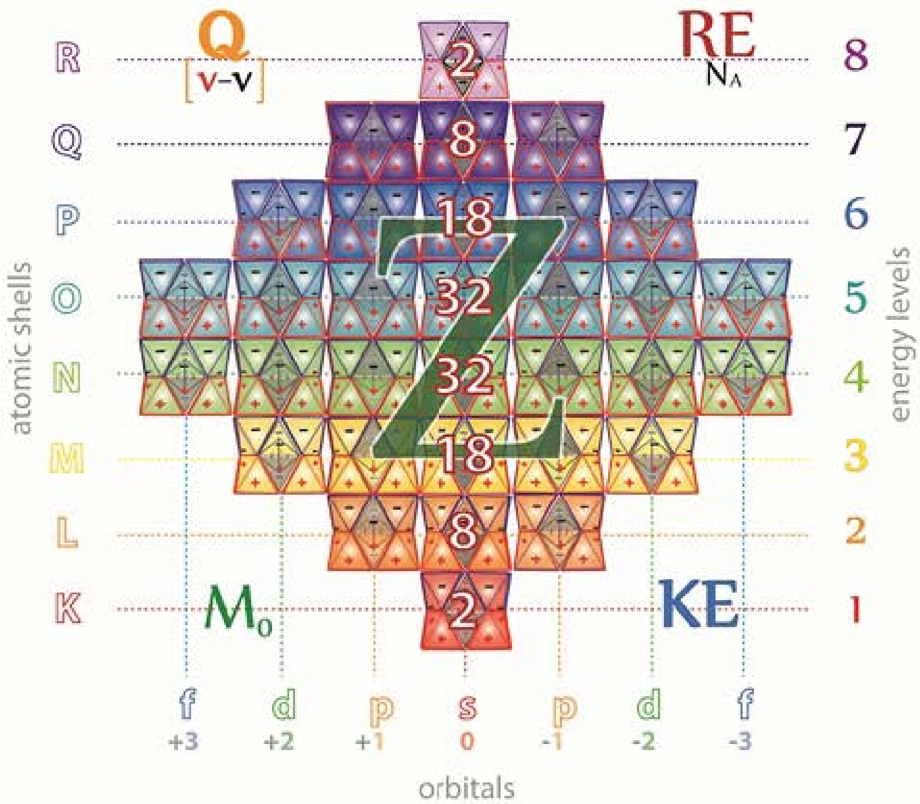
The graph below is a plot of neutron number against proton number.
It is used as rule to determine which nuclei are stable or unstable.



Historically, Proton-electron numbers are viewed as being equivalent in neutral elementary matter with the excess molar mass measured being the result of 'excess or extra' Neutrons in the atom

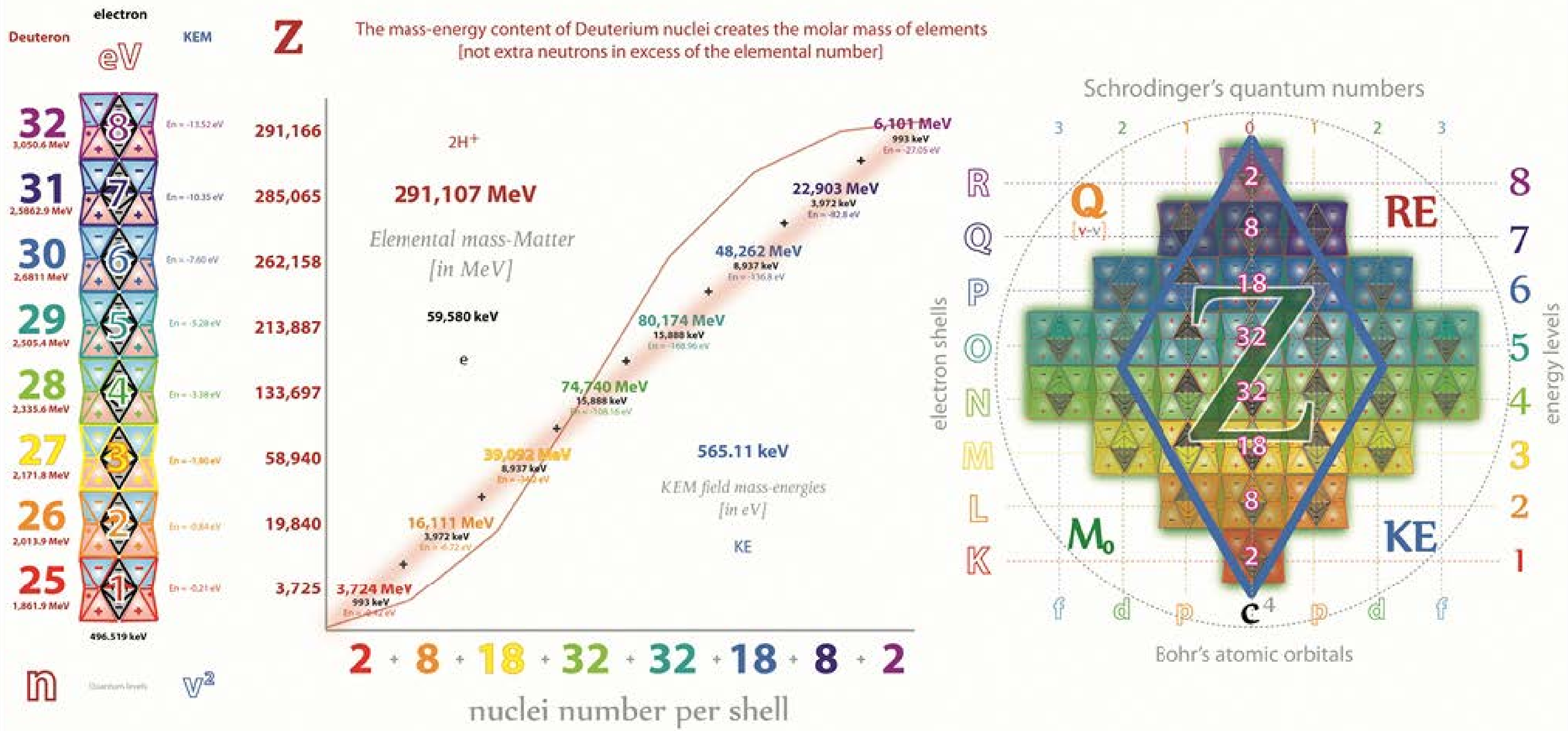
Atomic Nuclei Numbers

All periodic elements have an EQUAL number of Protons, Neutrons & Electrons with their molar mass-Matter being determined by their quantum level mass-energies



Tetryonic modelling of the charged mass-ENERGY-Matter topologies of elementary atoms and the nuclei that comprise them, reveals a DIRECT LINEAR relationship for the number of Protons-electrons-Neutrons in all periodic elements and nuclear isotopes

Planck mass-energy contributions to elementary Matter and isotopes



n1 Elementary nuclei

are comprised of equal numbers of Protons, Neutrons & electrons with varying energy levels

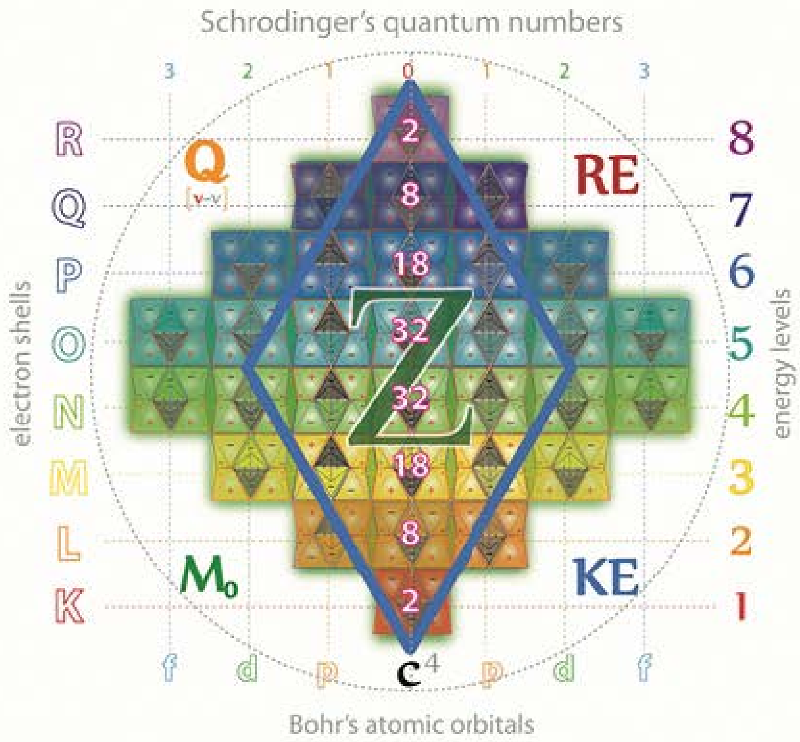
Baryons		electrons		KEM fields
930.947 MeV	+	496.519 keV	+	13.525 ev

The mass-energy content of Matter topologies is velocity invariant

The mass-energy content of Baryons determines the KEM field of electrons

Baryons		KEM fields		electrons
930.947 MeV	+	**13.525 ev**	+	**496.519 keV**

Mapping Planck mass-energy contributions to elementary Matter and isotopes



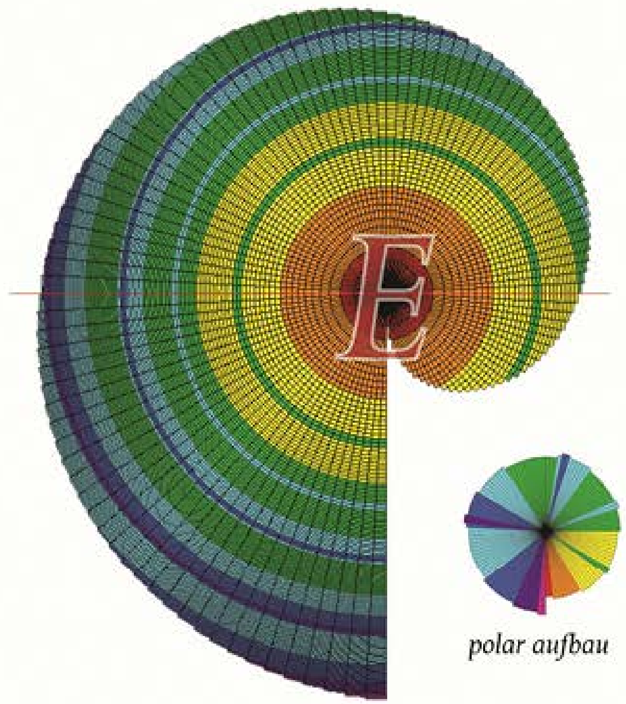
$$E = hv^2$$

$$n^2 + v^2 + e = Z$$

general form quatratic equation

$$ax^2 + bx + c = Z$$

$$E = nhv$$



polar energy spirals courtesy of Rene Cormier

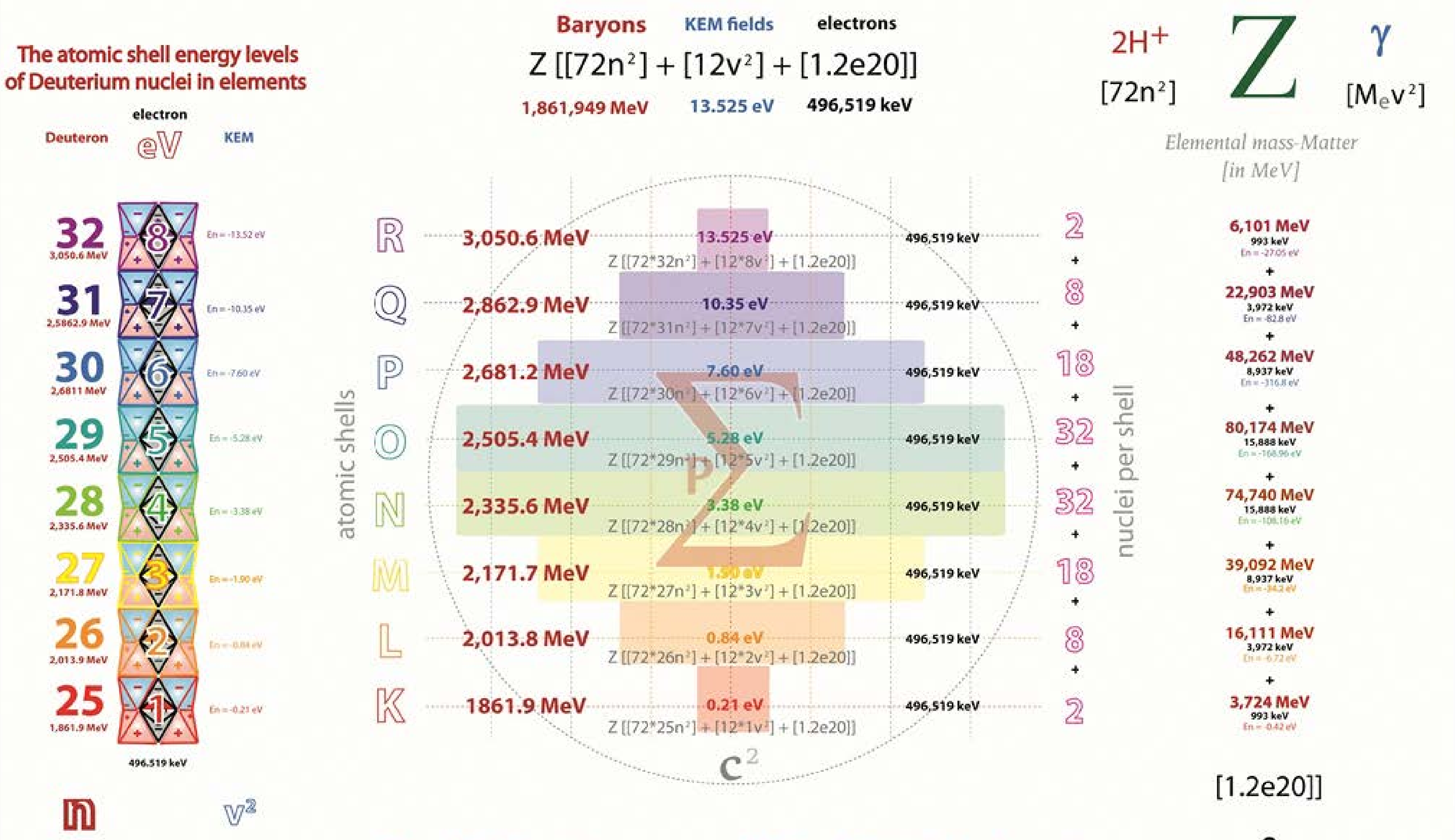
Identifying electron rest Matter topologies as velocity invariant we can re-arrange the component Planck mass-energy geometry formulation of periodic elements to

$$h\left[72[v^2] + v + 1.20\,e20\ v \right]$$

(72[v²]: Deuteron rest mass; v: Spectral lines; 1.20 e20 v: electron rest mass)

reveal a quadratic formulation for all Z numbers

All elements are comprised of n level Duetrium nuclei



Determines the spectral line [KEM field energies] of electrons bound to them

The relativistic rest mass-energy-Matter of all periodic elements
is the sum of the mass-energies of all atomic nuclei and spectral lines that comprise its mass-Matter topology as measured in any spatial co-ordinate system per unit of time

the rest mass-Matter of bound photo-electrons is velocity invariant

Avagadro's number

6.022141579 e26
atoms in 1KG of Matter

1 KG mass
[of Matter]

1.660538841 e-27 kg
atomic rest mass-Matter

Hydrogen

01

using SI units Avagadro's number can be expressed exactly as the inverse rest mass of Hydrogen

Weighted atomic mass

Carbon

12

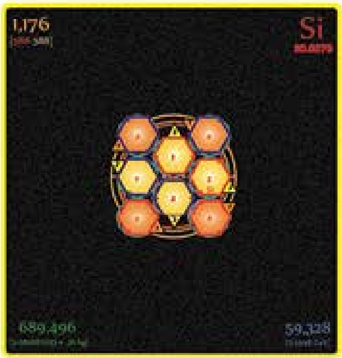
5.019789213 e25
atoms in 1KG of Matter

6.02214078 e 23

1.99211552 e-26 kg
atomic rest mass-Matter

Tetryonic charge geometries make weighted atomic mass measurements and calculations obsolete

22,506 1/12 of Carbon 12 [Graphene] is not equal to 1 Hydrogen atom 22,512
(Deuterium is the building block of all atomic elements)

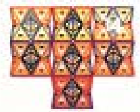


International Avagadro project

1.966225348 e25
atoms in 1KG of Matter

5.085887033 e-26 kg
atomic rest mass-Matter

Silicon



28

The gram was originally defined in 1795 as the mass of one cubic centimeter of water at 4°C,
making the kilogram equal to the mass of one liter of water.

The prototype kilogram, manufactured in 1799 and from which the current kilogram is based
has a mass equal to the mass of 1.000025 liters of water

In recent years two major experiments, namely the Watt balance & Avagadro projects, have been attempting to
measure and define 1KG of mass-Matter in terms of electrical force and the number of atoms respectively
in order to better define 1KG of mass-Matter precisely for all future physical references

Platinum

191

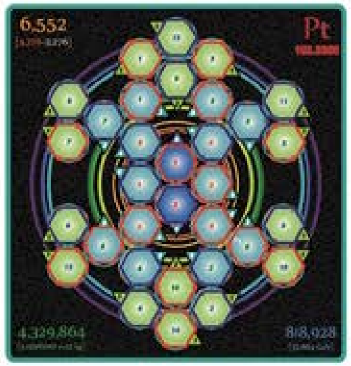
La Grande K

2.817950081 e24
atoms in 1KG of Matter
3.181804449 e23

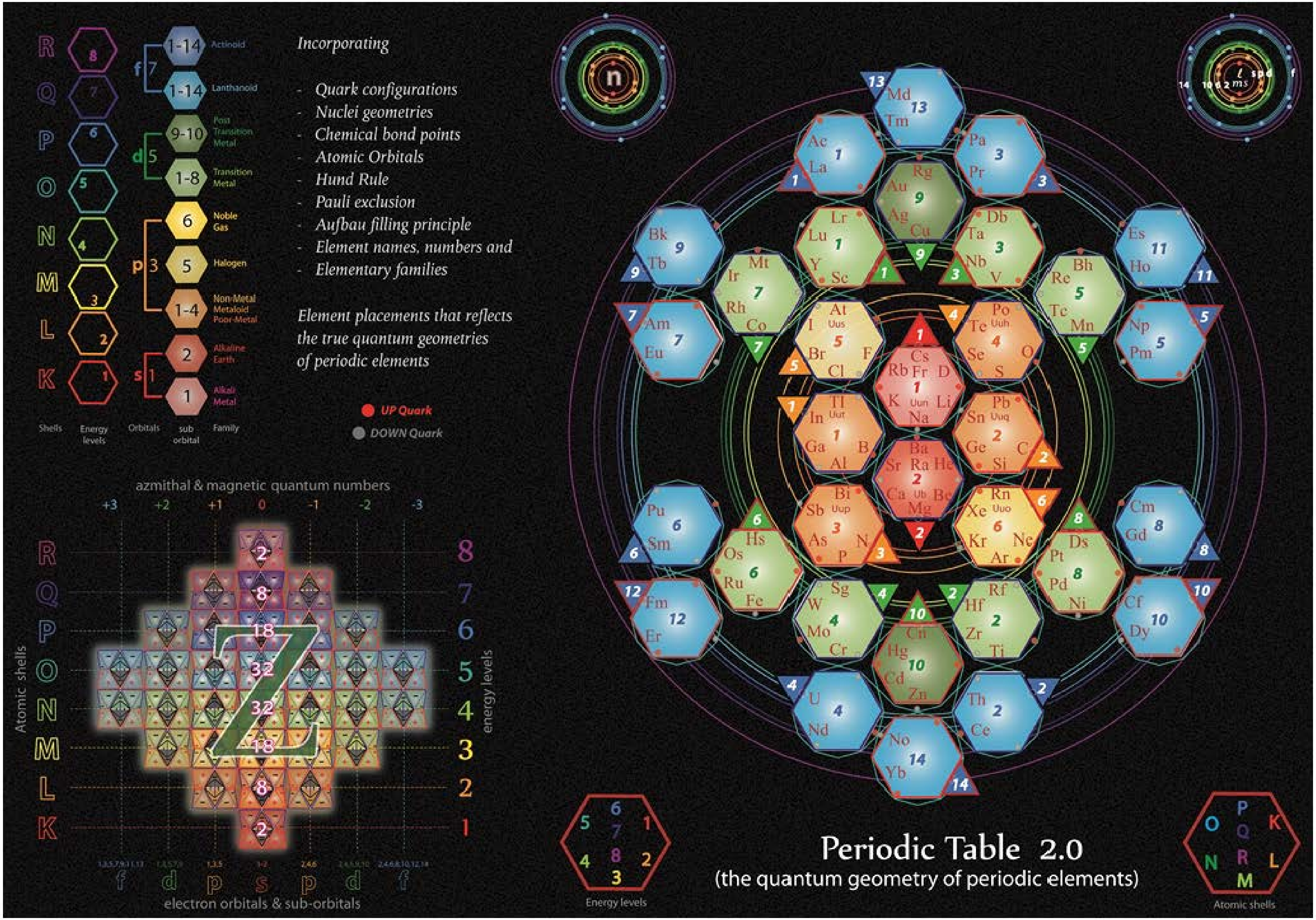
90% Pt
10% Ir

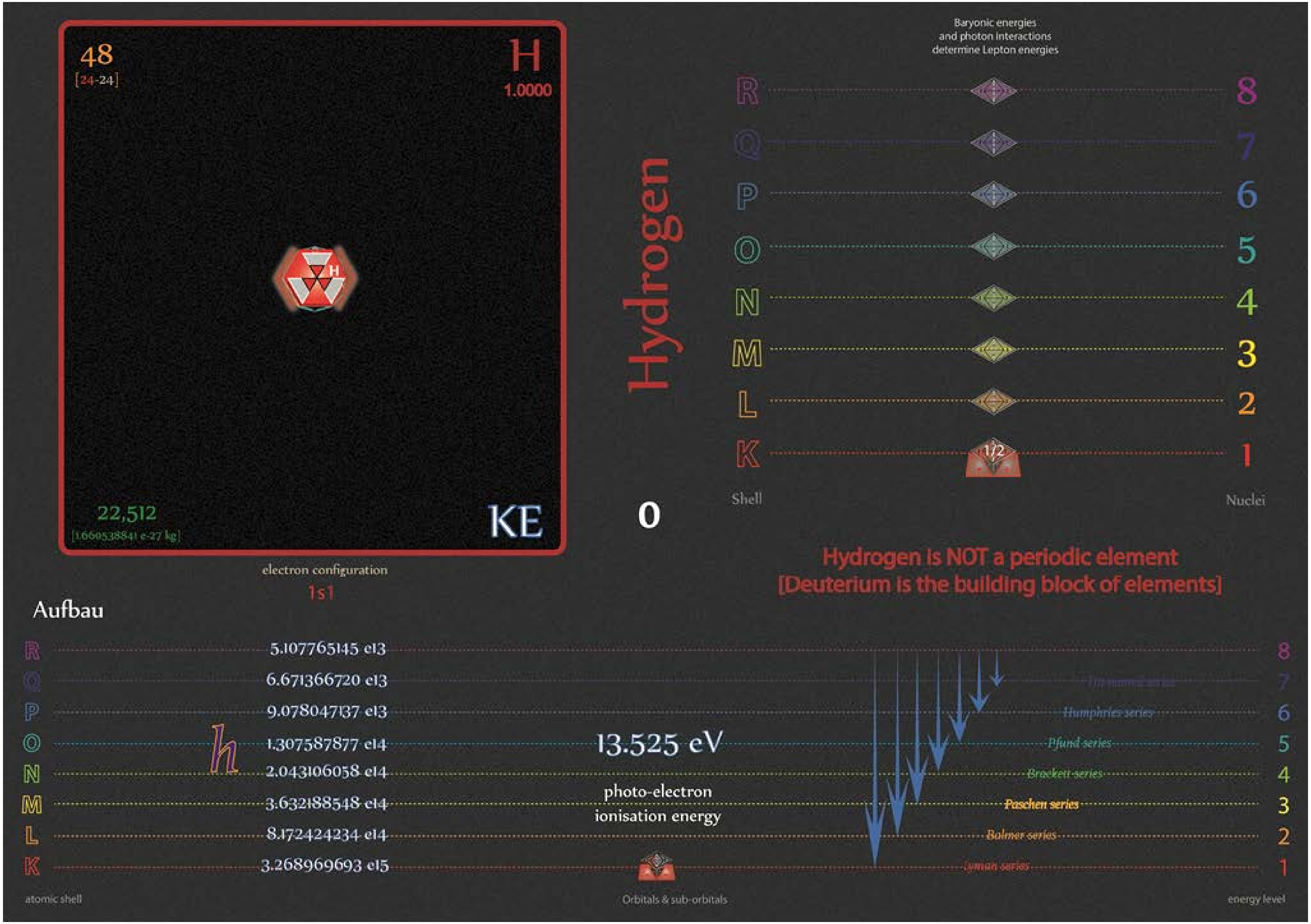
The La grande K is an alloy of 90% Platinum & 10% Iridium that has been slowly losing mass since its manufacture

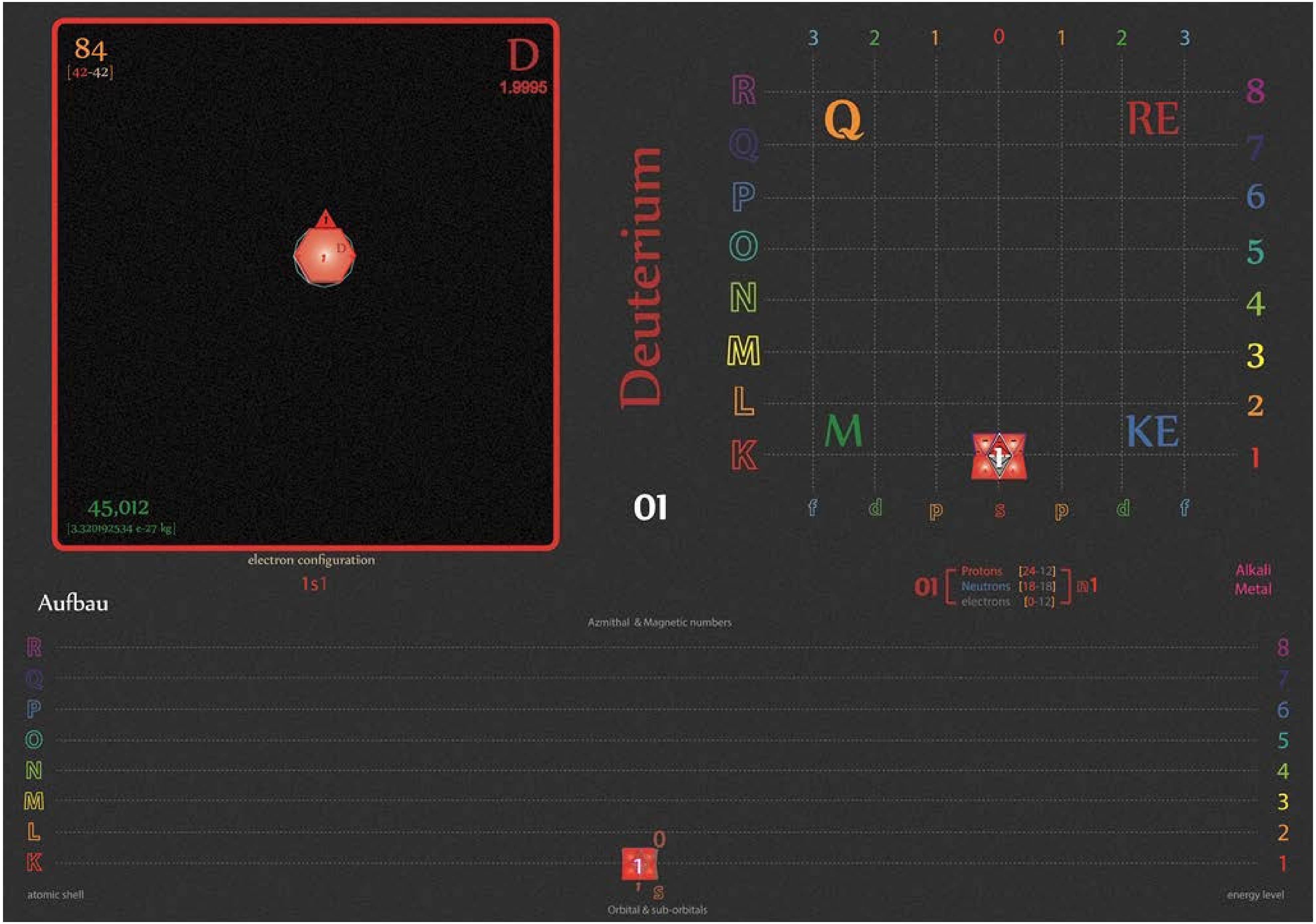
3.1893811012 e-25 kg
atomic rest mass-Matter
3.142870708 e-25 kg



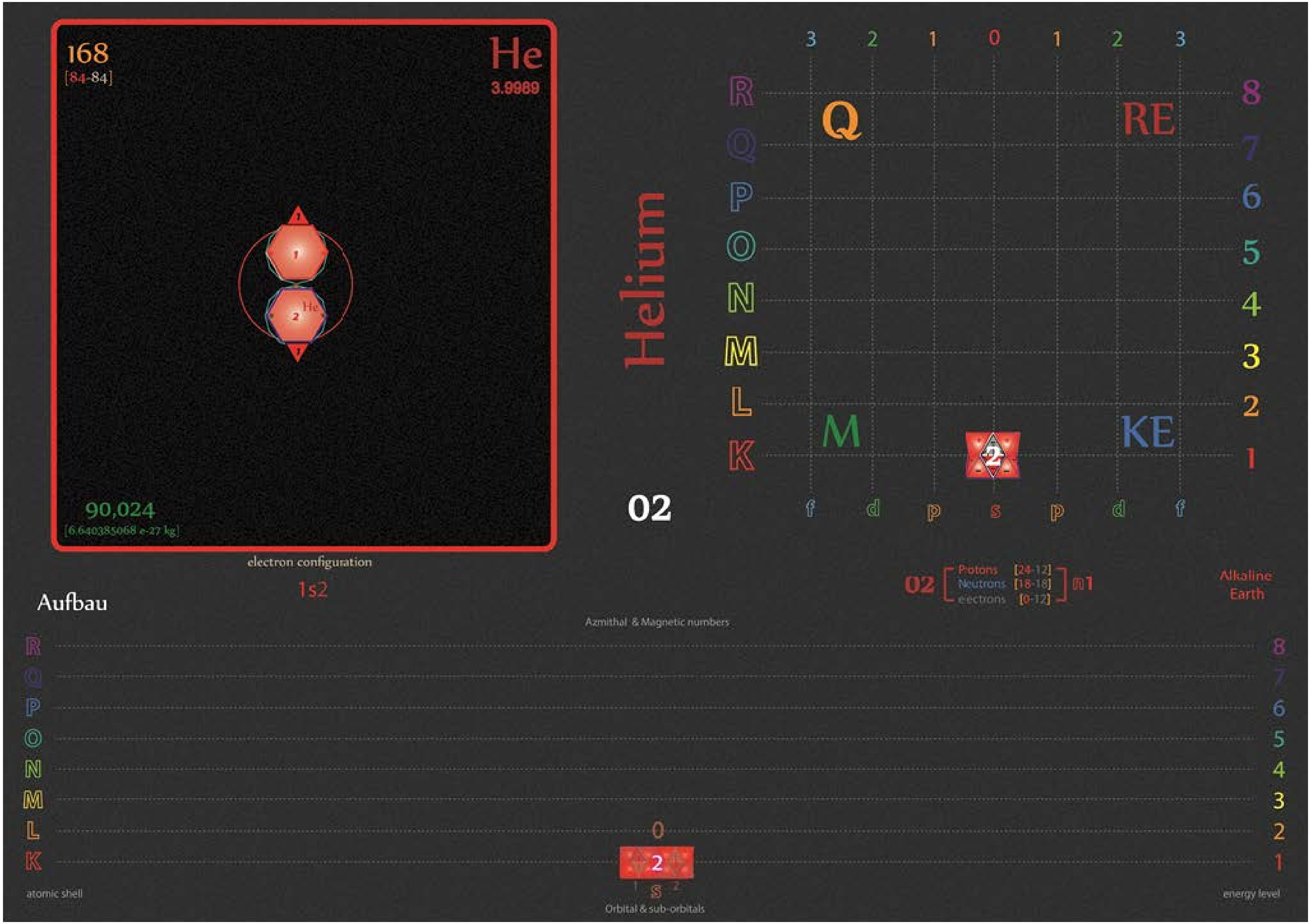
All atomic rest masses are for atoms at absolute zero and any deviation is a measure of the topological Matter's Kinetic energy content [chemical energy, KEM fields and/or spectral lines]


Incorporating
- Quark configurations
- Nuclei geometries
- Chemical bond points
- Atomic Orbitals
- Hund Rule
- Pauli exclusion
- Aufbau filling principle
- Element names, numbers and
- Elementary families
Element placements that reflects
the true quantum geometries
of periodic elements
UP Quark
DOWN Quark
Shells
Energy levels
Orbitals
sub orbital
Family
Actinoid
Lanthanoid
Post Transition Metal
Transition Metal
Noble Gas
Halogen
Non-Metal Metaloid Poor-Metal
Alkaline Earth
Alkali Metal
azmithal & magnetic quantum numbers
Atomic shells
energy levels
electron orbitals & sub-orbitals
Energy levels
Atomic shells
Periodic Table 2.0
(the quantum geometry of periodic elements)

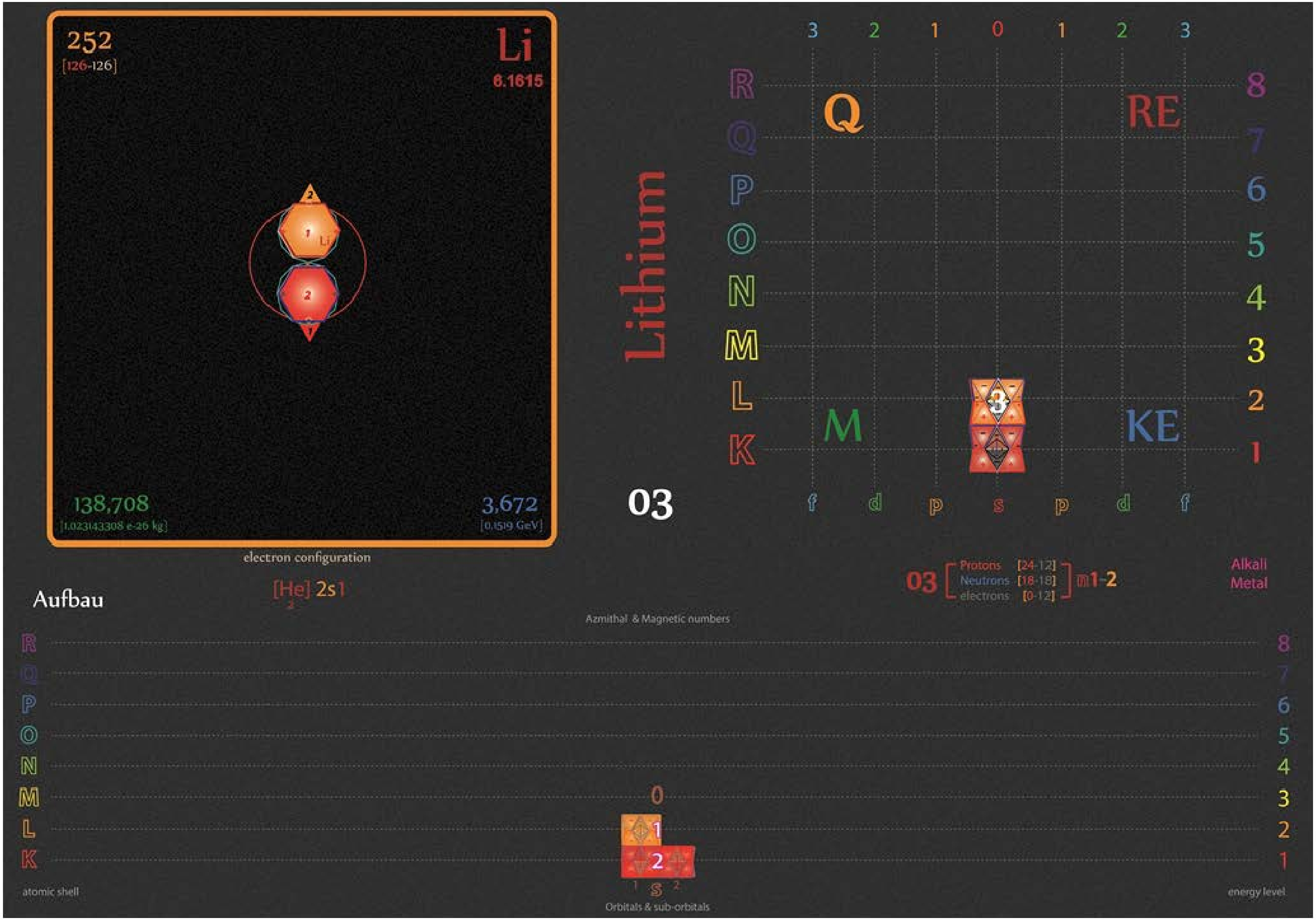

48
[24-24]
H
1.0000
22,512
[1.660538841 e-27 kg]
KE
electron configuration
1s1
Hydrogen
0
Baryonic energies
and photon interactions
determine Lepton energies
R 8
Q 7
P 6
O 5
N 4
M 3
L 2
K 1/2 1
Shell
Nuclei
Hydrogen is NOT a periodic element
[Deuterium is the building block of elements]
Aufbau
R 5.107765145 e13 8
Q 6.671366720 e13 7
P 9.078047137 e13 Humphries series 6
O 1.307587877 e14 Pfund series 5
N 2.043106058 e14 Brackett series 4
M 3.632188548 e14 Paschen series 3
L 8.172424234 e14 Balmer series 2
K 3.268969693 e15 Lyman series 1
h
13.525 eV
photo-electron
ionisation energy
atomic shell
Orbitals & sub-orbitals
energy level



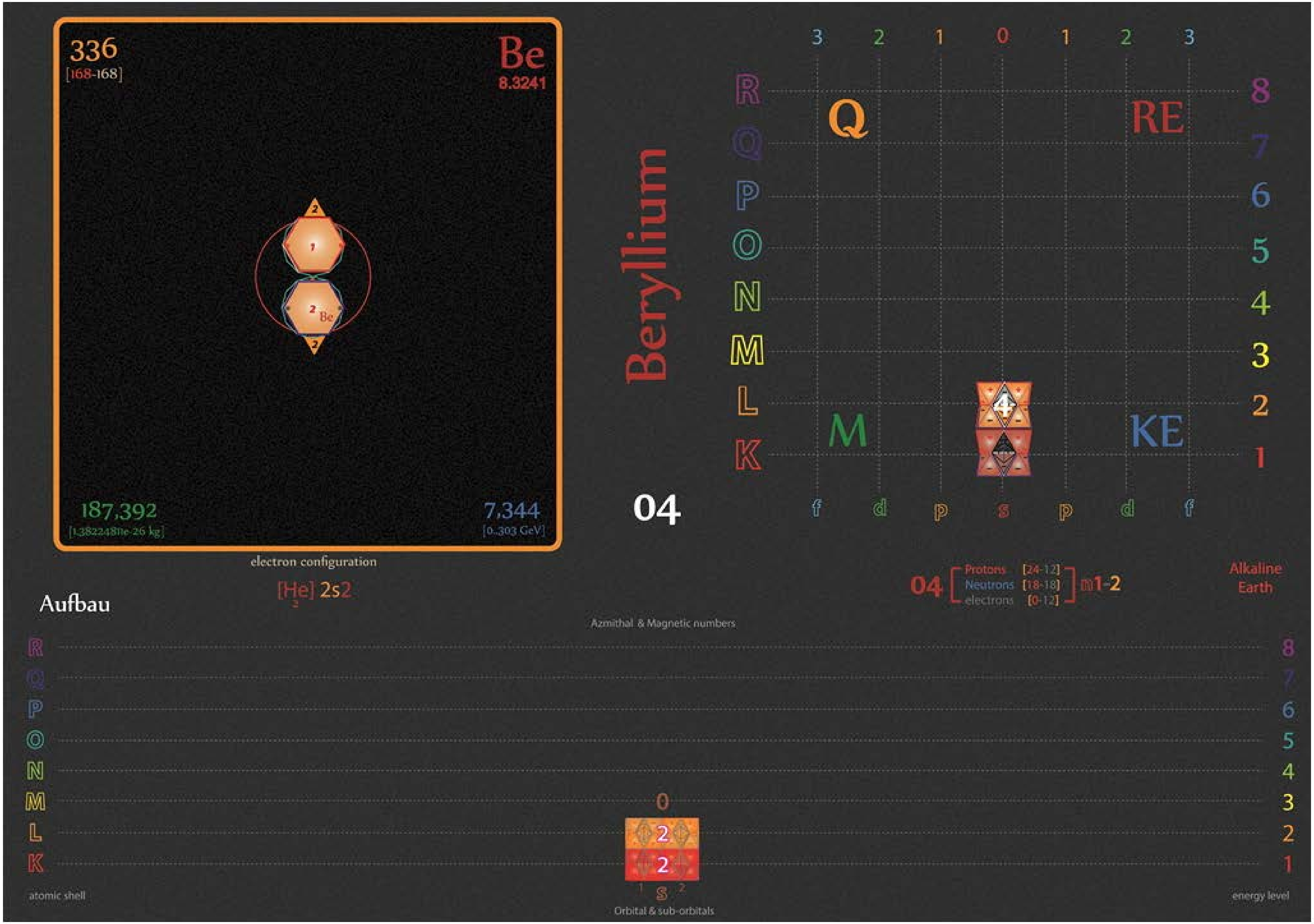
Tetryonics 51.01 - Deuterium atom



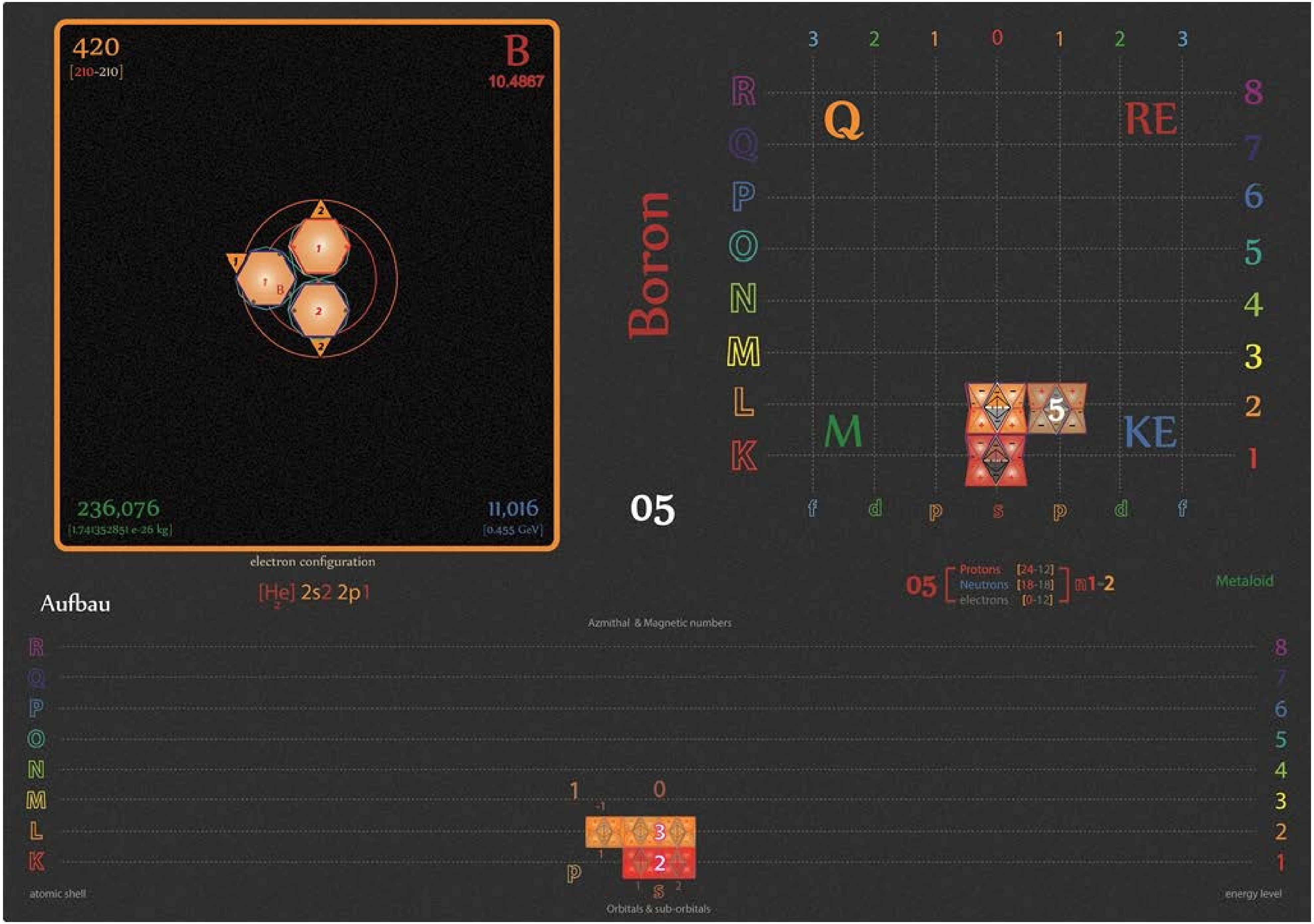
Tetryonics 51.02 - Helium atom



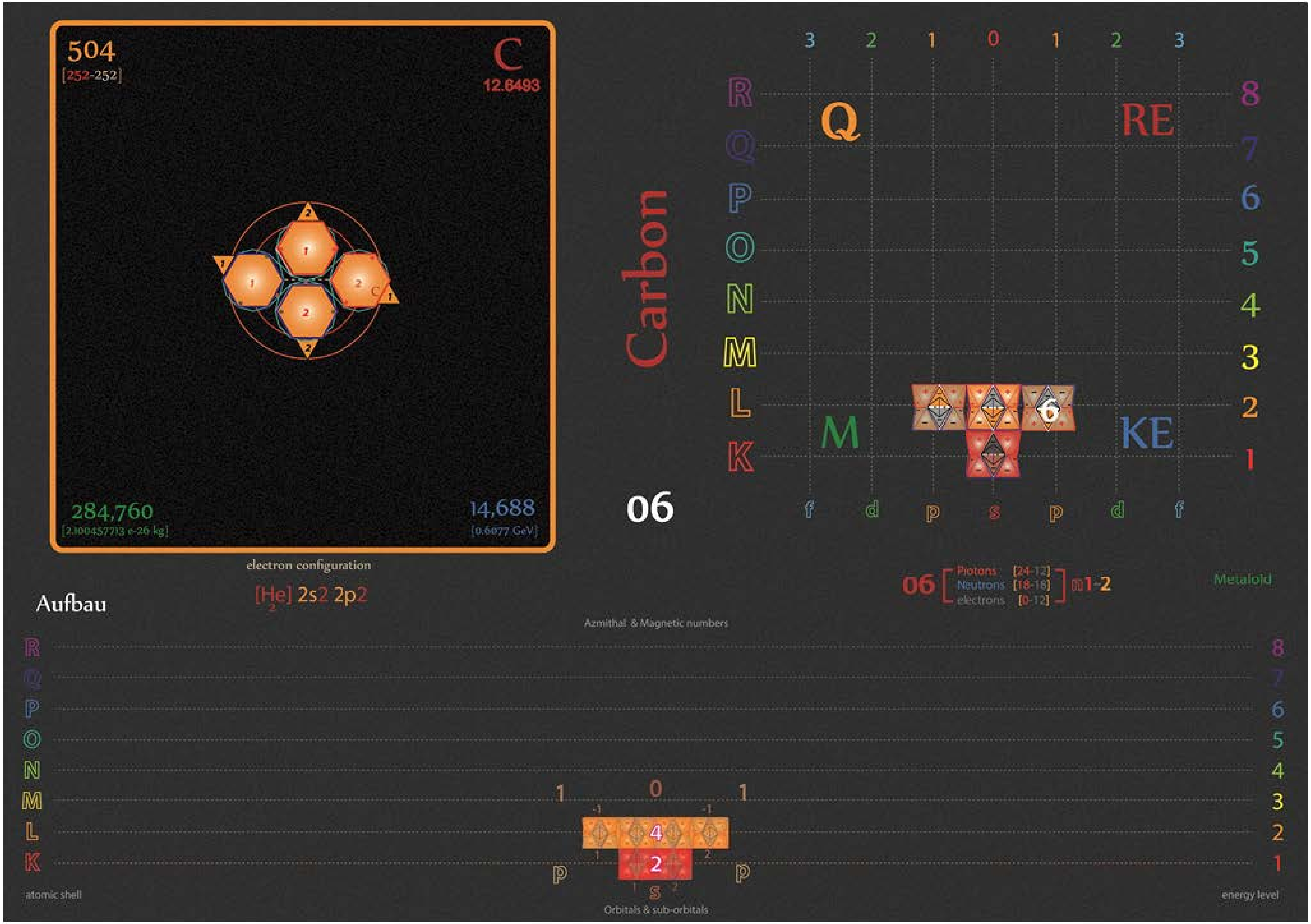
Tetryonics 51.03 - Lithium atom



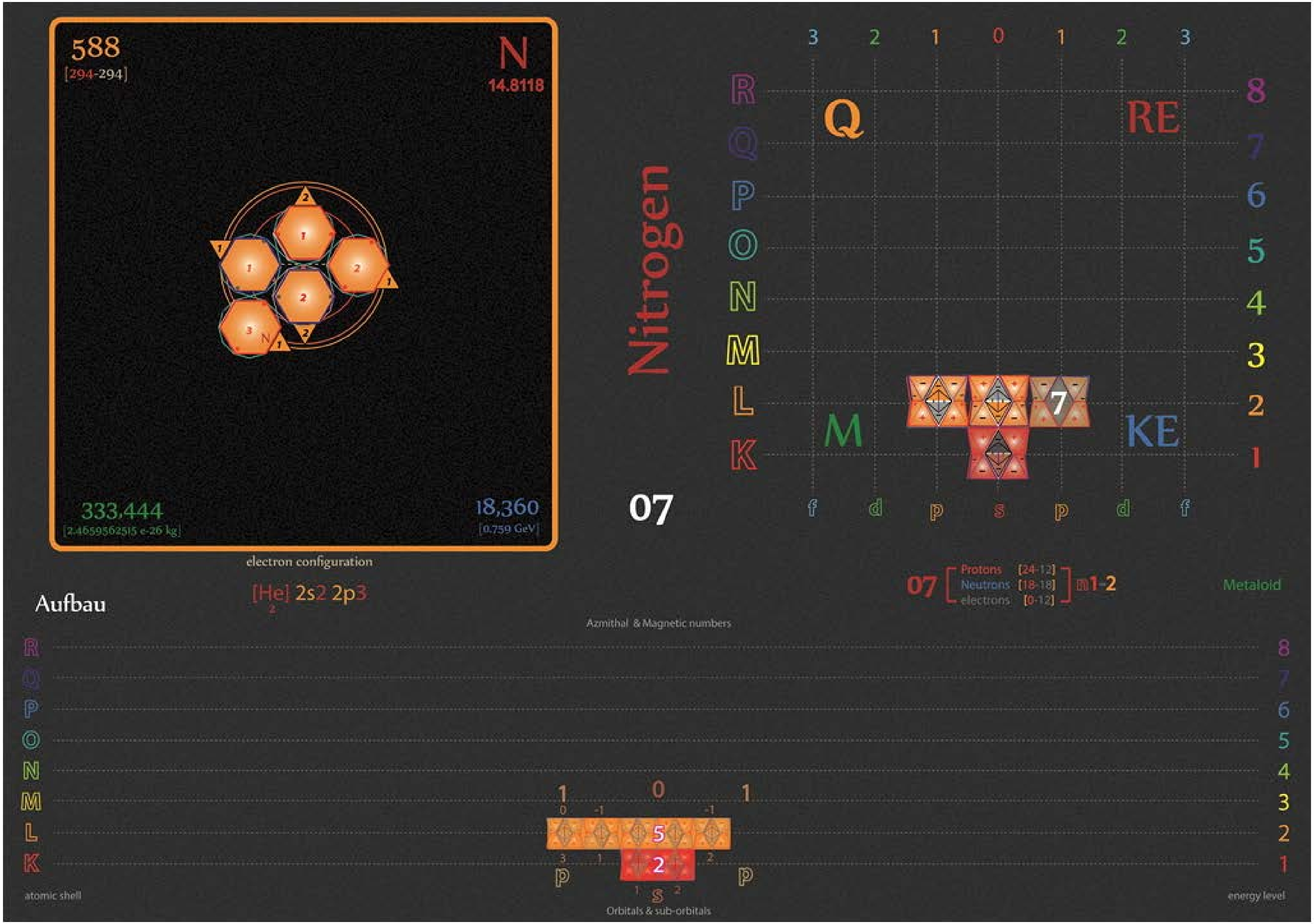
Tetryonics 51.04 - Beryllium atom



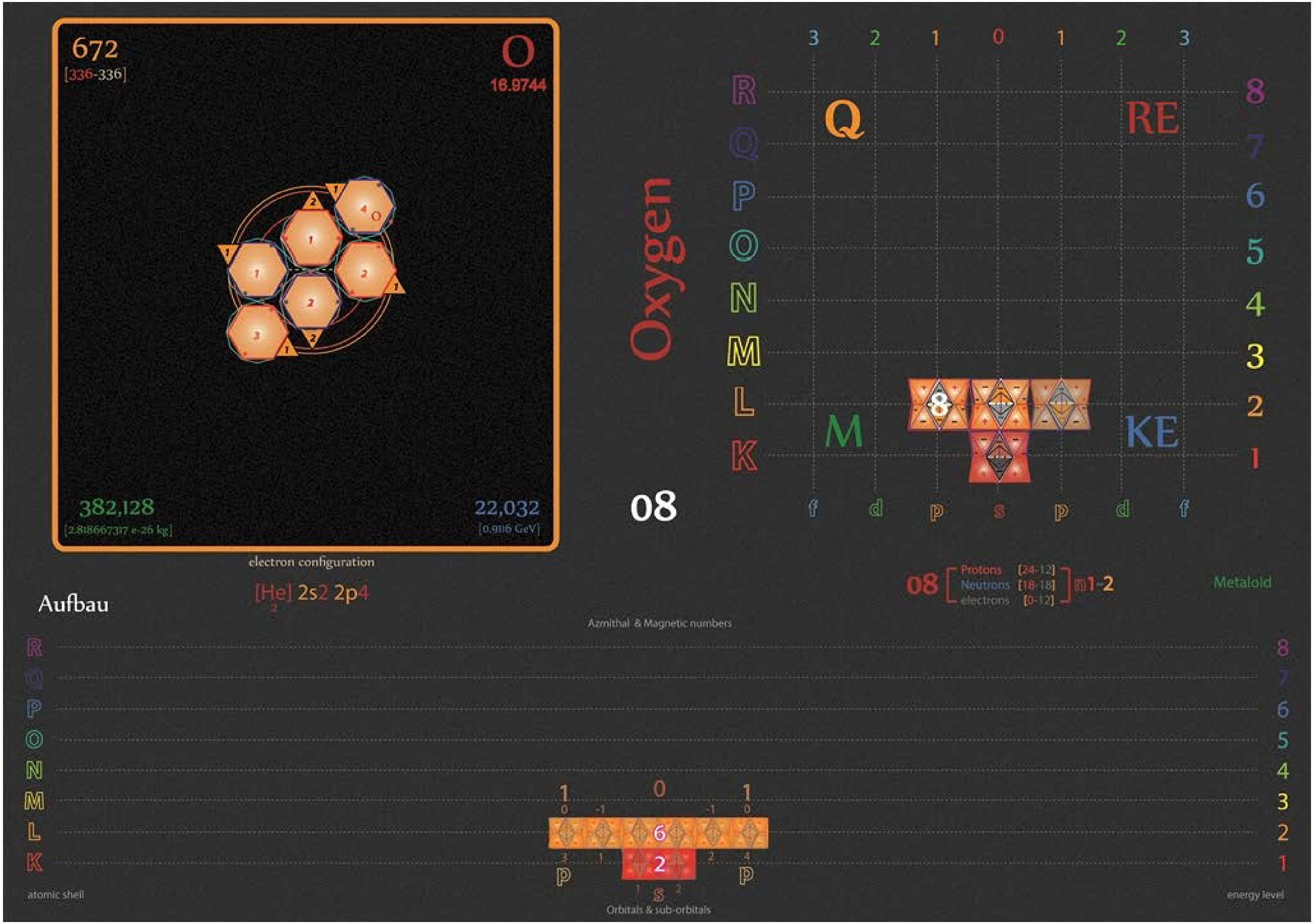
Tetryonics 51.05 - Boron atom



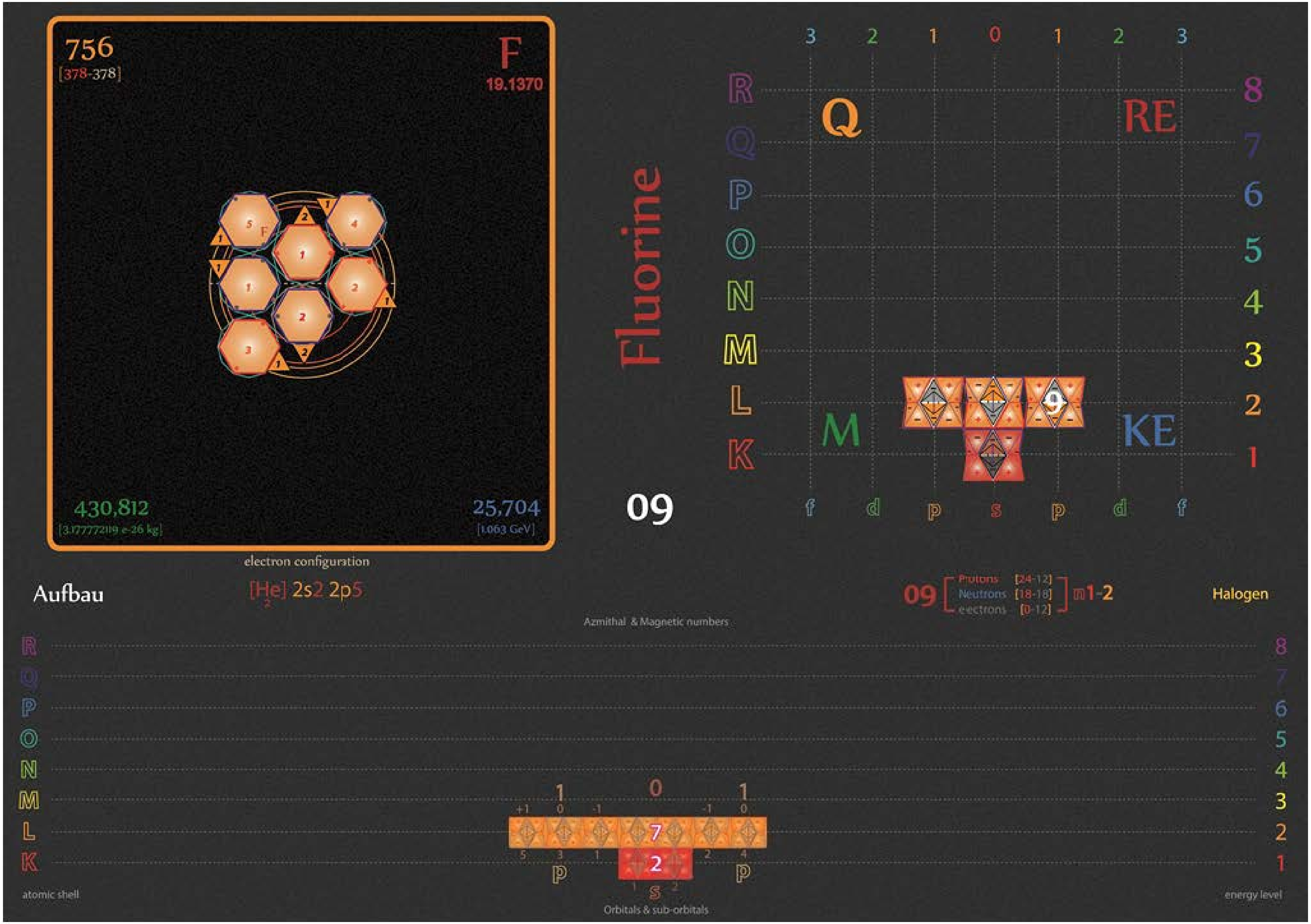
Tetryonics 51.06 - Carbon atom



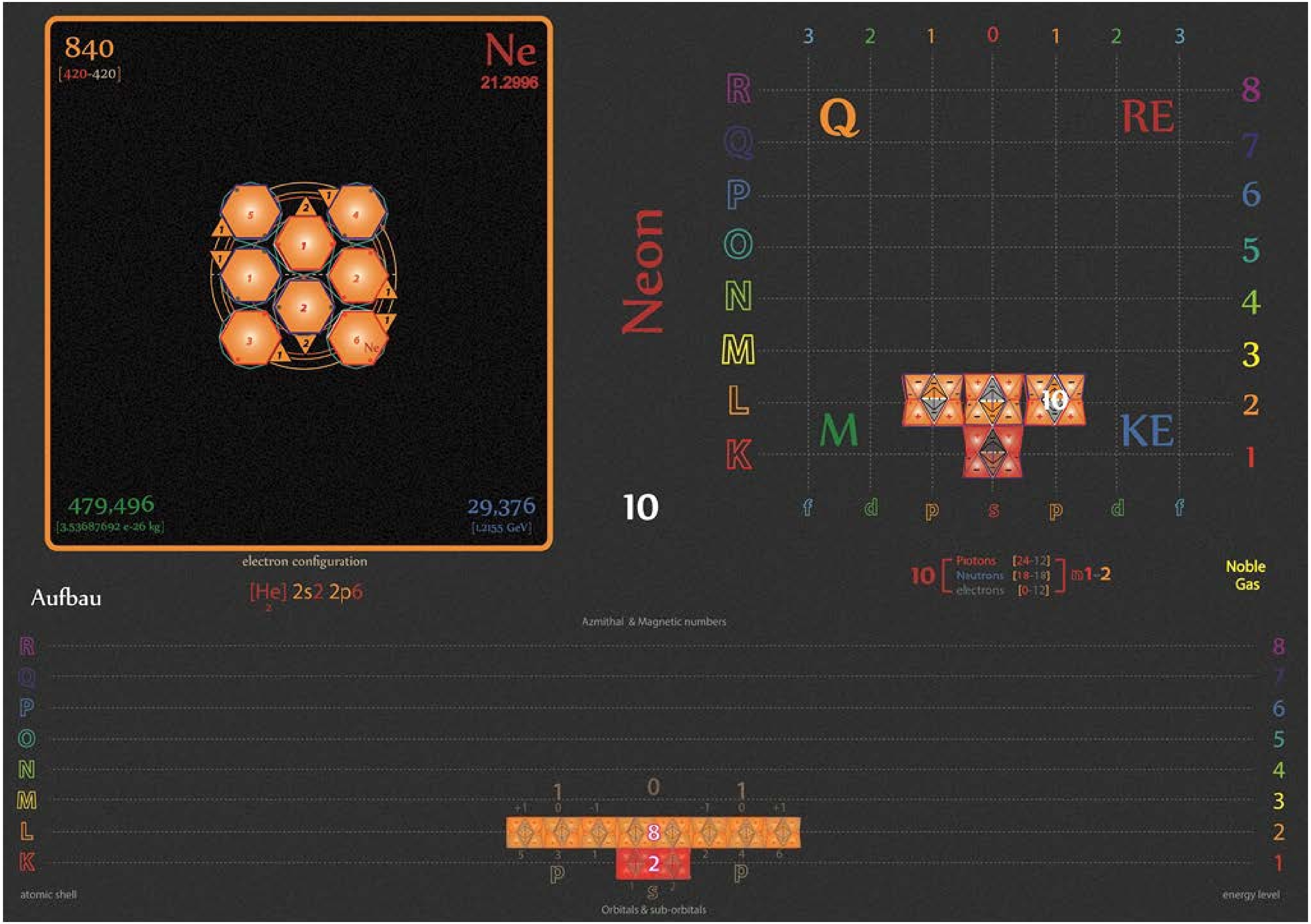
Tetryonics 51.07 - Nitrogen atom



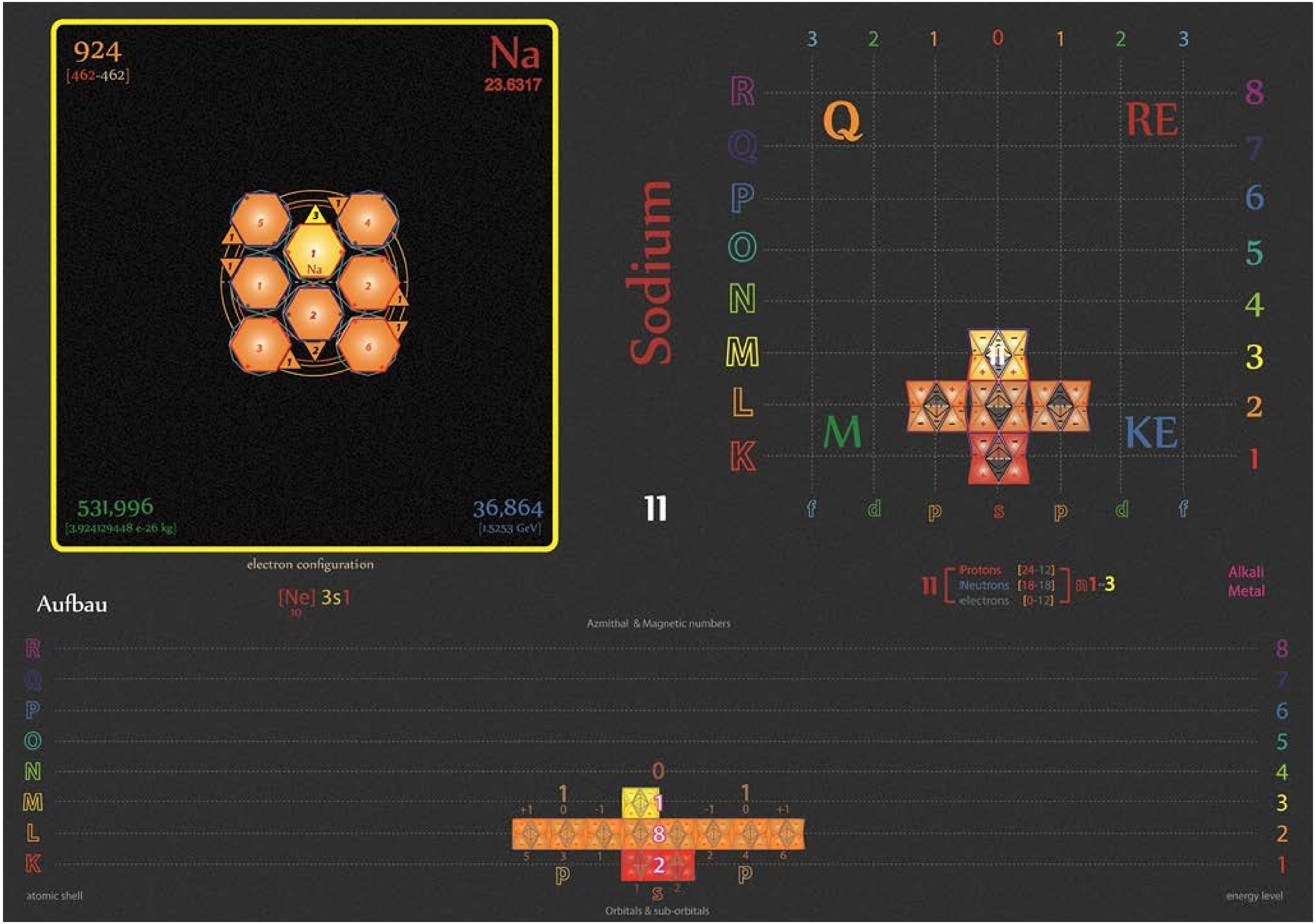
Tetryonics 51.08 - Oxygen atom

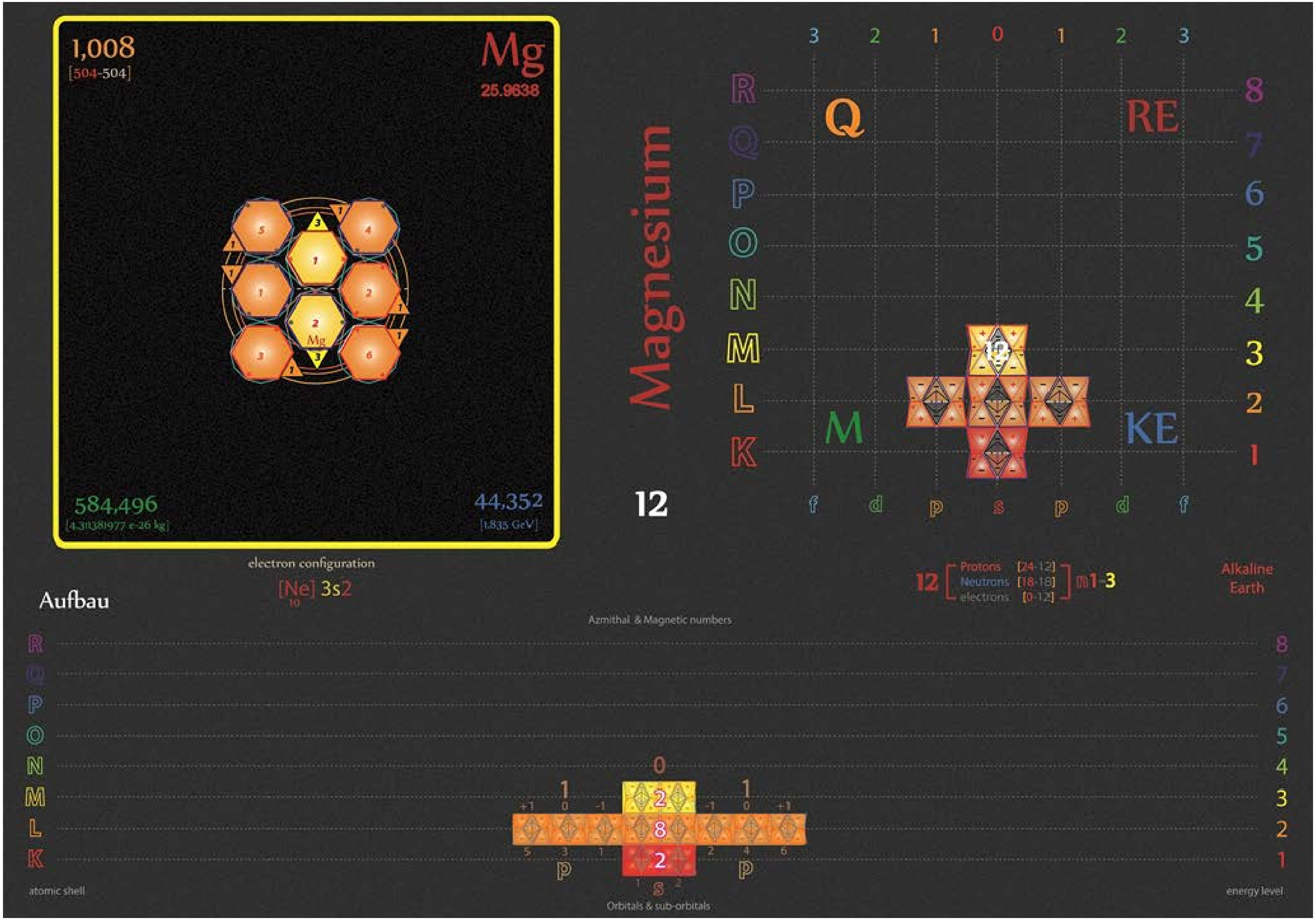


756
[378-378]
F
19.1370
430,812
[3.177772119 e-26 kg]
25,704
[1.063 GeV]
Fluorine
09
R Q P O N M L K
8 7 6 5 4 3 2 1
3 2 1 0 1 2 3
f d p s p d f
Q
RE
M
KE
electron configuration
Aufbau
[He] 2s2 2p5
09
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-2
Halogen
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

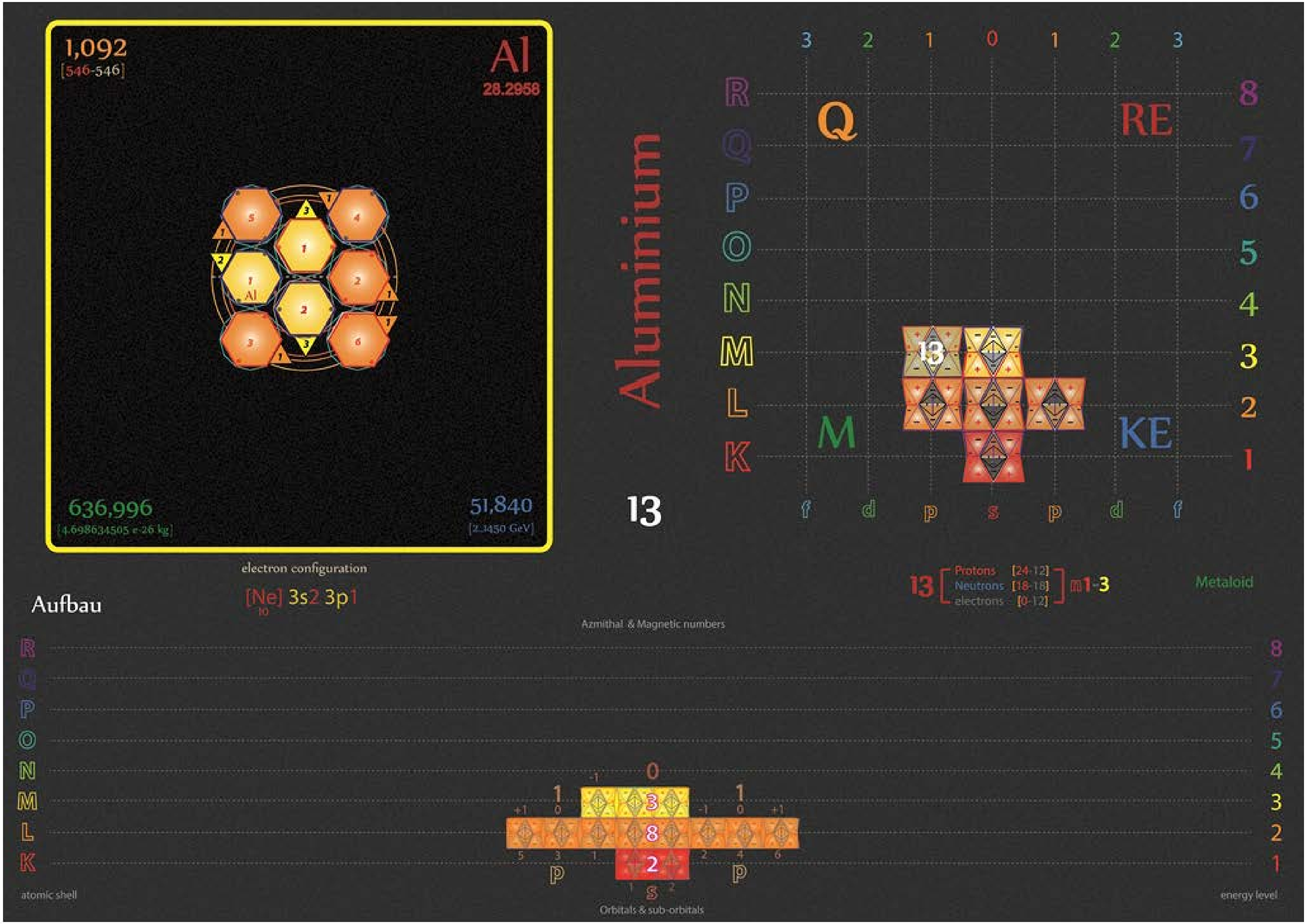


Tetryonics 51.10 - Neon atom

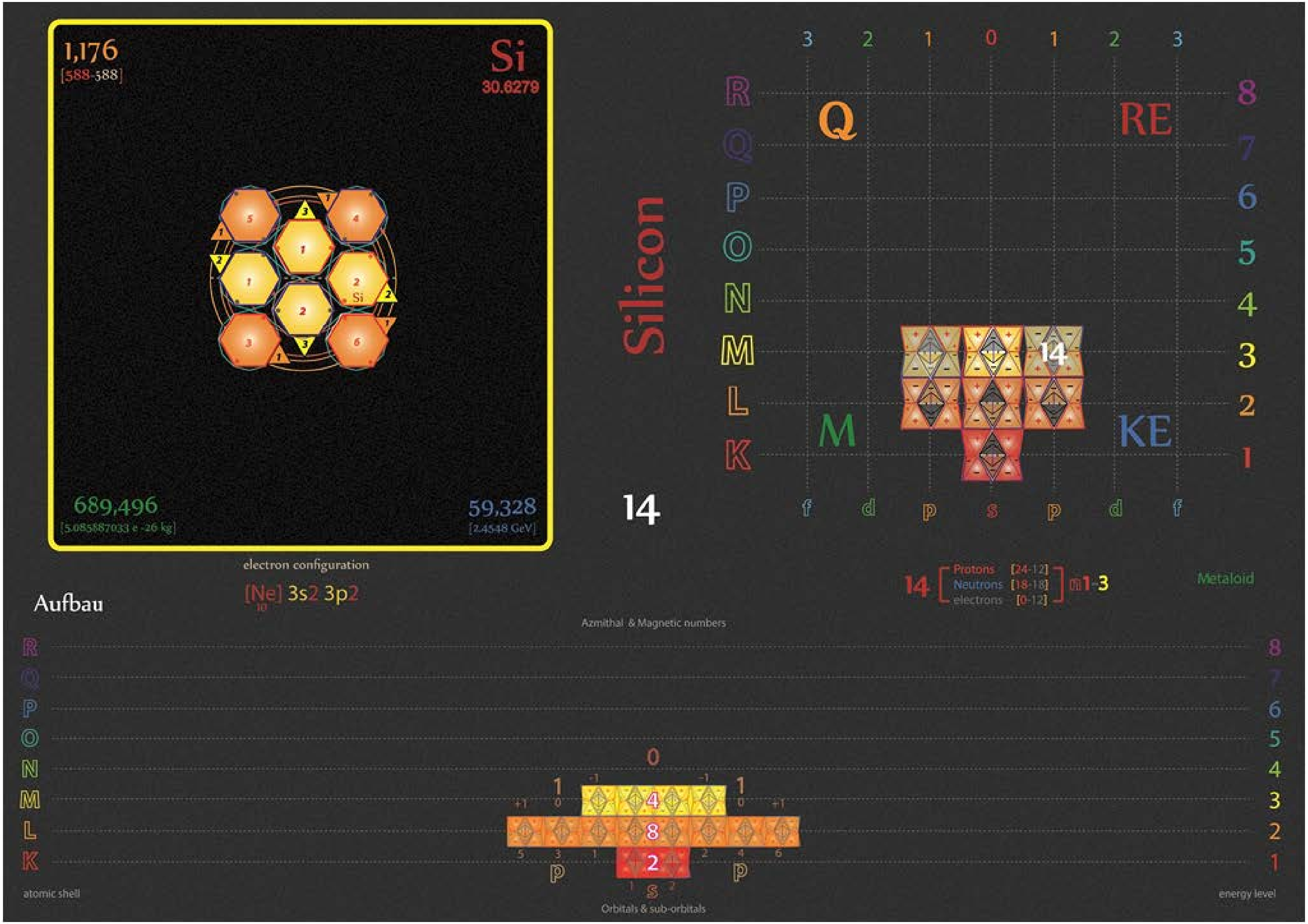

924
[462-462]
Na
23.6317
531,996
[3.924129448 e-26 kg]
36,864
[15253 GeV]
Sodium
11
electron configuration
Aufbau
[Ne] 3s1
3 2 1 0 1 2 3
R Q P O N M L K
8 7 6 5 4 3 2 1
Q
RE
M
KE
f d p s p d f
11 [Protons [24-12] Neutrons [18-18] electrons [0-12]] n1-3
Alkali Metal
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals



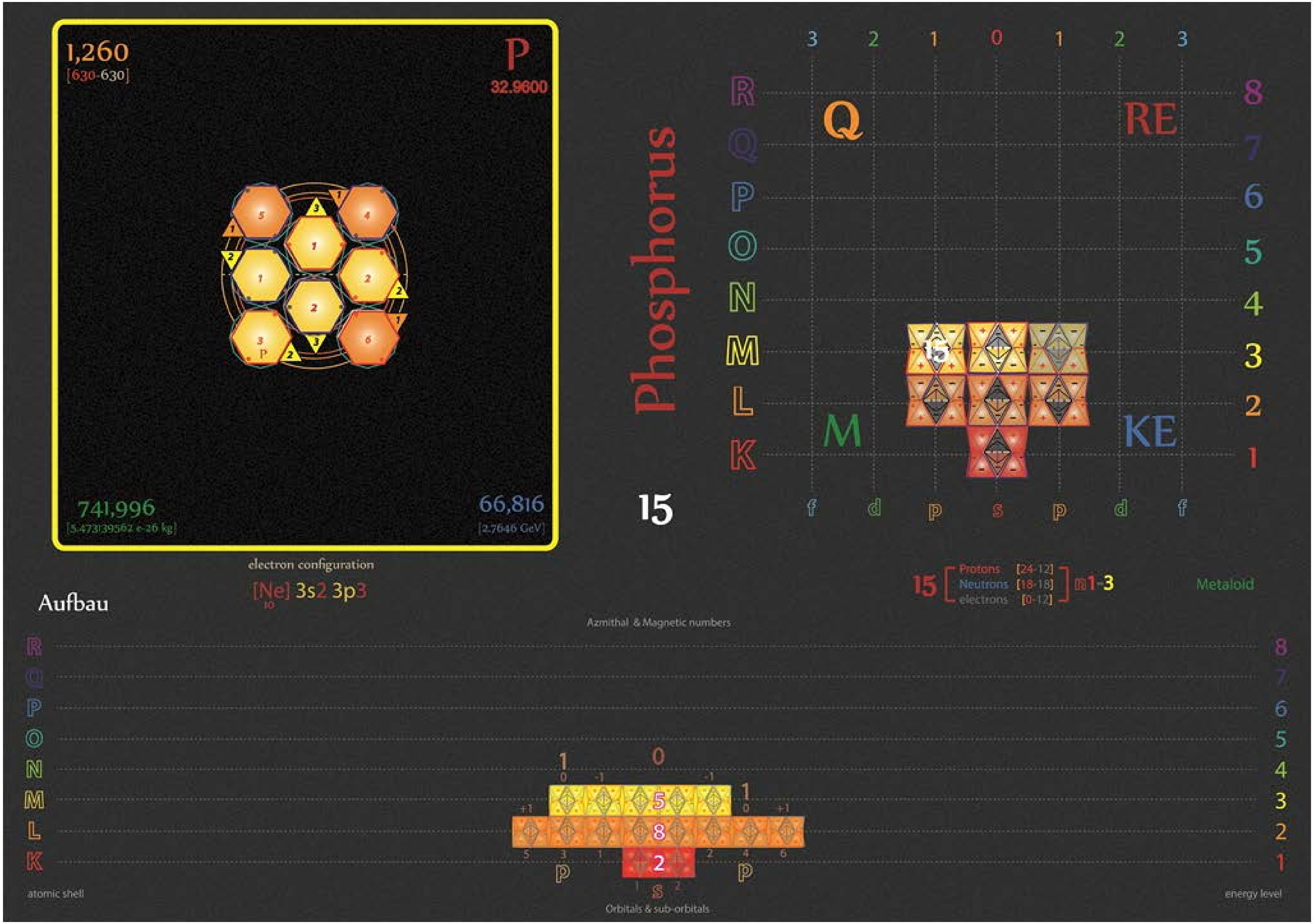
Tetryonics 51.12 - Magnesium atom

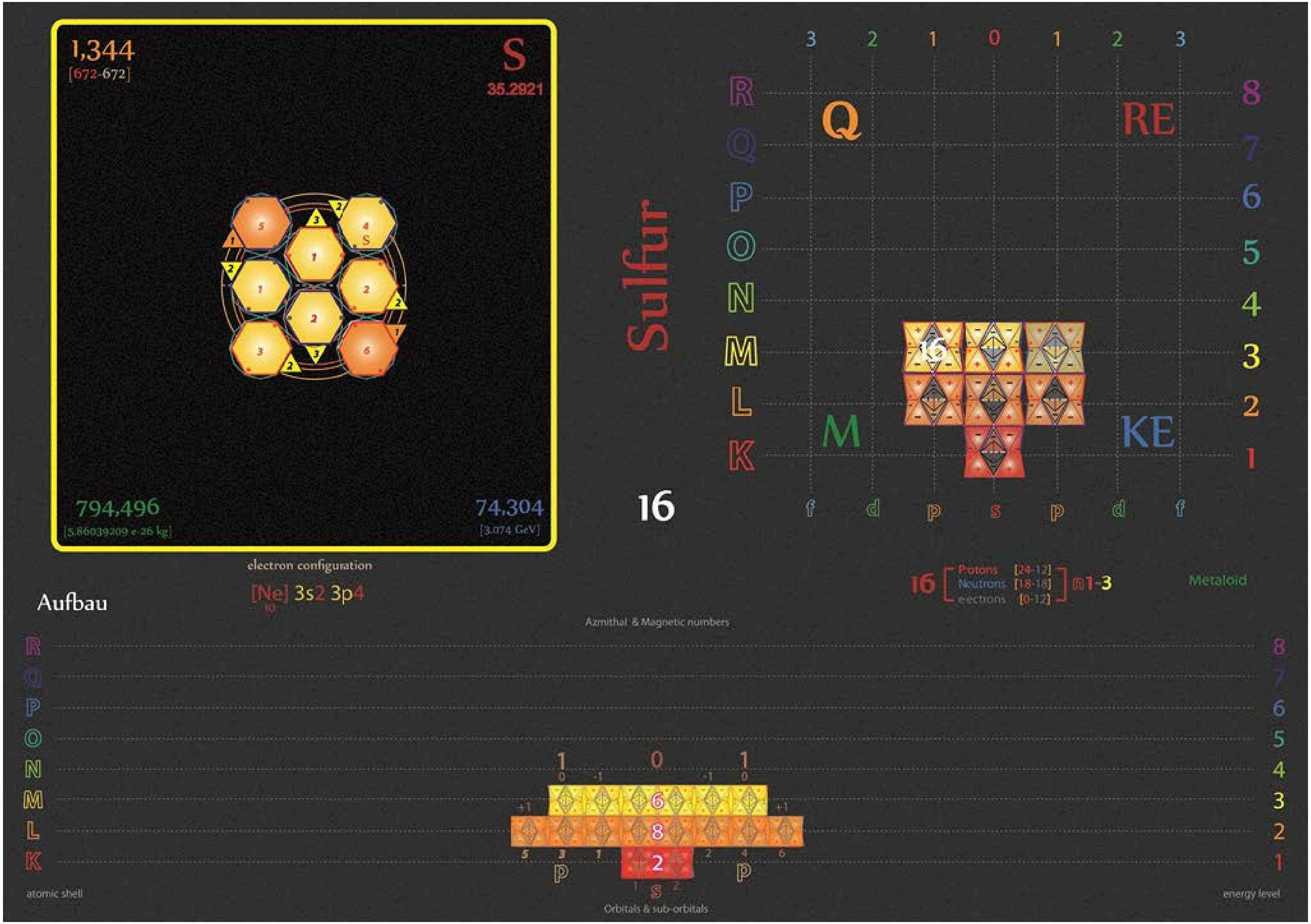


Tetryonics 51.13 - Aluminium atom

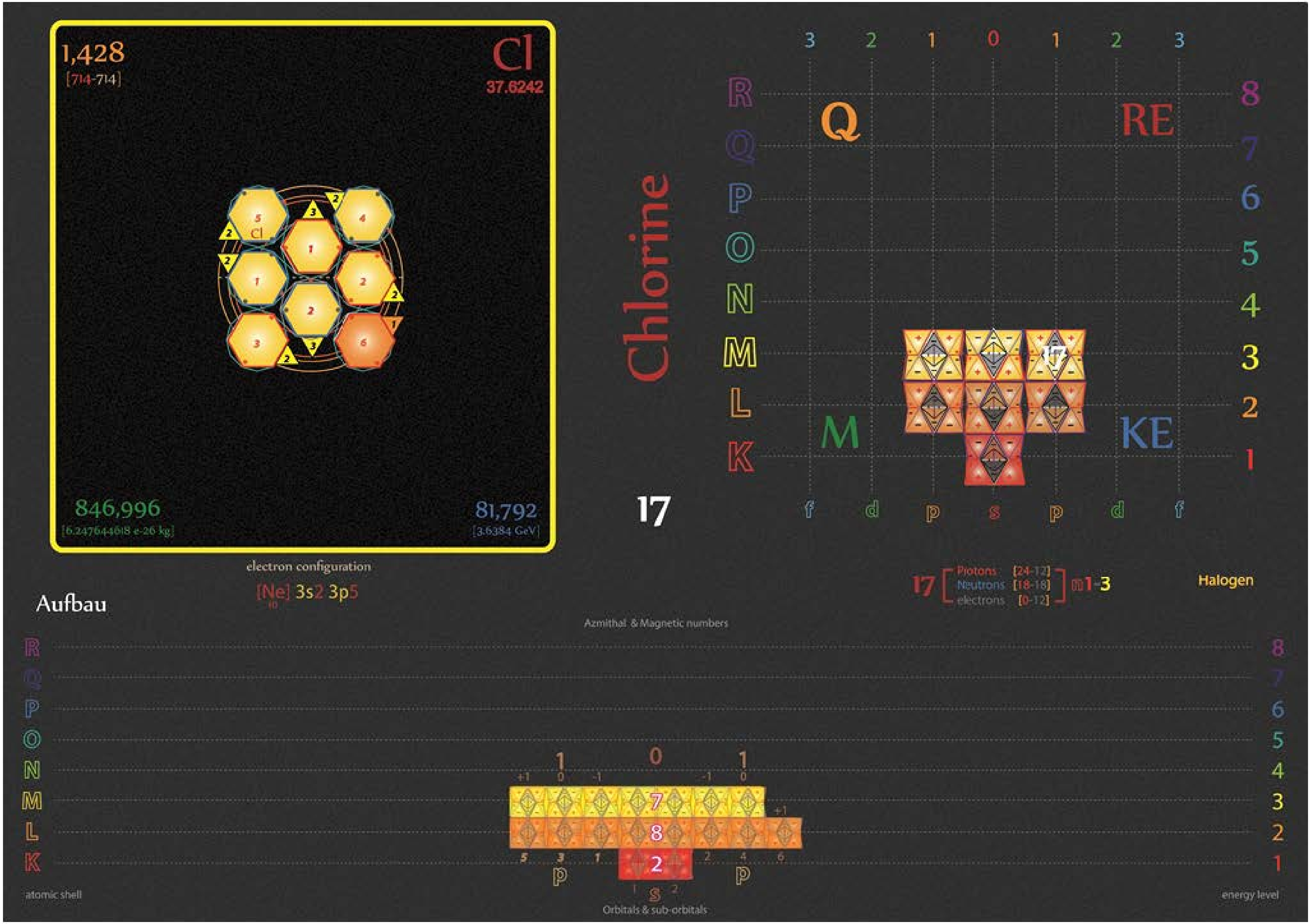


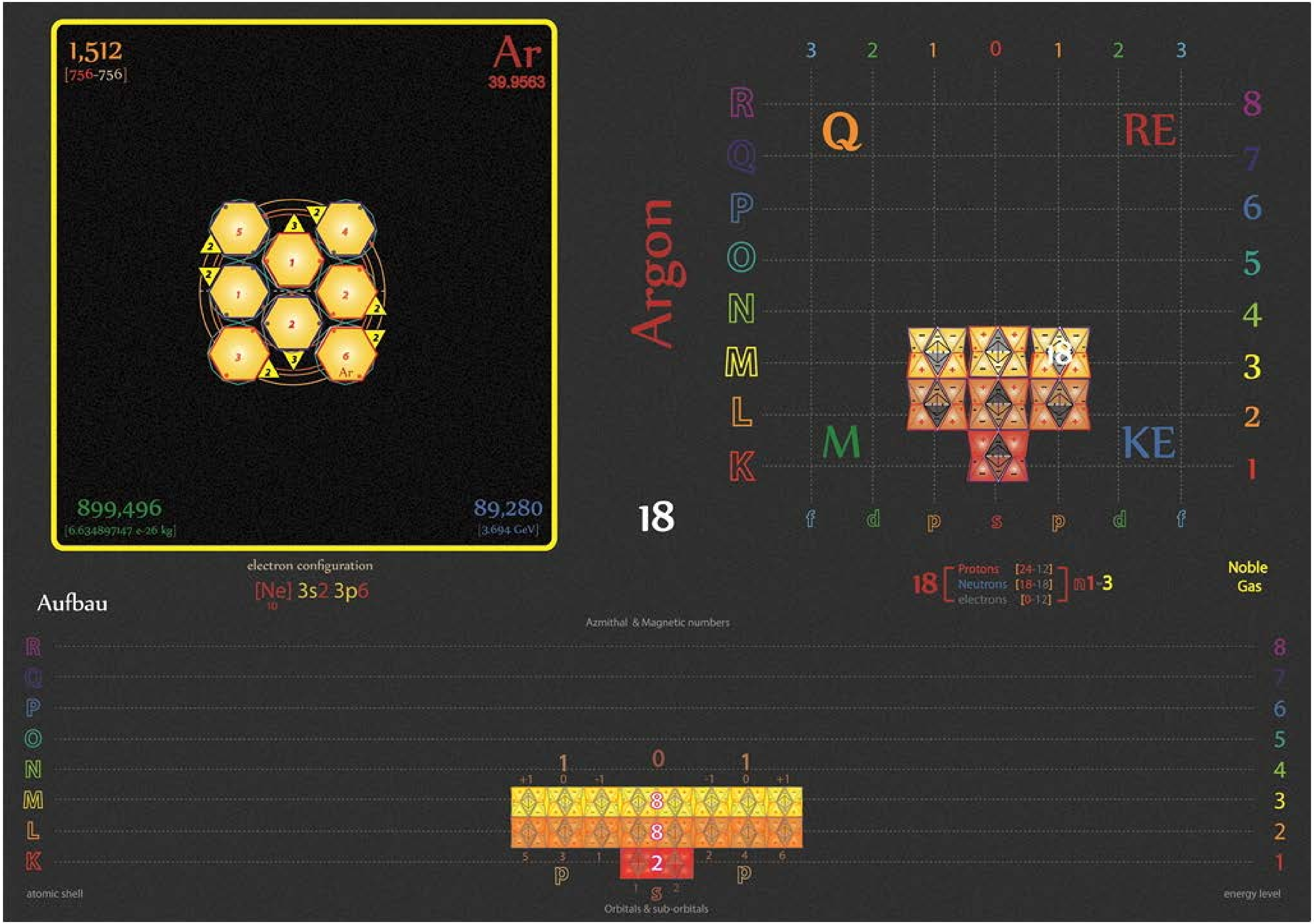
Tetryonics 51.14 - Silicon atom


1,260
[630-630]
P
32.9600
741,996
[5.473139562 e-26 kg]
66,816
[2.7646 GeV]
Phosphorus
15
electron configuration
[Ne] 3s2 3p3
10
Aufbau
15 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-3
Metaloid
Q
RE
M
KE
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

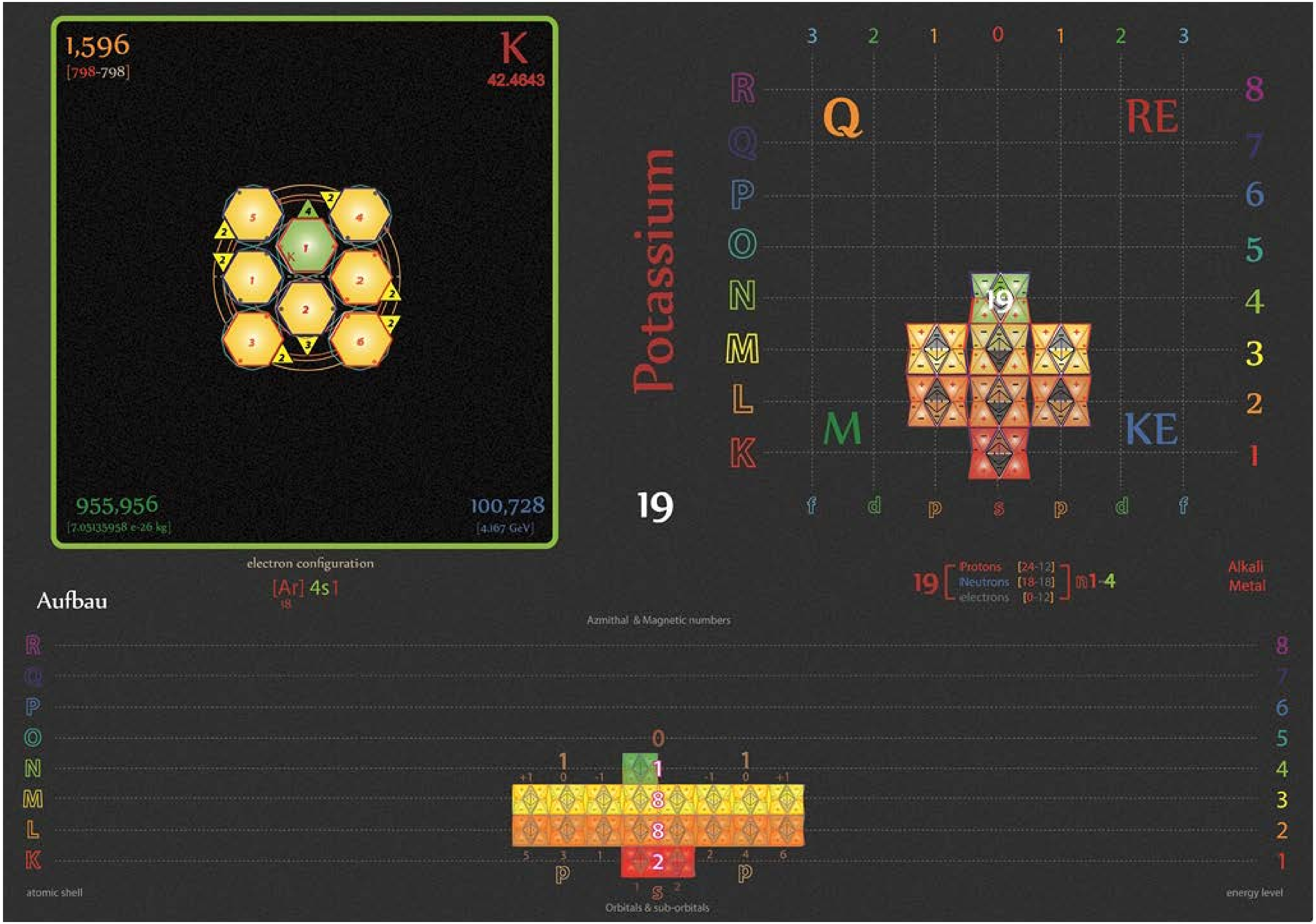


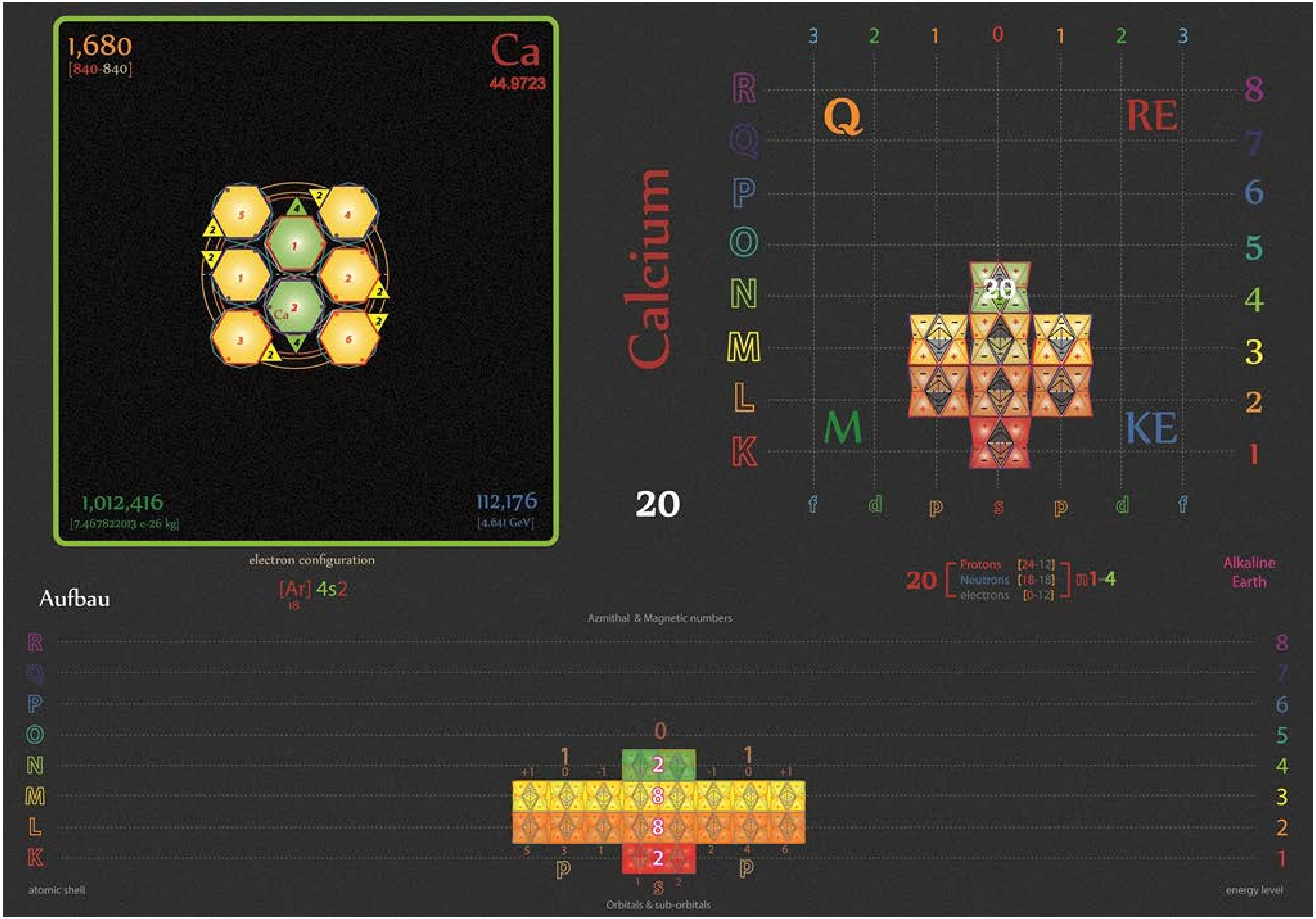
1,344
[672-672]
S
35.2921
794,496
[5.86039209 e-26 kg]
74,304
[3.074 GeV]
Sulfur
16
electron configuration
[Ne] 3s2 3p4
Aufbau
Q
RE
M
KE
Azmithal & Magnetic numbers
16 Potons [24-12] Neutrons [18-18] electrons [0-12] n1-3
Metaloid
atomic shell
energy level
Orbitals & sub-orbitals


1,428
[714-714]
Cl
37.6242
846,996
[6.247644618 e-26 kg]
81,792
[3.6384 GeV]
Chlorine
17
R Q P O N M L K
8 7 6 5 4 3 2 1
3 2 1 0 1 2 3
Q
RE
M
KE
f d p s p d f
electron configuration
[Ne] 3s2 3p5
Aufbau
Azmithal & Magnetic numbers
17 Protons [24-12] Neutrons [18-18] electrons [0-12] m1-3
Halogen
7
8
2
atomic shell
energy level
Orbitals & sub-orbitals

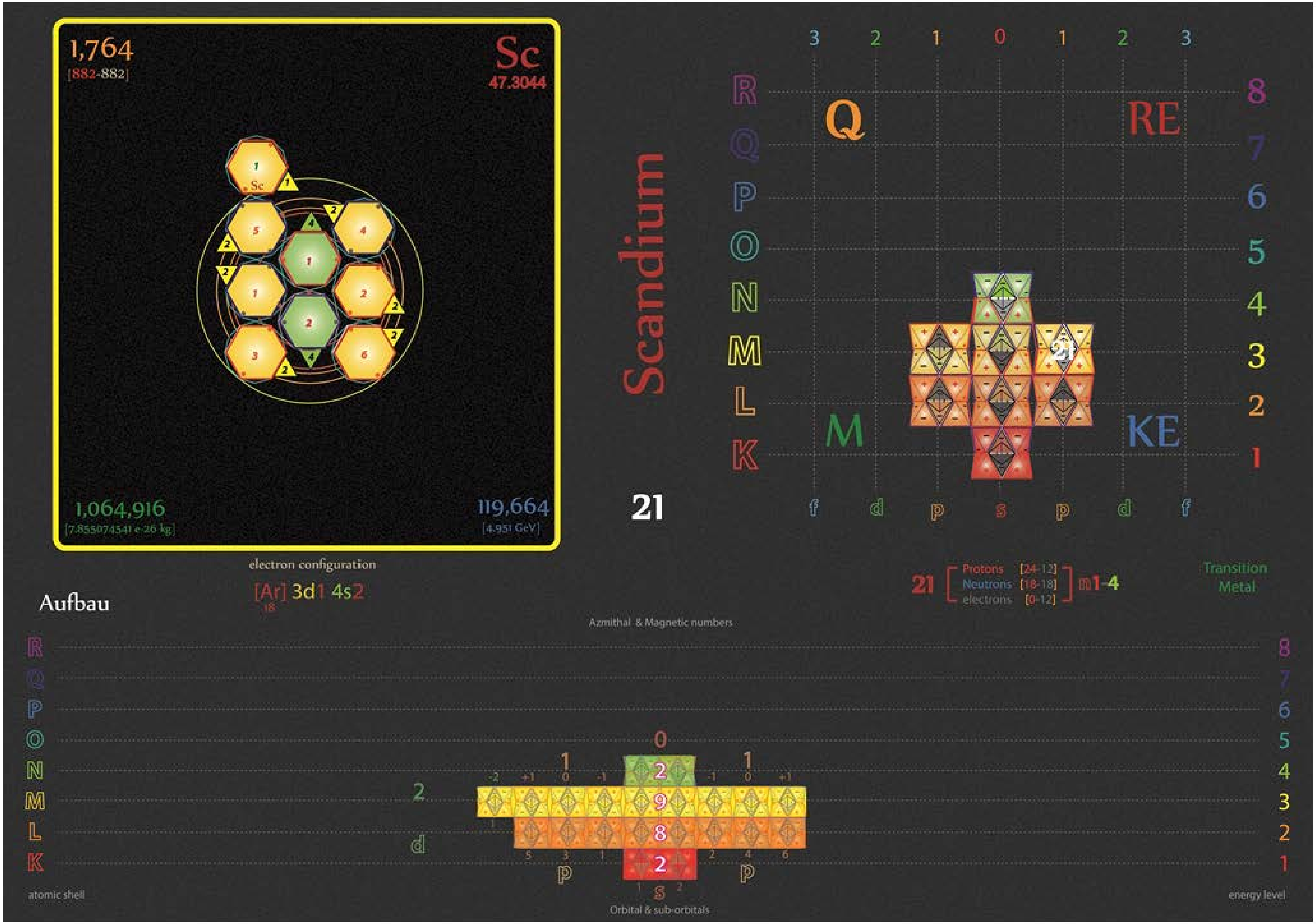


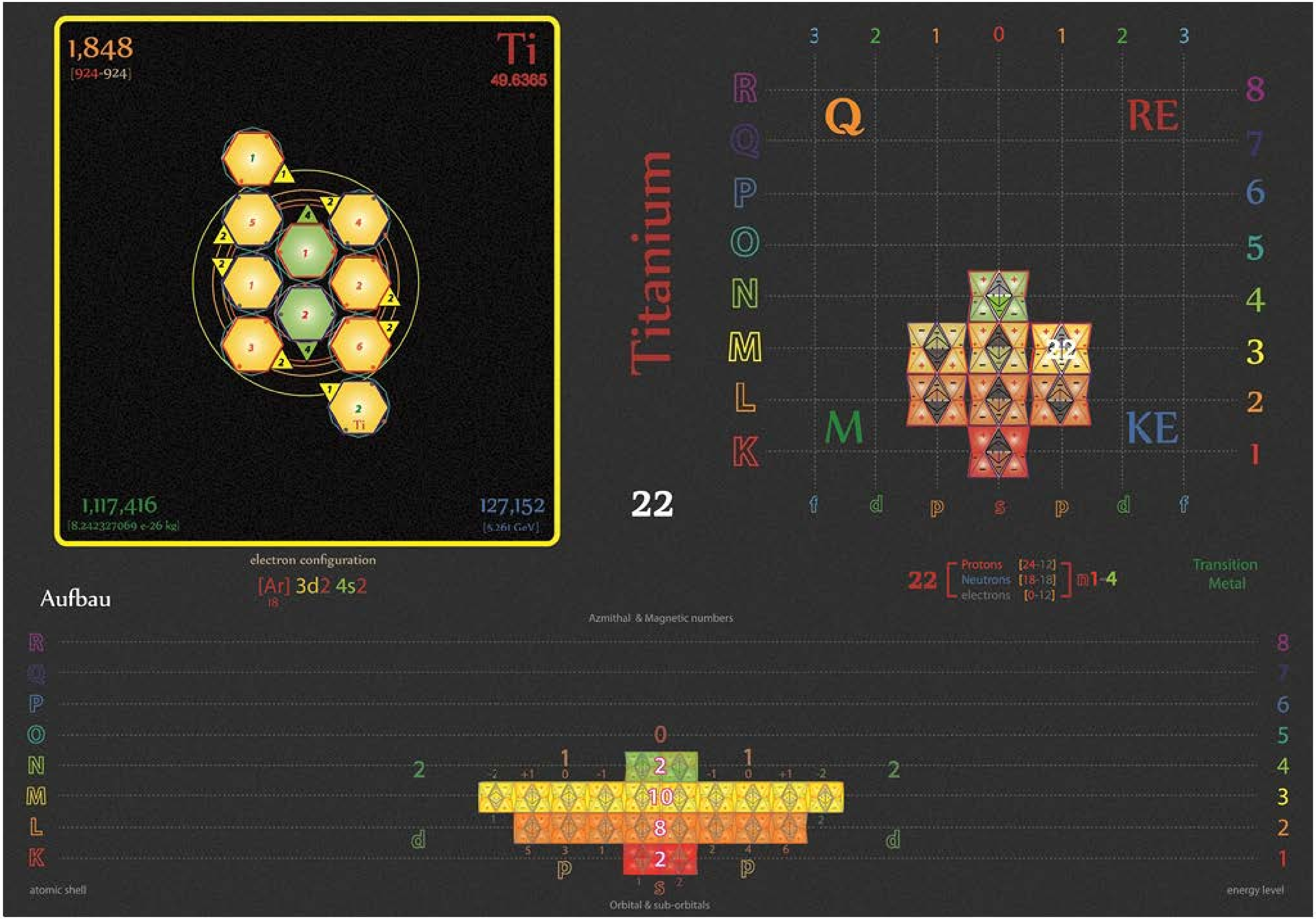
1,512
[756-756]
Ar
39.9563
Argon
18
899,496
[6.634897147 e-26 kg]
89,280
[3.694 GeV]
3 2 1 0 1 2 3
R Q P O N M L K
8 7 6 5 4 3 2 1
Q
RE
M
KE
f d p s p d f
electron configuration
[Ne] 3s2 3p6
18 [Protons [24-12] Neutrons [18-18] electrons [0-12]] n1-3
Noble Gas
Aufbau
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals


1,596
[798-798]
K
42.4643
955,956
[7.05135958 e-26 kg]
100,728
[4.167 GeV]
Potassium
19
electron configuration
[Ar] 4s1
Aufbau
Q
RE
M
KE
19 [Protons [24-12] Neutrons [18-18] electrons [0-12]] n1-4
Alkali Metal
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

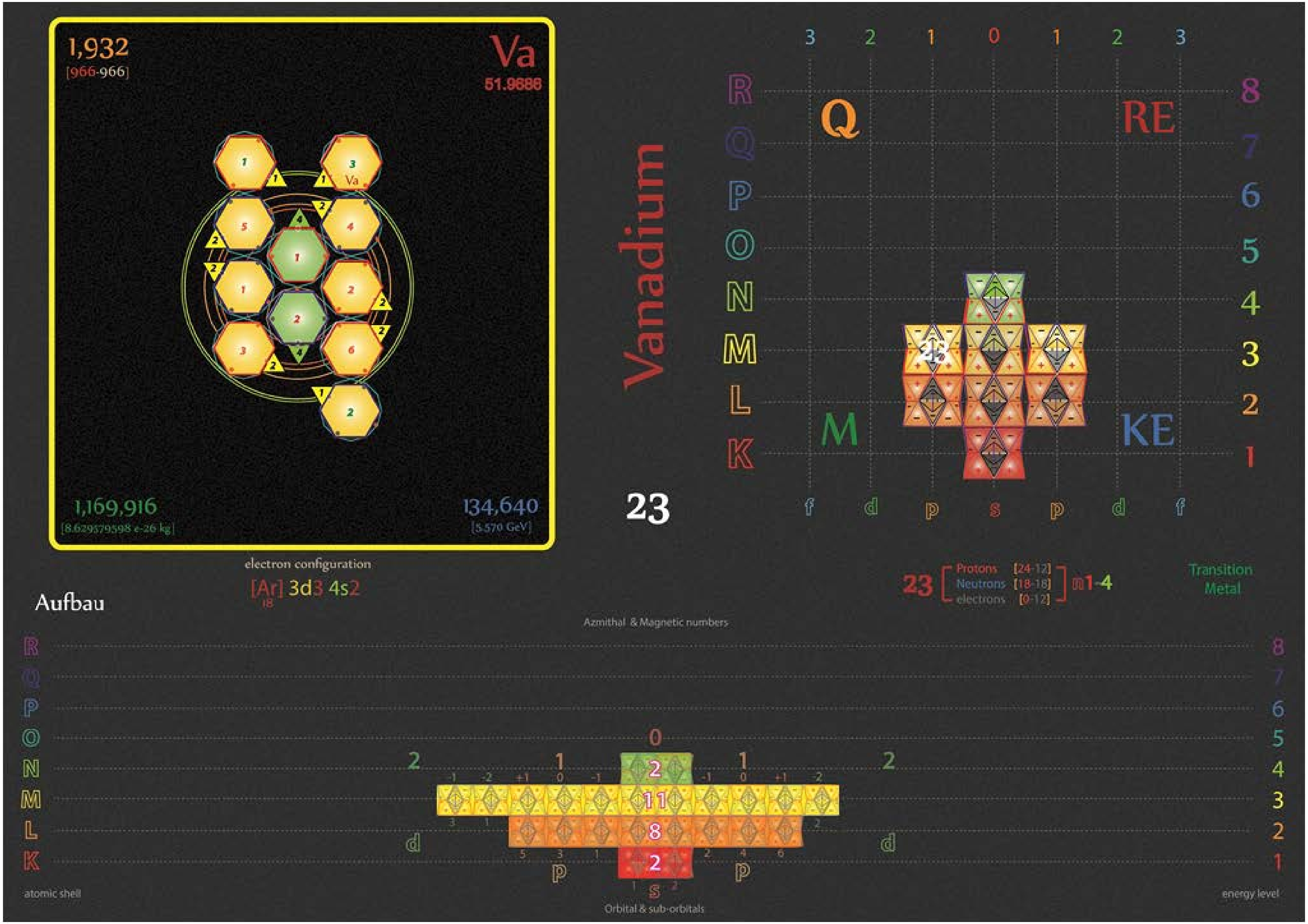


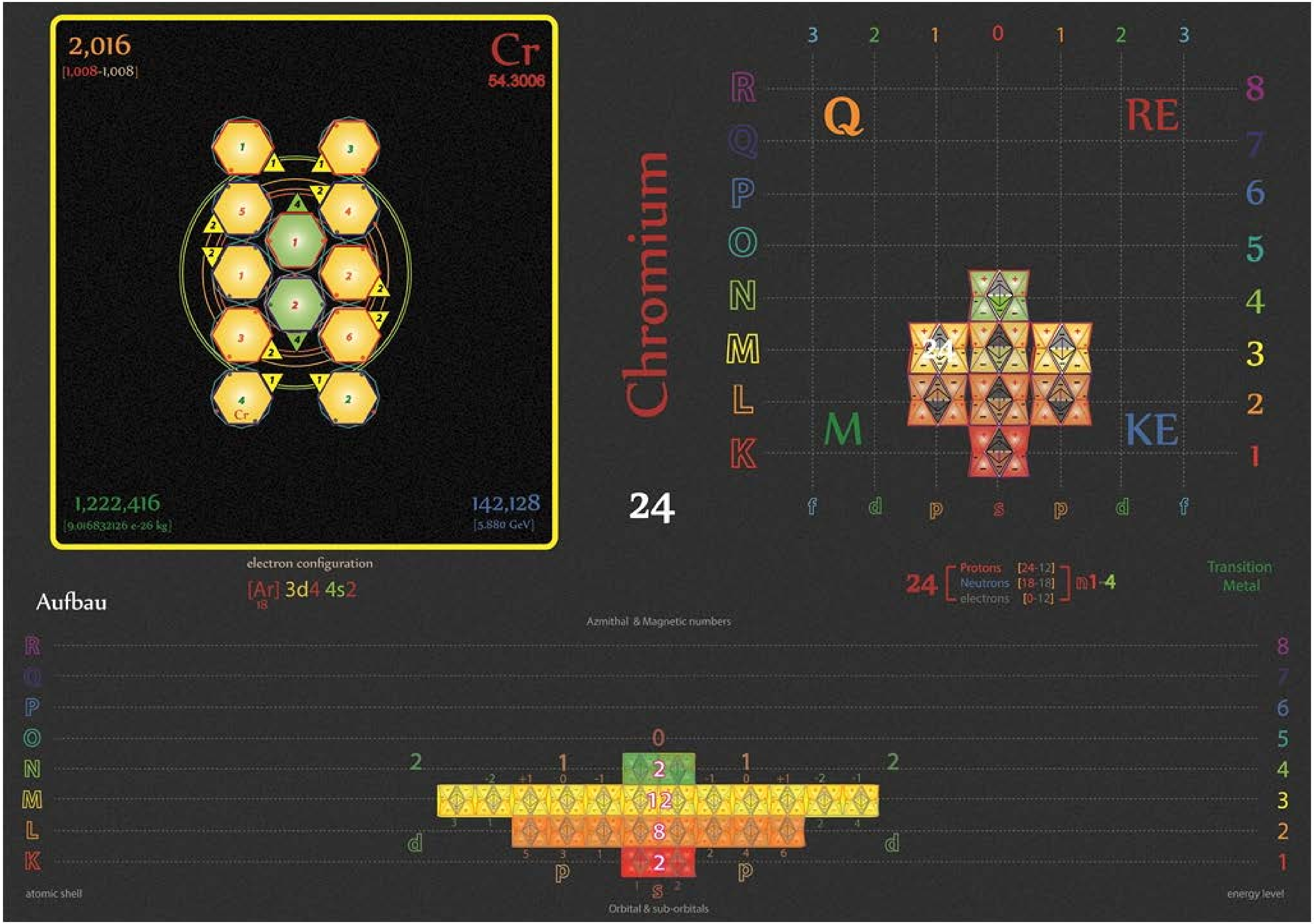
Tetryonics 51.20 - Calcium atom


1,764
[882-882]
Sc
47.3044
1,064,916
[7.855074541 e-26 kg]
119,664
[4.951 GeV]
Scandium
21
electron configuration
[Ar] 3d1 4s2
Aufbau
R Q P O N M L K
8 7 6 5 4 3 2 1
Q
RE
M
KE
f d p s p d f
21 Protons [24-12] Neutrons [18-18] electrons [0-12] m1-4
Transition Metal
Azmithal & Magnetic numbers
atomic shell
energy level
Orbital & sub-orbitals

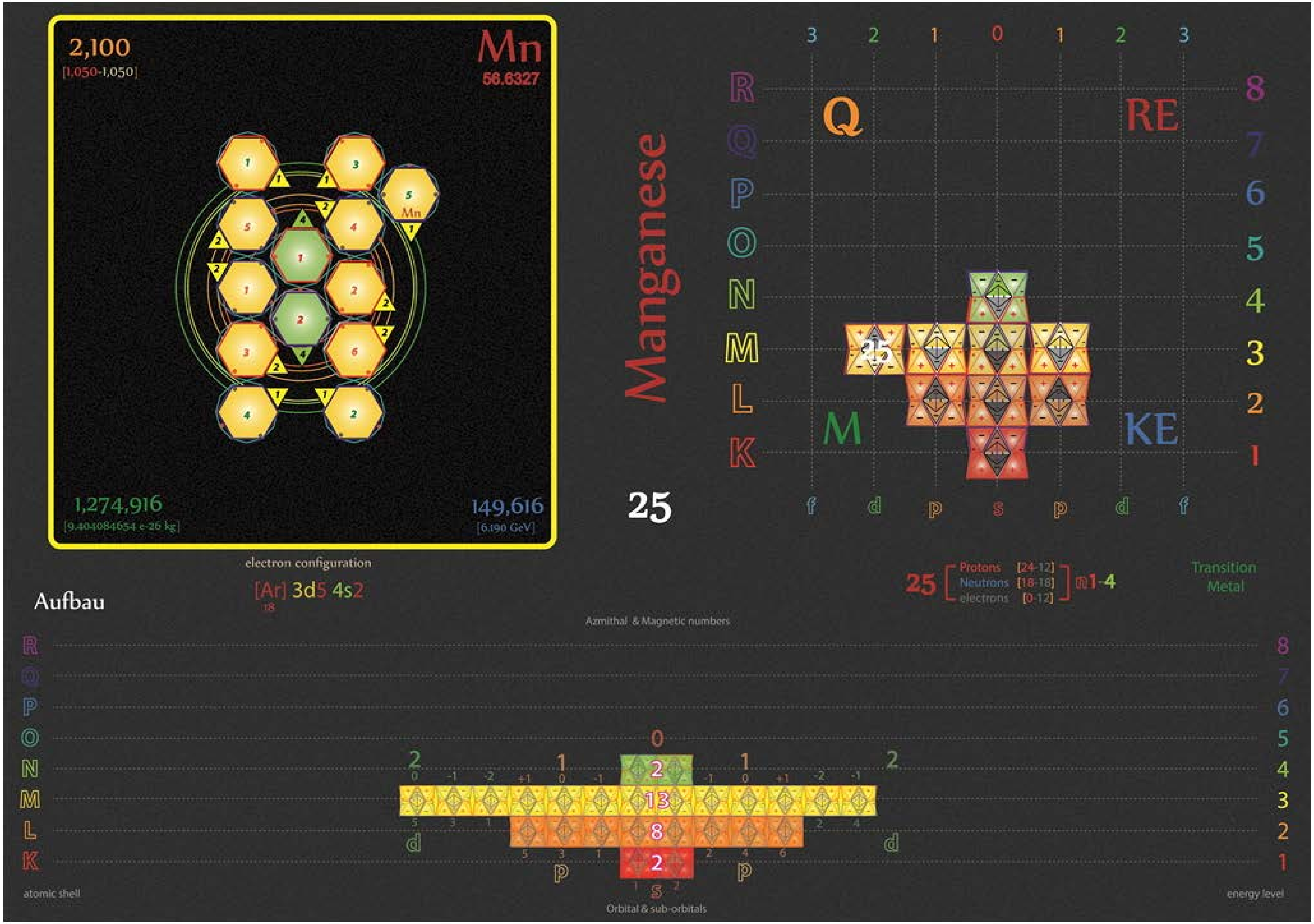


Tetryonics 51.22 - Titanium atom

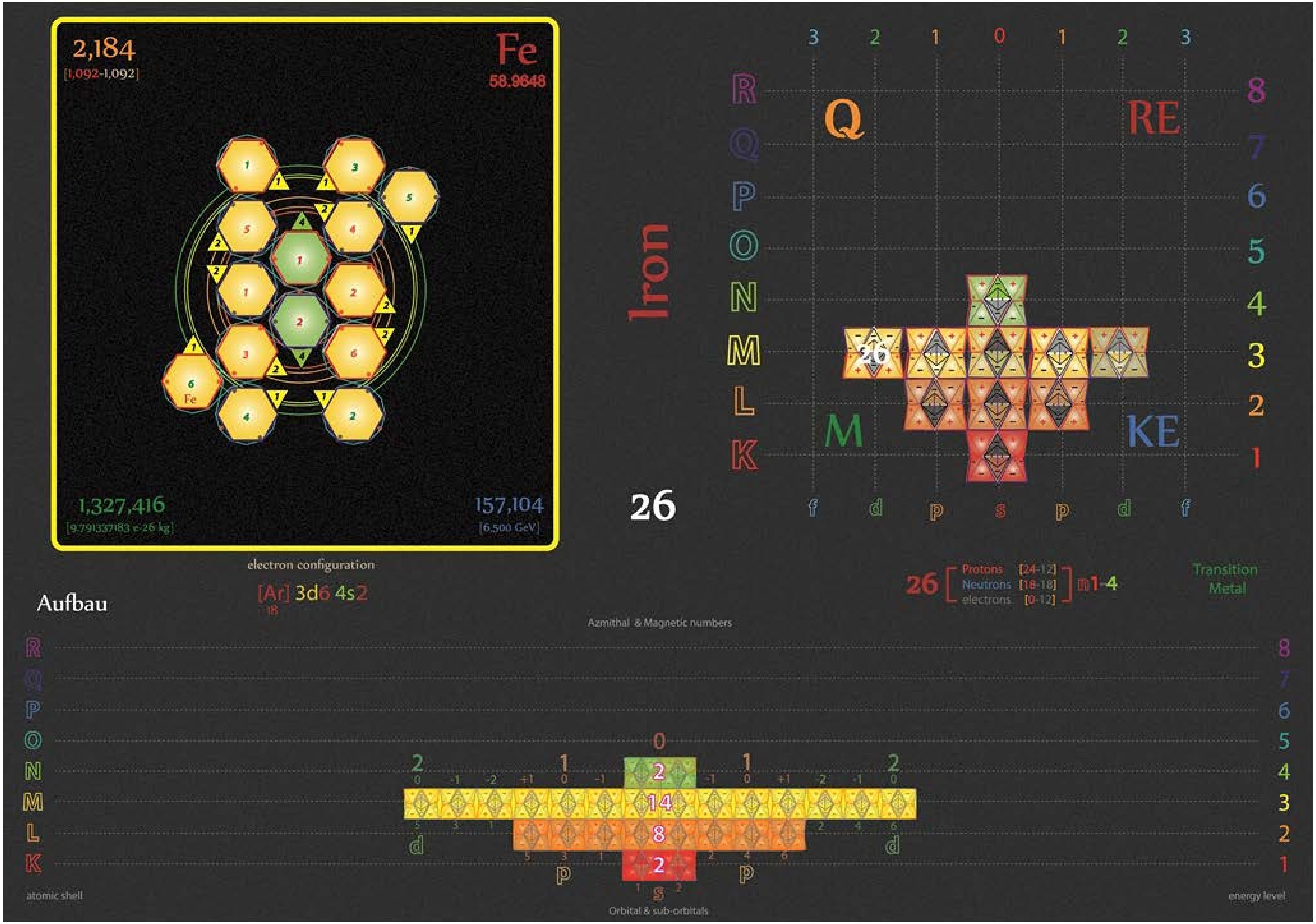

1,932
[966-966]
Va
51.9888
1,169,916
[8.629579598 e-26 kg]
134,640
[5.570 GeV]
Vanadium
23
R Q P O N M L K
8 7 6 5 4 3 2 1
Q
RE
M
KE
f d p s p d f
electron configuration
[Ar] 3d3 4s2
Aufbau
23
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
n1-4
Transition Metal
Azmithal & Magnetic numbers
atomic shell
energy level
Orbital & sub-orbitals



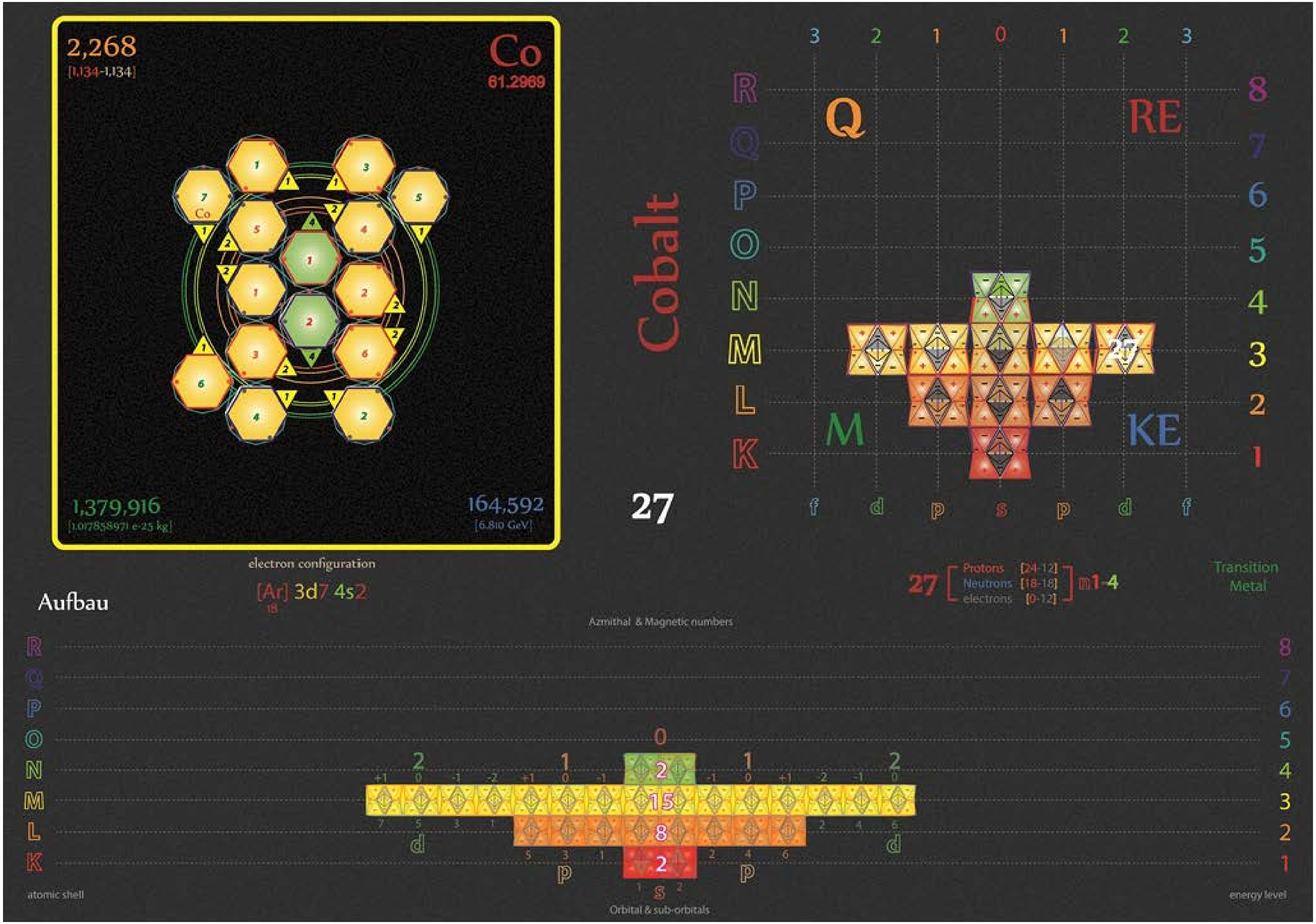
Tetryonics 51.24 - Chromium atom



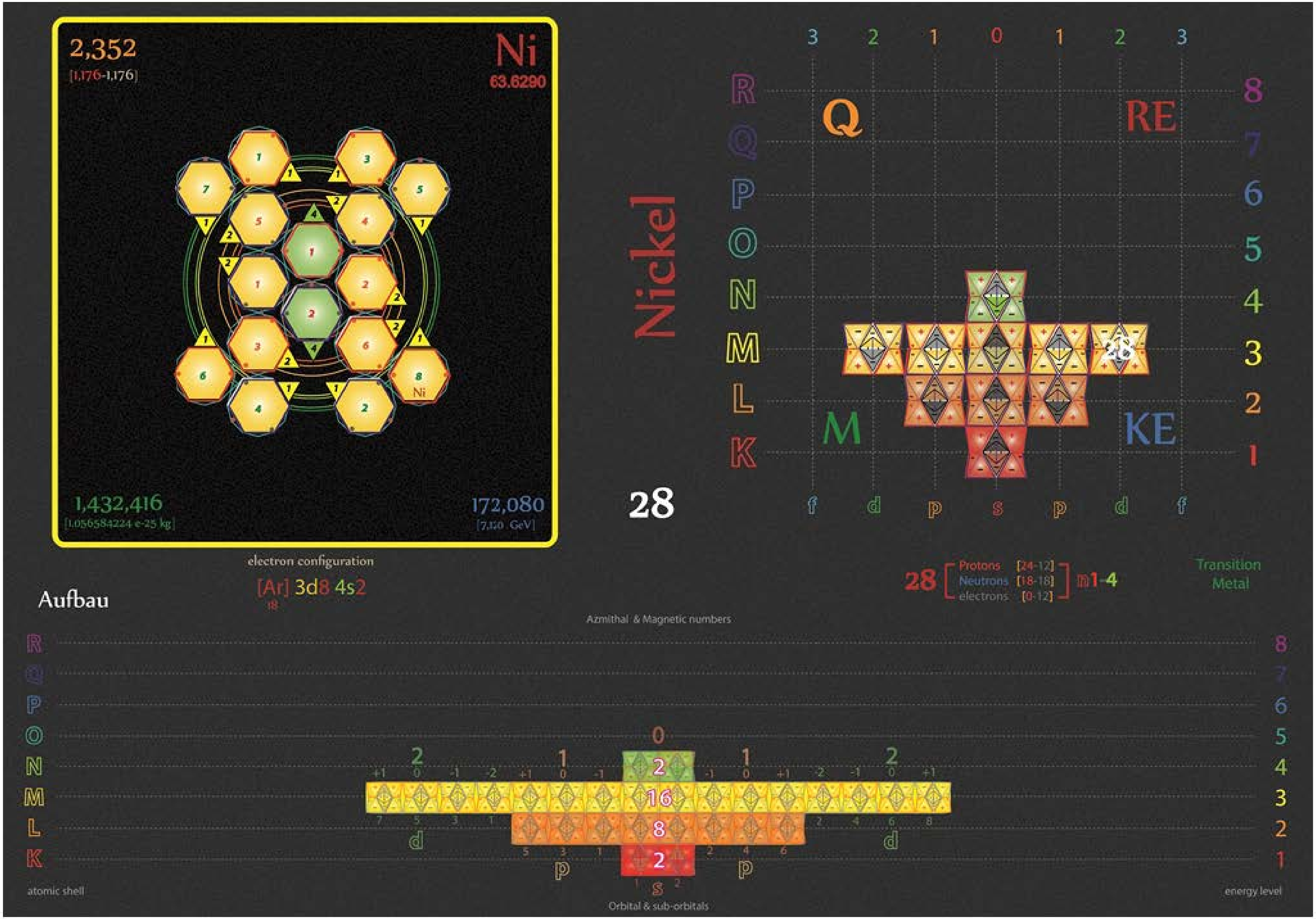
Tetryonics 51.25 - Manganese atom

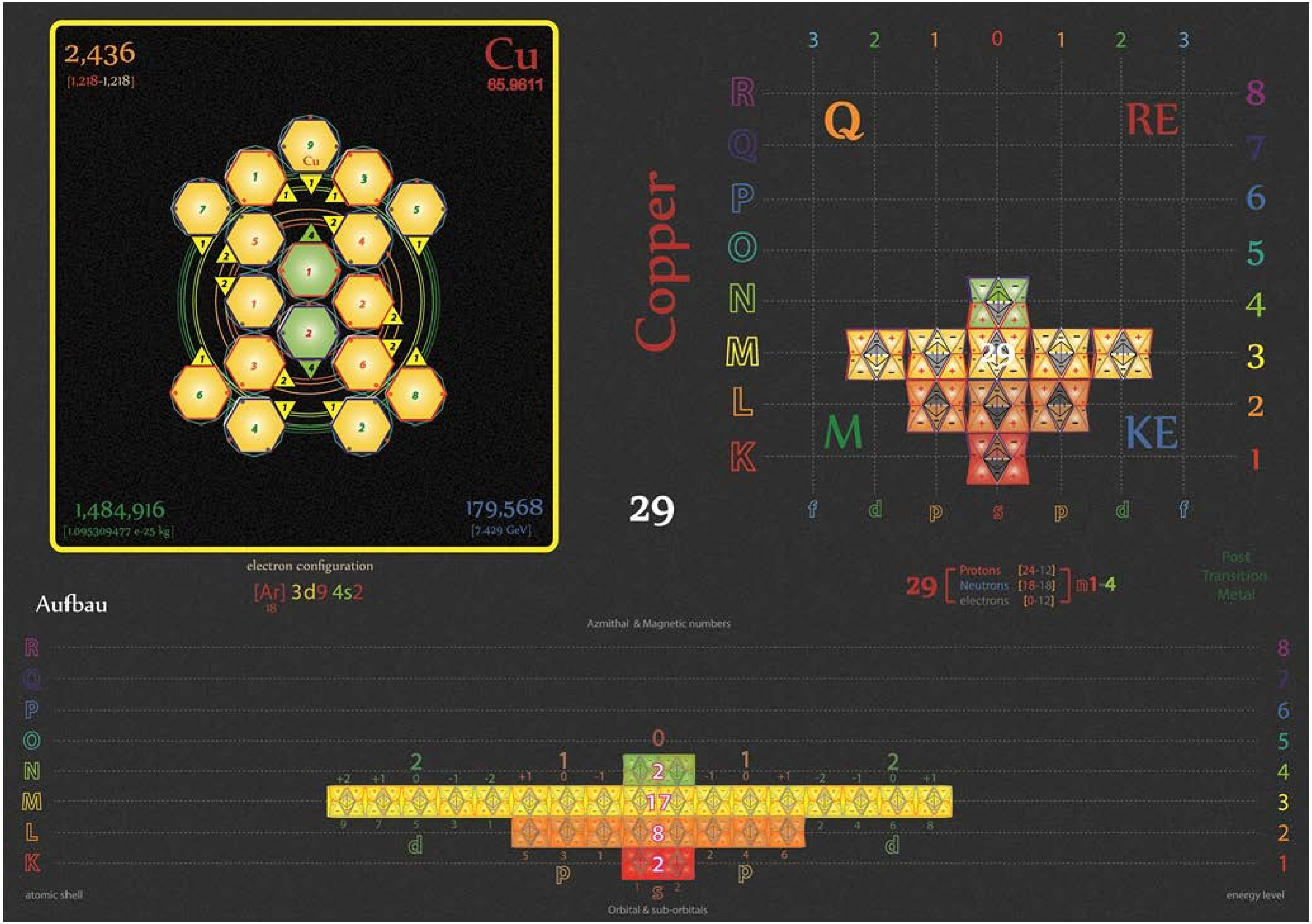


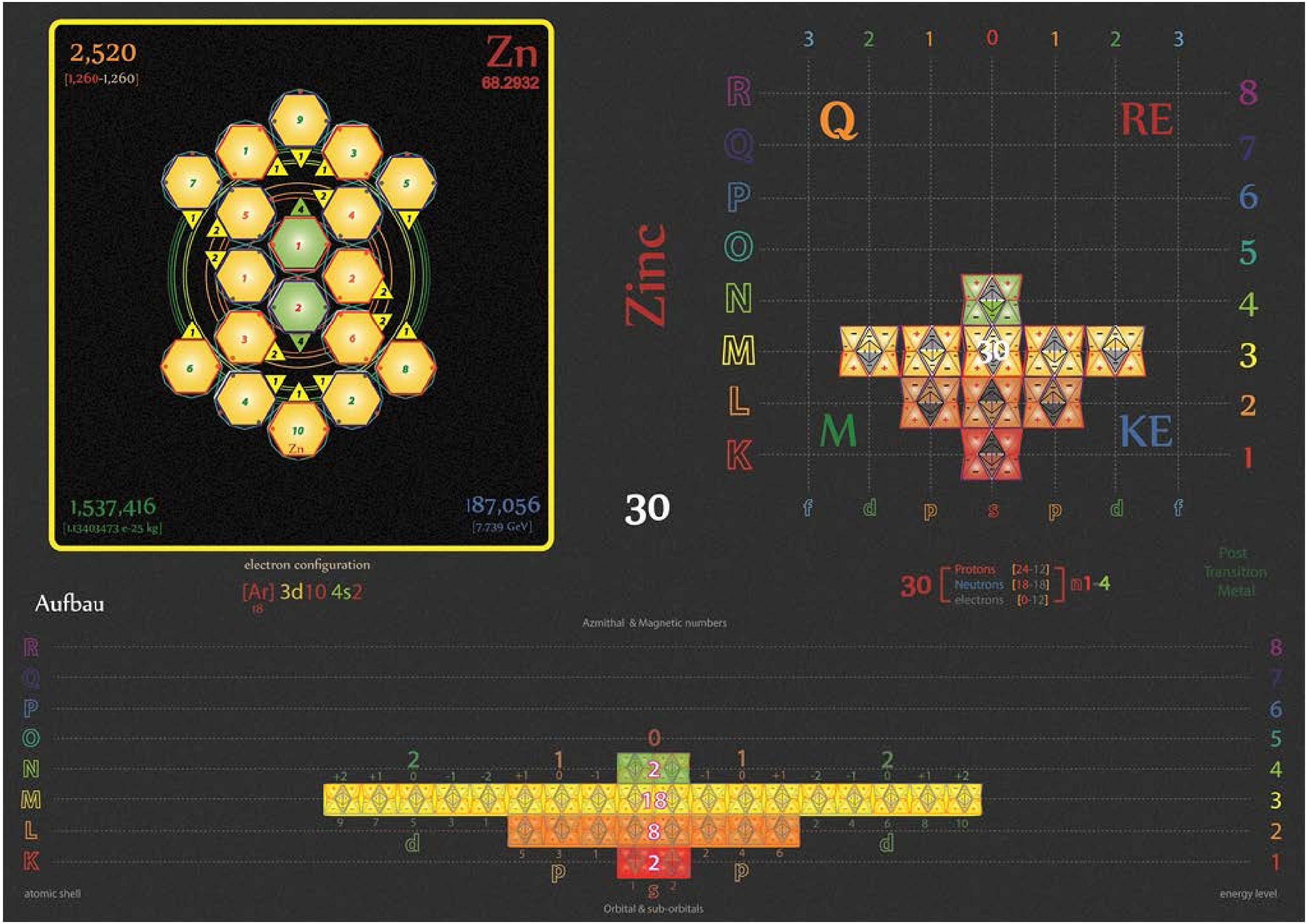
Tetryonics 51.26 - Iron atom



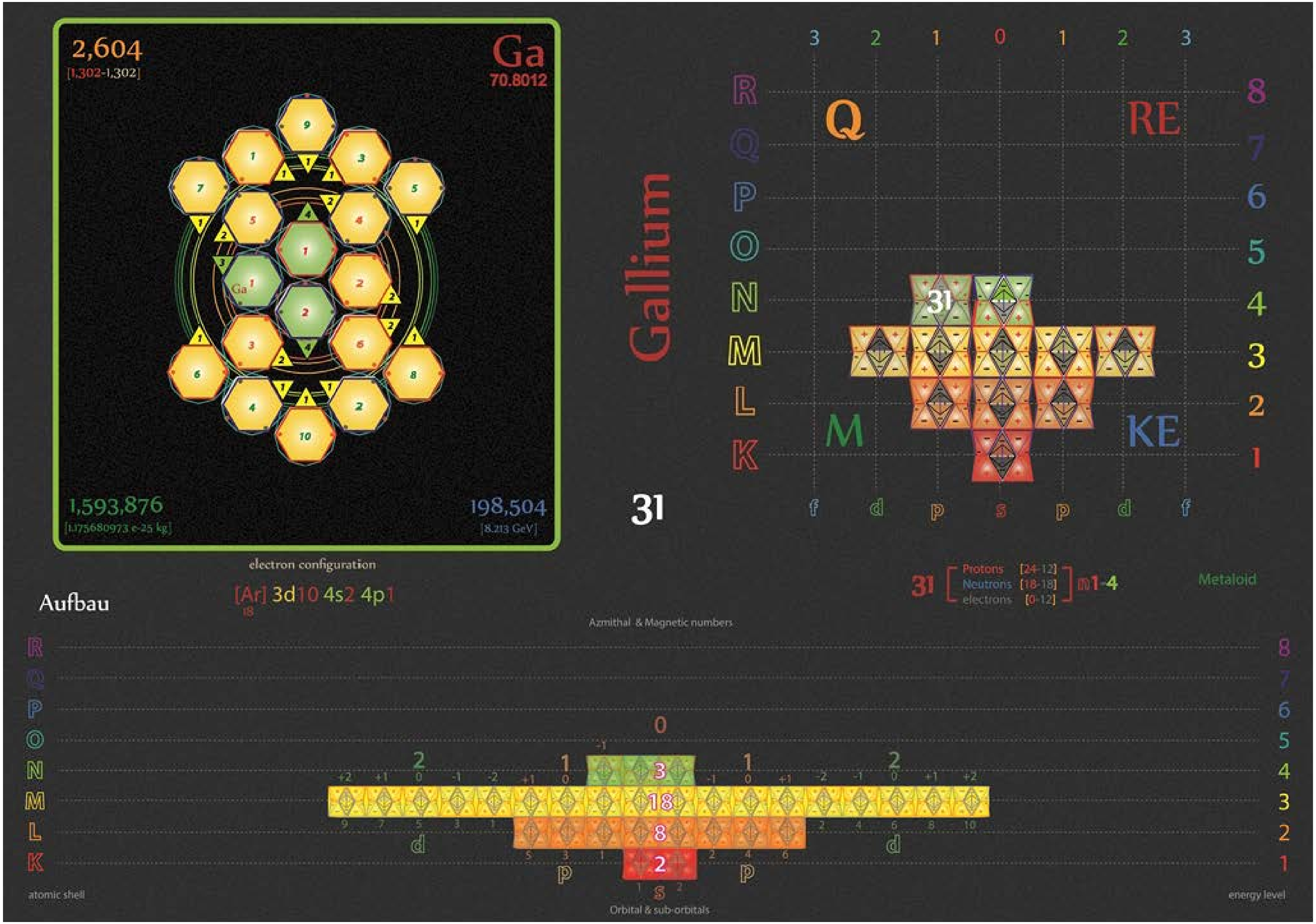
Tetryonics 51.27 - Cobalt atom

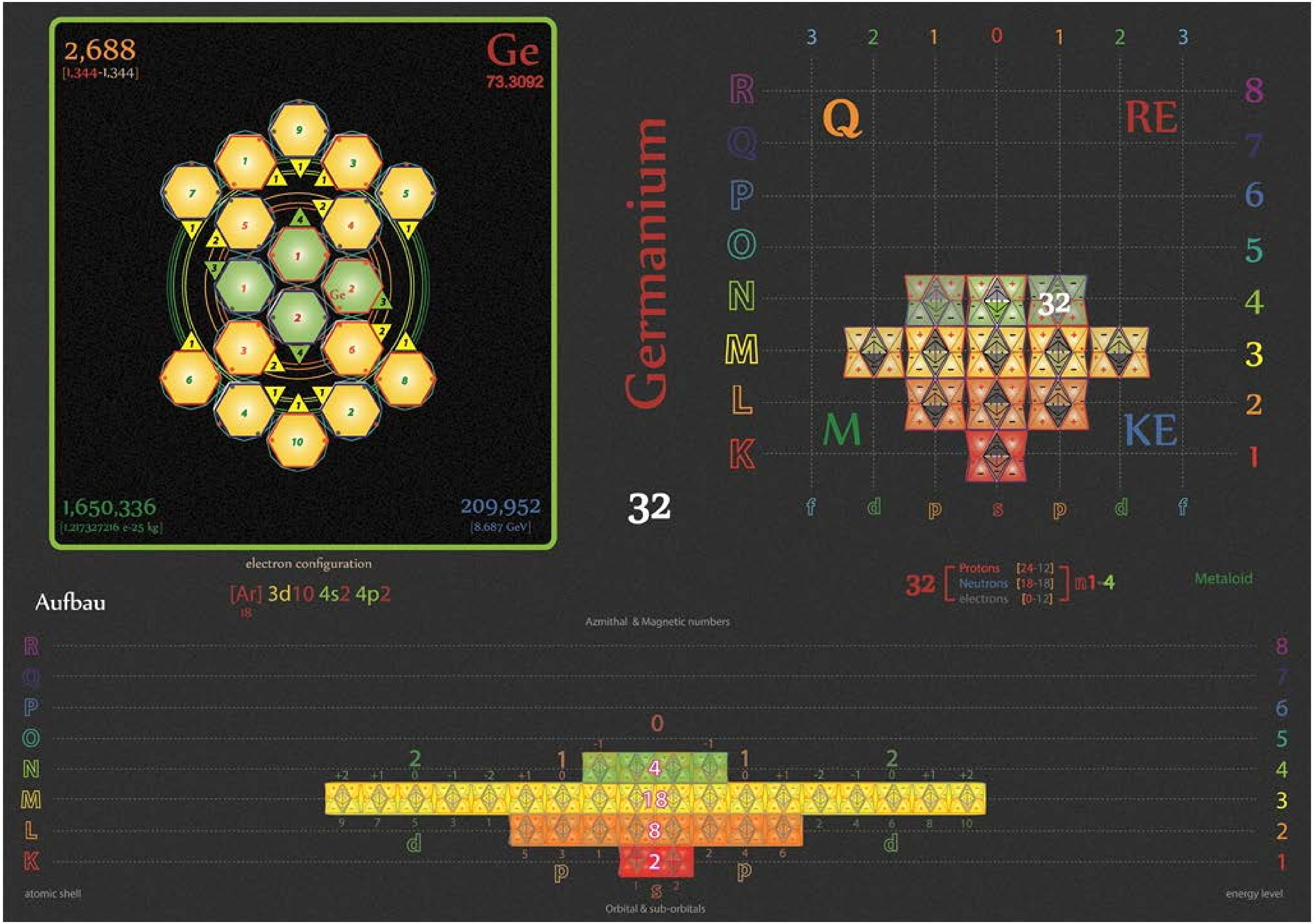

2,352
[1,176-1,176]
Ni
63.6290
1,432,416
[1.056584224 e-25 kg]
172,080
[7,150 GeV]
Nickel
28
Q
RE
M
KE
Transition Metal
electron configuration
[Ar] 3d8 4s2
Aufbau
28 Protons [24-12] Neutrons [18-18] electrons [0-12] n1-4
Azmithal & Magnetic numbers
atomic shell
energy level
Orbital & sub-orbitals


2,436
[1,218-1,218]
Cu
65.9611
1,484,916
[1.095309477 e-25 kg]
179,568
[7.429 GeV]
Copper
29
R Q P O N M L K
8 7 6 5 4 3 2 1
Q
RE
M
KE
f d p s p d f
electron configuration
[Ar] 3d9 4s2
18
Aufbau
29 [Protons [24-12] Neutrons [18-18] electrons [0-12]] n1-4
Post Transition Metal
Azmithal & Magnetic numbers
atomic shell
energy level
Orbital & sub-orbitals

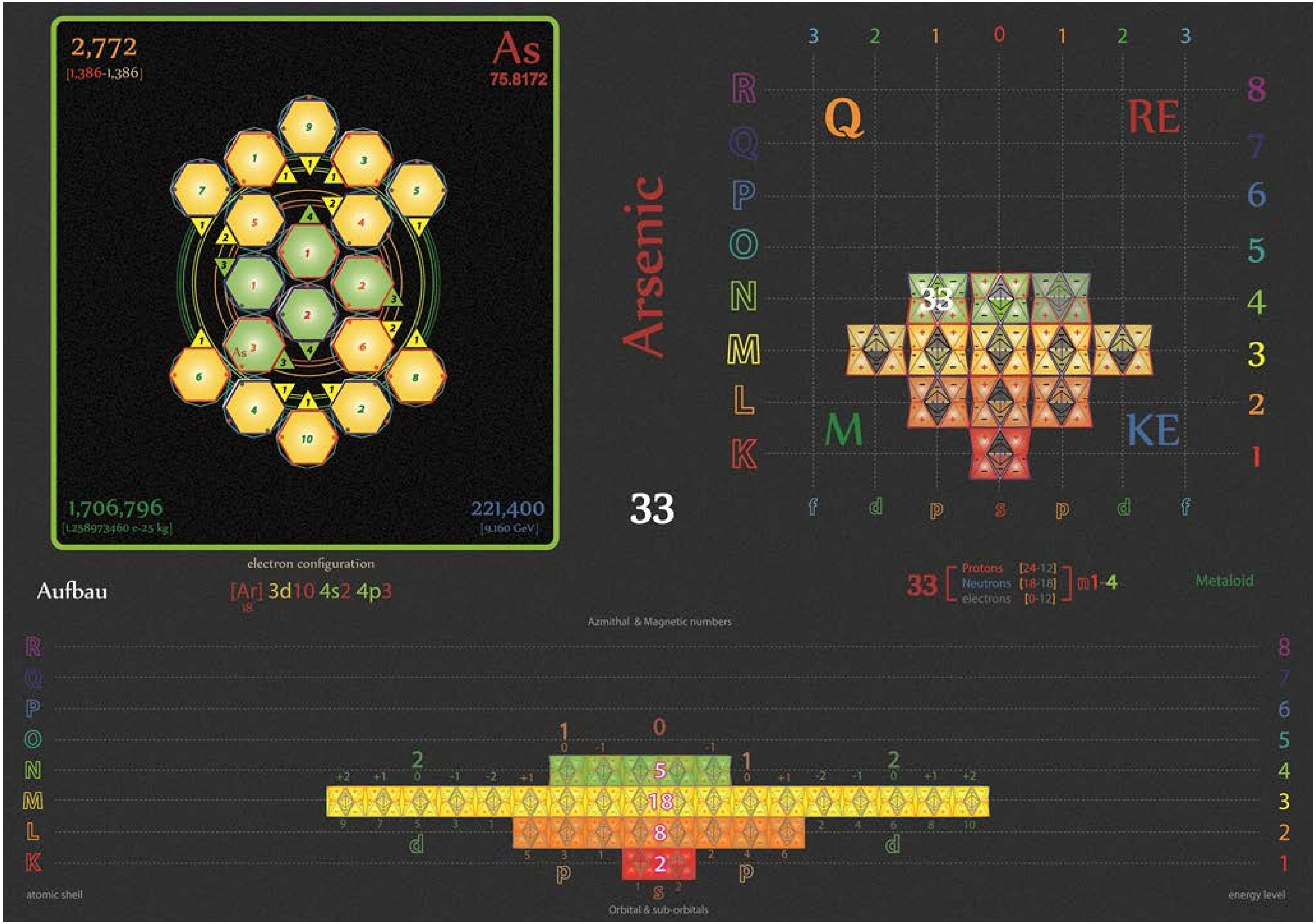


Tetryonics 51.30 - Zinc atom

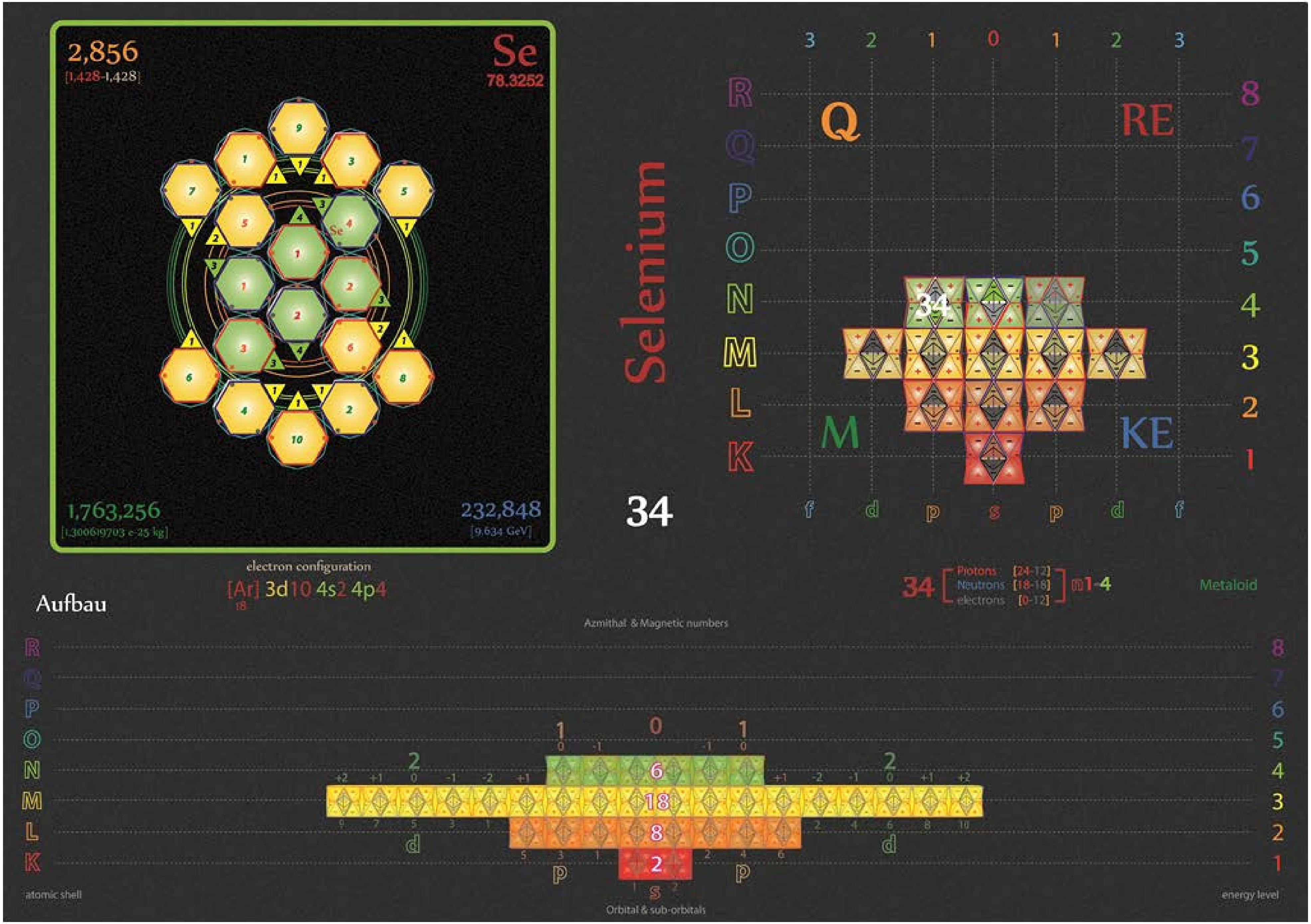

2,604
[1,302-1,302]
Ga
70.8012
1,593,876
[1.175680973 e-25 kg]
198,504
[8.213 GeV]
Gallium
31
electron configuration
[Ar] 3d10 4s2 4p1
18
Aufbau
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
31 Protons [24-12] Neutrons [18-18] electrons [0-12] m1-4
Metaloid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbital & sub-orbitals

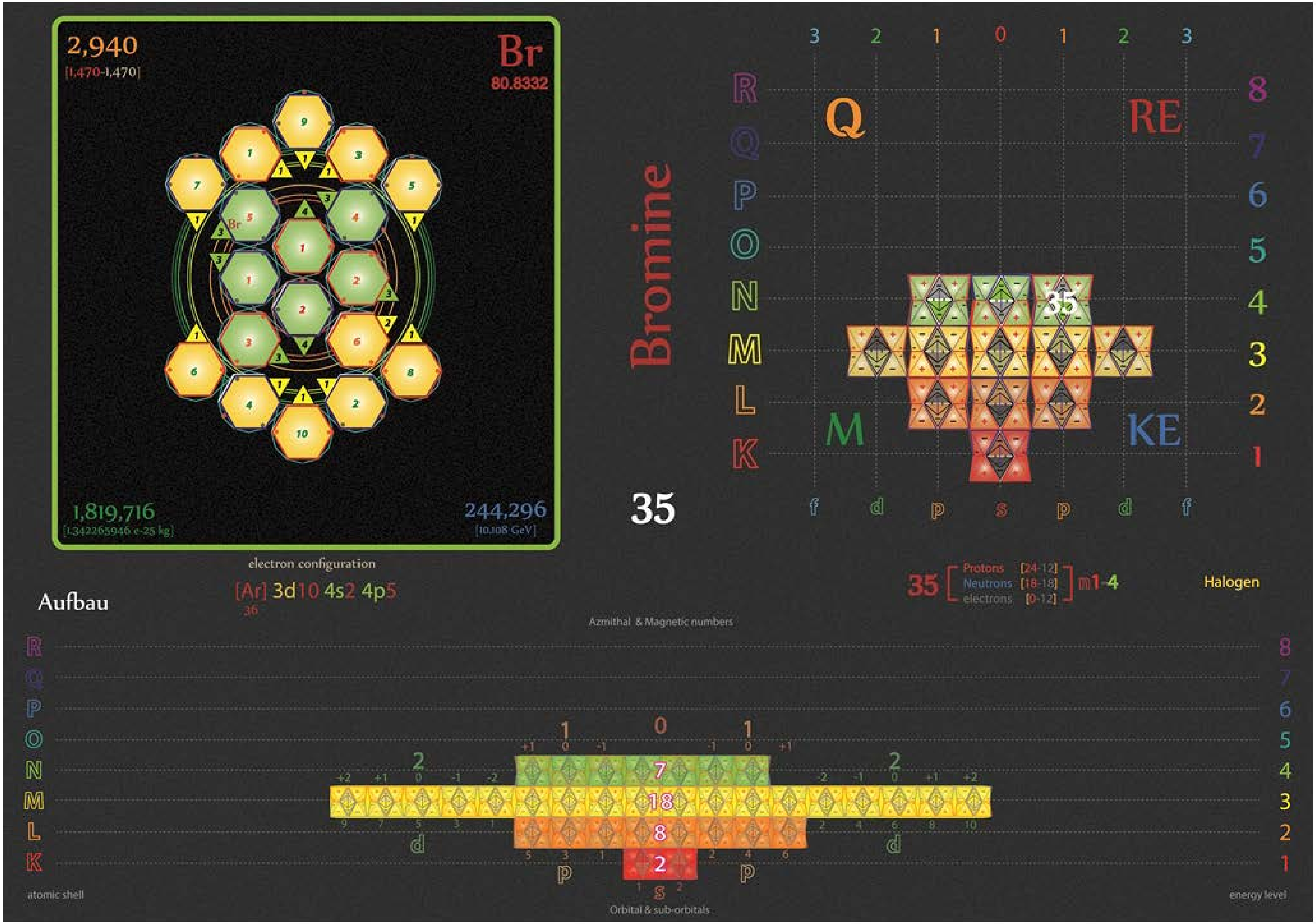


Tetryonics 51.32 - Germanium atom

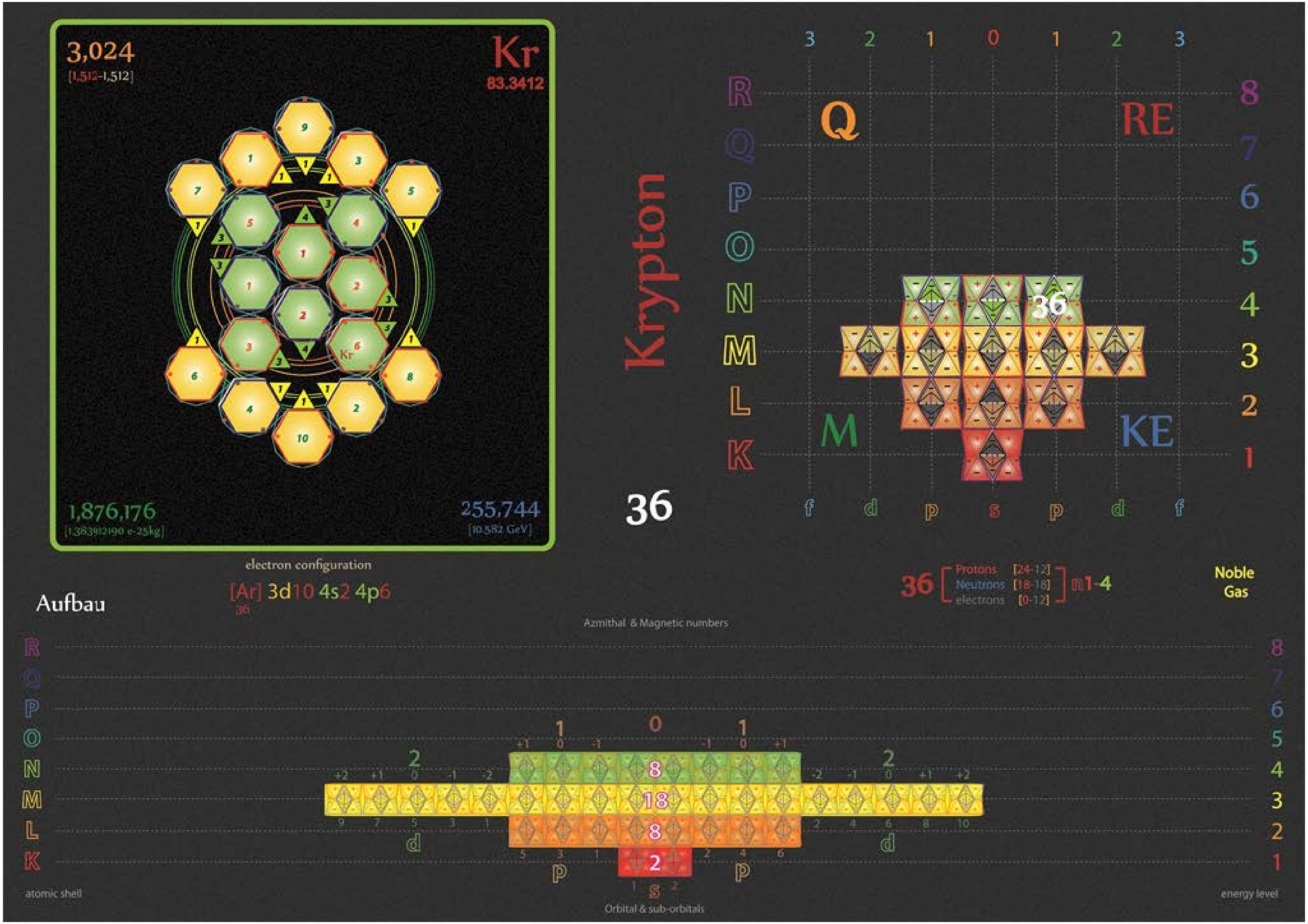


Tetryonics 51.33 - Arsenic atom

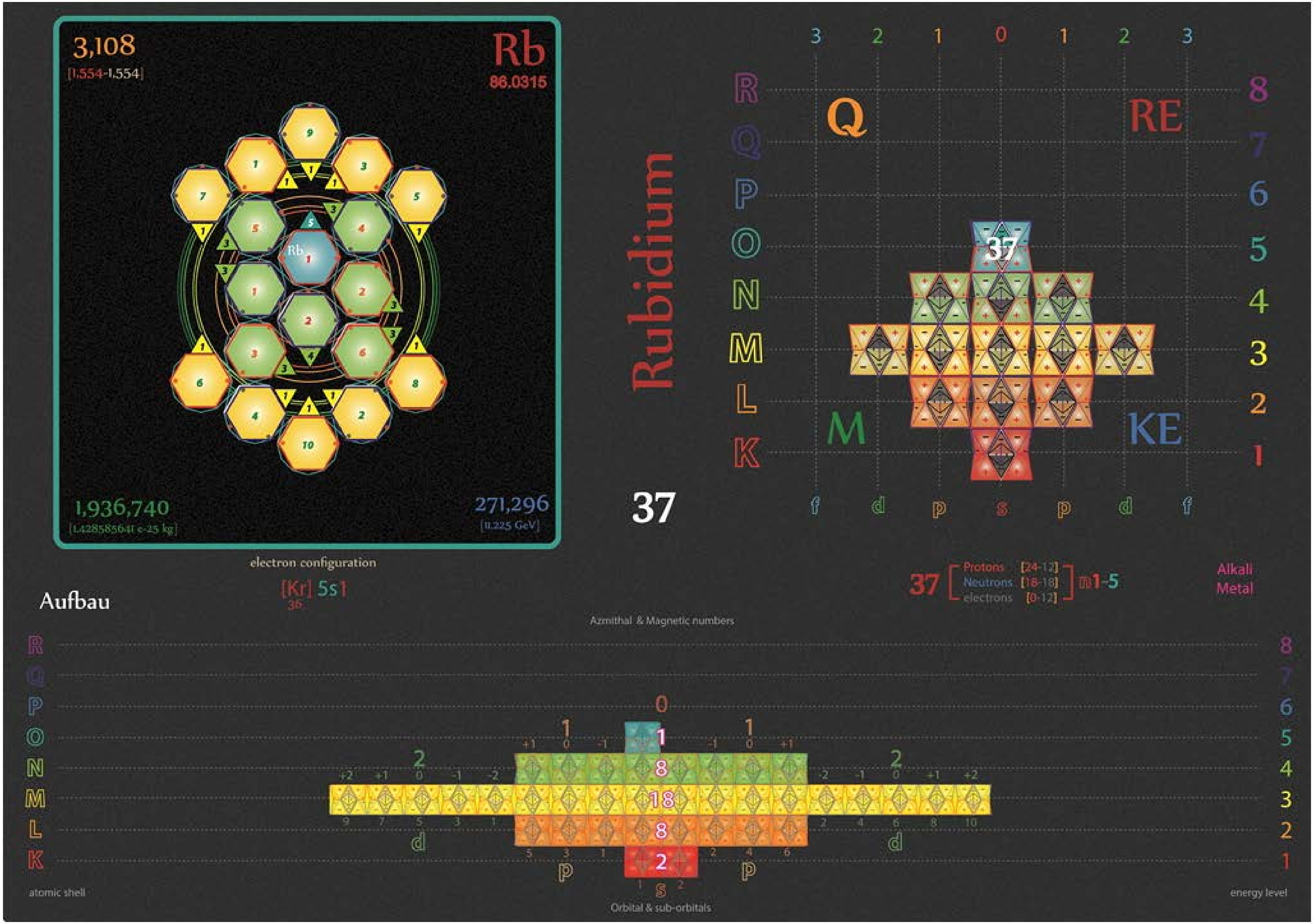

2,856
[1,428-1,428]
Se
78.3252
1,763,256
[1.300619703 e-25 kg]
232,848
[9.634 GeV]
Selenium
34
electron configuration
[Ar] 3d10 4s2 4p4
18
Aufbau
Q
RE
M
KE
34
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-4
Metaloid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbital & sub-orbitals

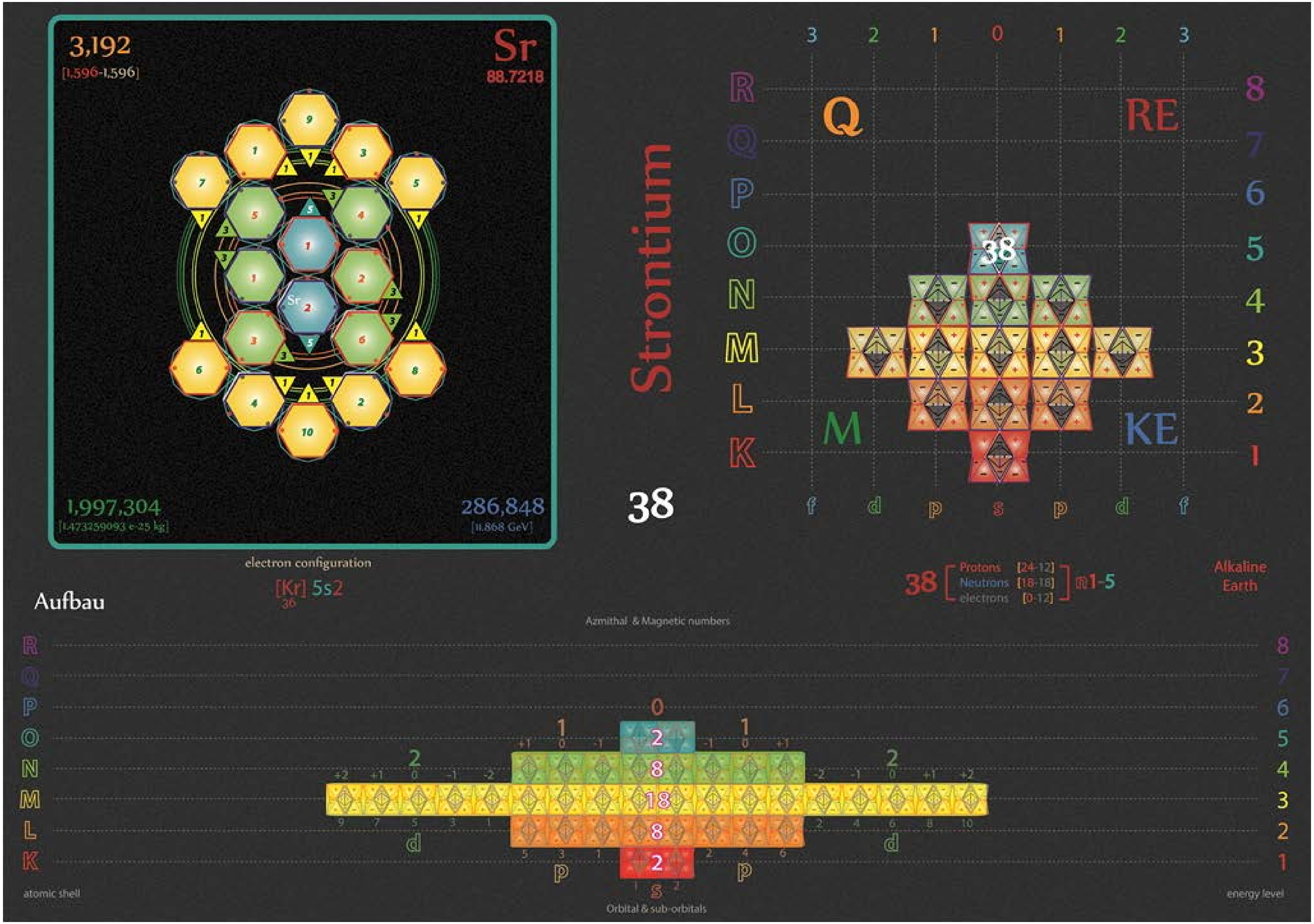


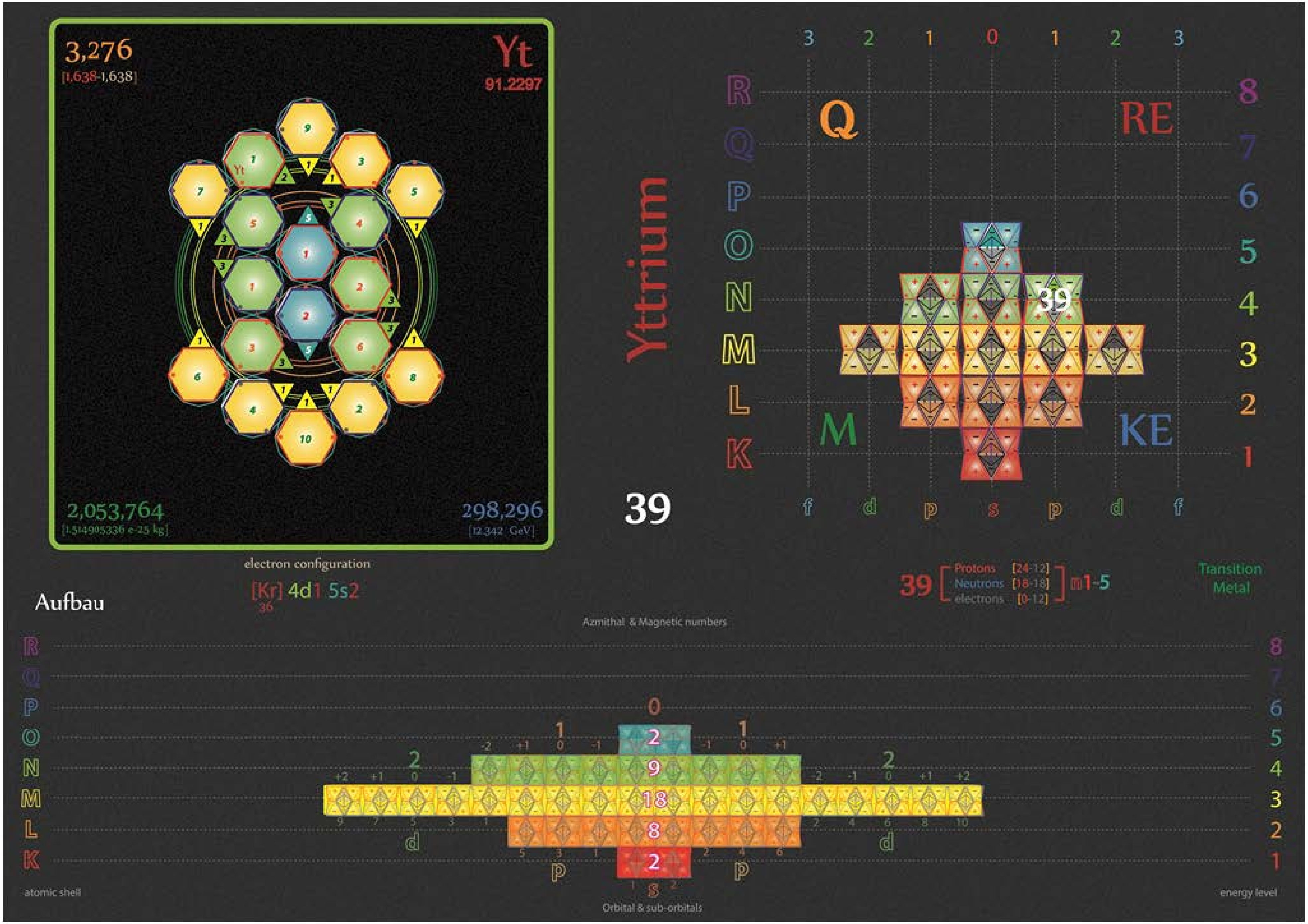
Tetryonics 51.35 - Bromine atom

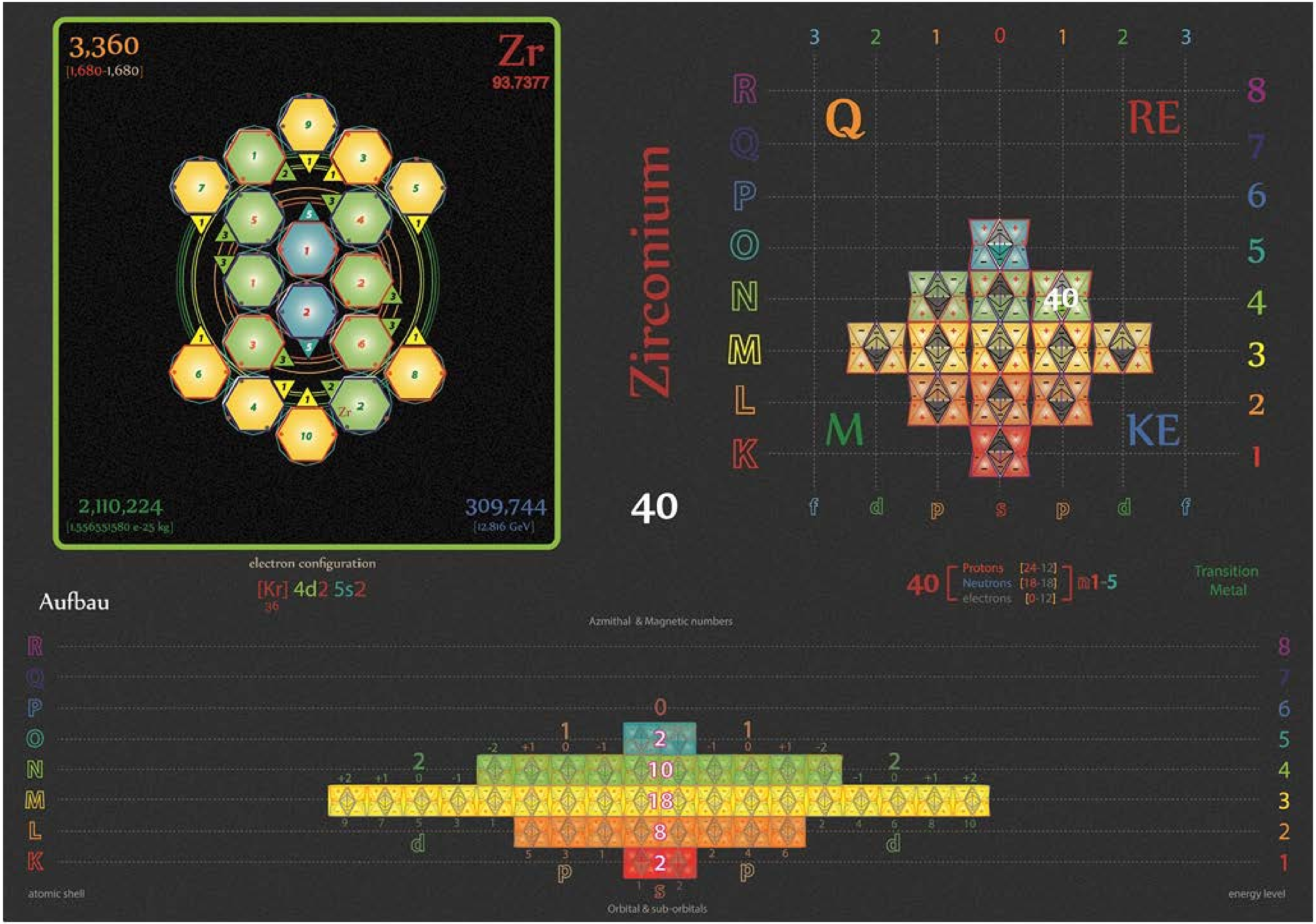


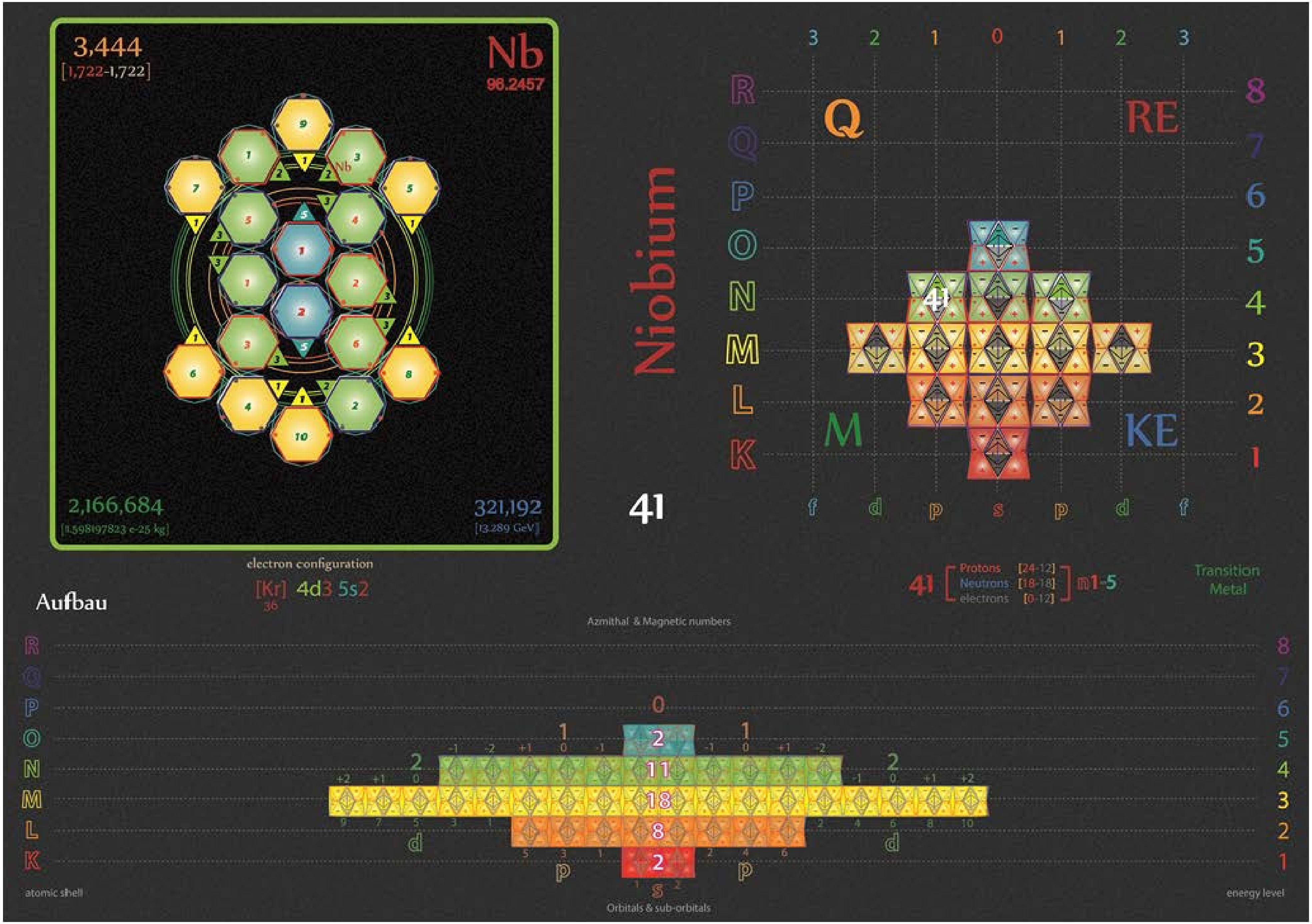
Tetryonics 51.36 - Krypton atom


3,108
[1.554-1.554]
Rb
86.0315
1,936,740
[1.428585641 e-25 kg]
271,296
[11.225 GeV]
Rubidium
37
Q
RE
M
KE
electron configuration
[Kr] 5s1
36
Aufbau
37
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-5
Alkali Metal
Azmithal & Magnetic numbers
atomic shell
energy level
Orbital & sub-orbitals

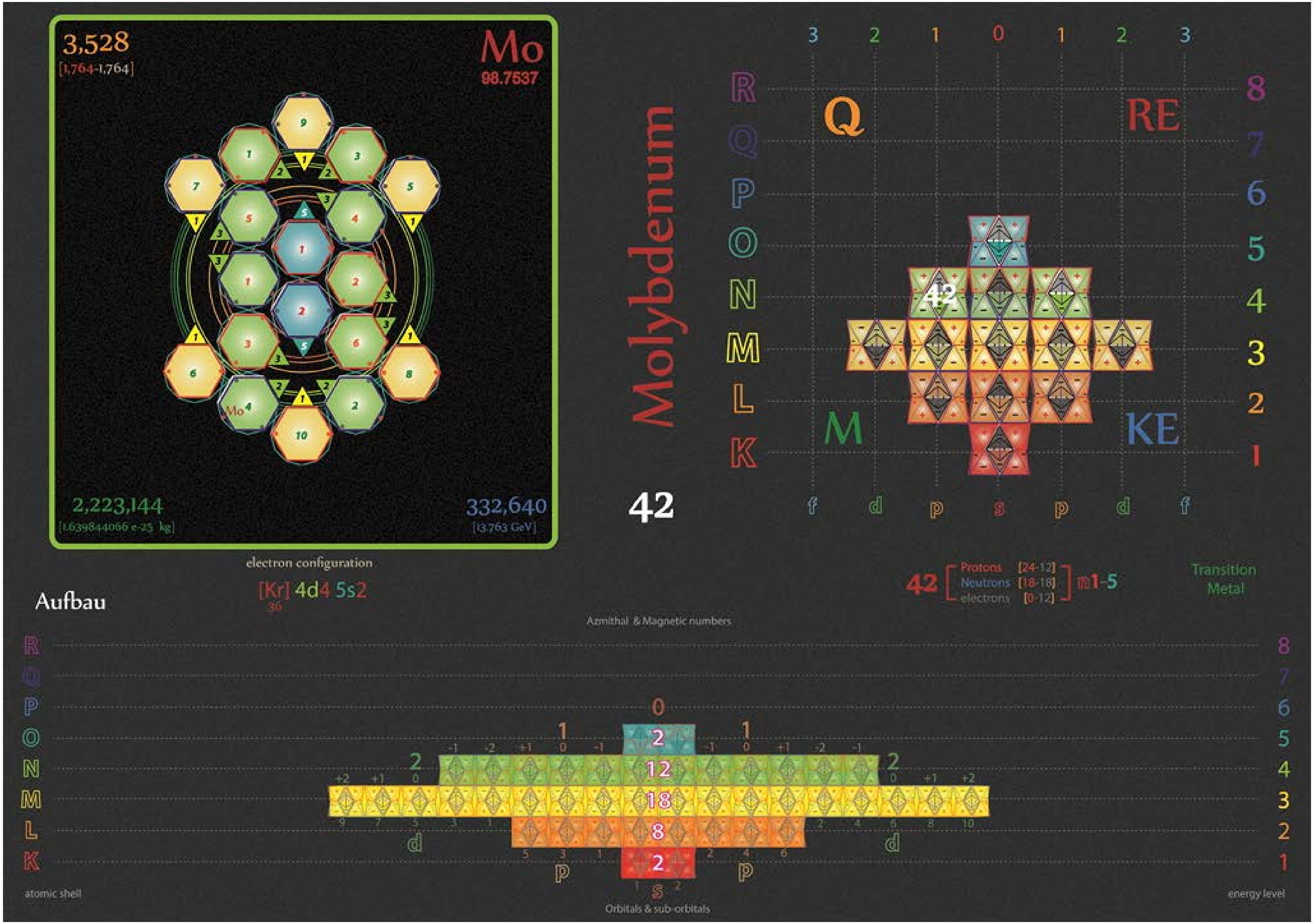

3,192
[1,596-1,596]
Sr
88.7218
1,997,304
[1.473259093 e-25 kg]
286,848
[11.868 GeV]
Strontium
38
electron configuration
[Kr] 5s2
36
Aufbau
R Q P O N M L K
8 7 6 5 4 3 2 1
3 2 1 0 1 2 3
f d p s p d f
Q
RE
M
KE
38 [Protons [24-12] Neutrons [18-18] electrons [0-12]] n1-5
Alkaline Earth
Azmithal & Magnetic numbers
atomic shell
energy level
Orbital & sub-orbitals


3,276
[1,638-1,638]
Yt
91.2297
2,053,764
[1.514905336 e-25 kg]
298,296
[12.342 GeV]
Yttrium
39
Q
RE
M
KE
electron configuration
[Kr] 4d1 5s2
36
Aufbau
39
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-5
Transition Metal
Azmithal & Magnetic numbers
atomic shell
energy level
Orbital & sub-orbitals

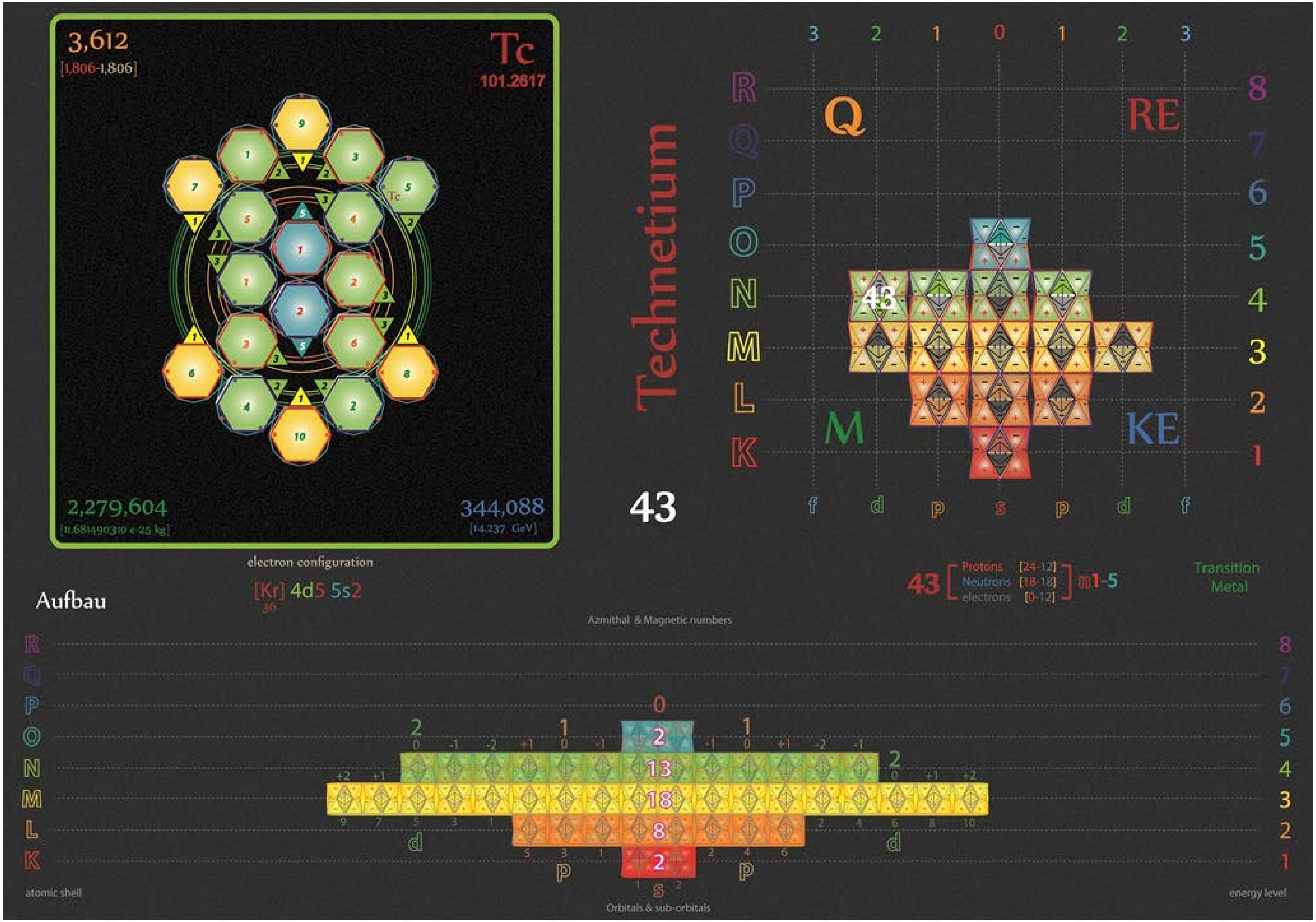

3,360
[1,680-1,680]
Zr
93.7377
2,110,224
[1.556551580 e-25 kg]
309,744
[12.816 GeV]
Zirconium
40
Q
RE
M
KE
40 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-5
Transition Metal
electron configuration
[Kr] 4d2 5s2
36
Aufbau
Azmithal & Magnetic numbers
atomic shell
energy level
Orbital & sub-orbitals



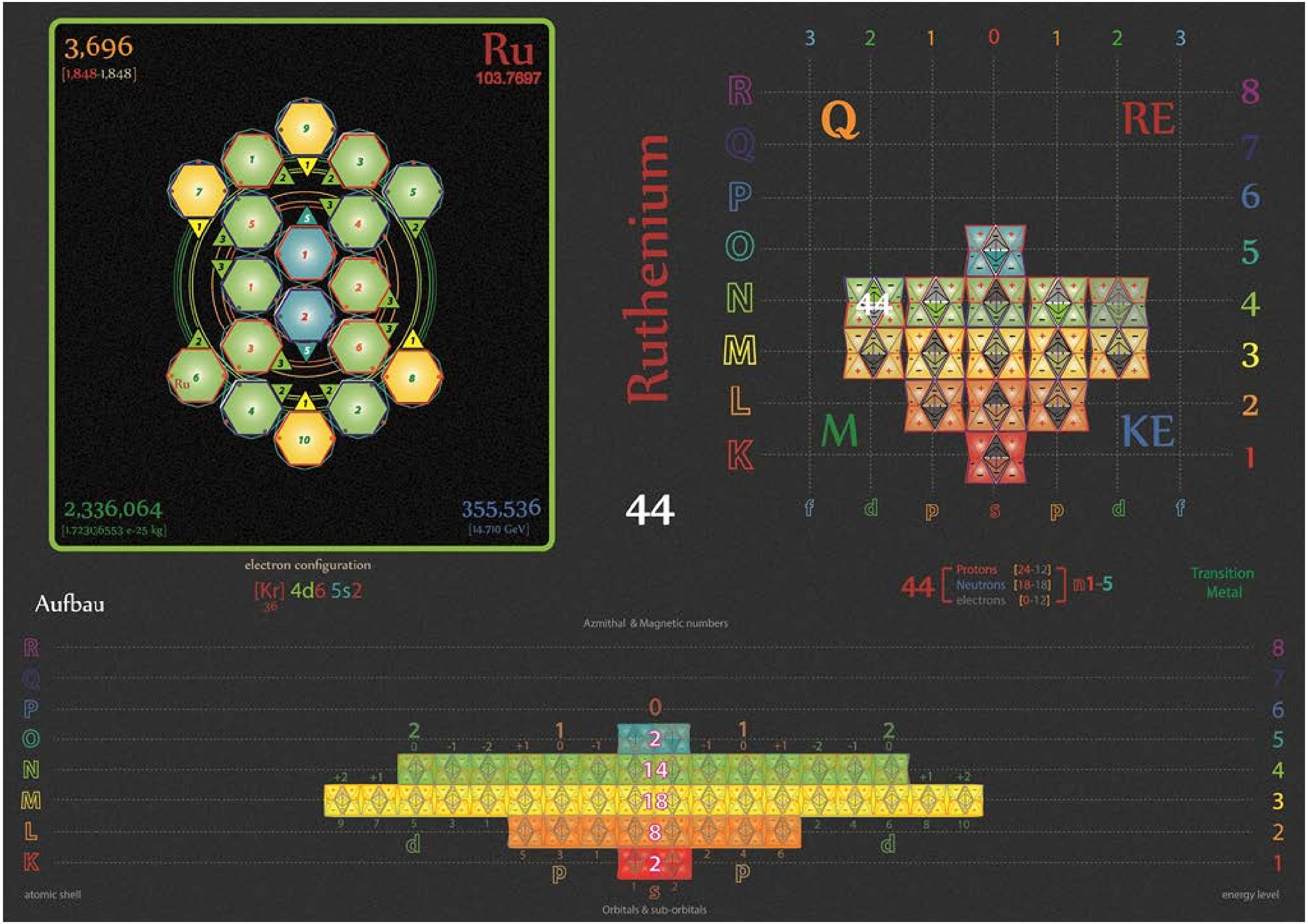
Tetryonics 51.41 - Niobium atom



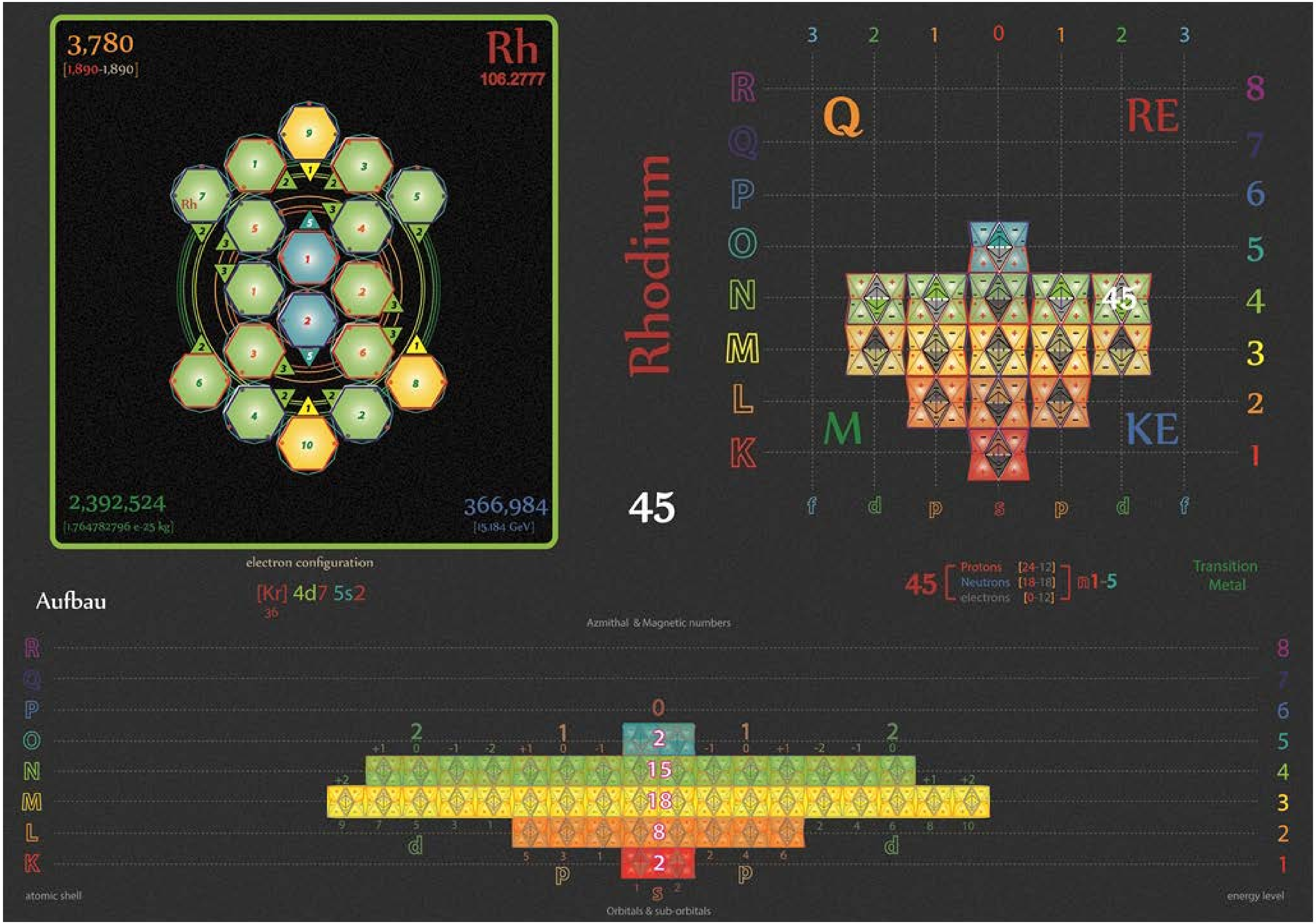
Tetryonics 51.42 - Molybdenum atom

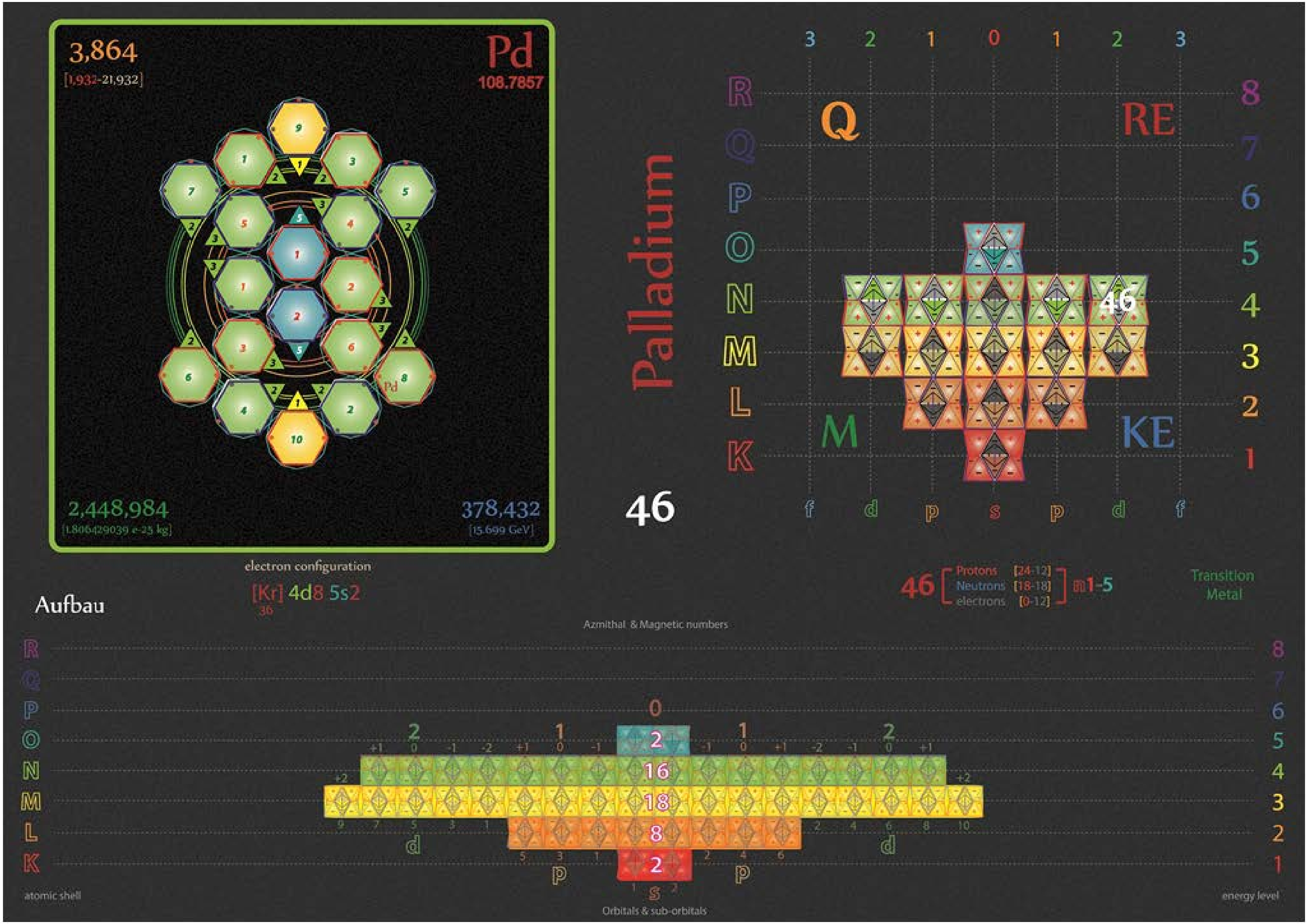


Tetryonics 51.43 - Technetium atom

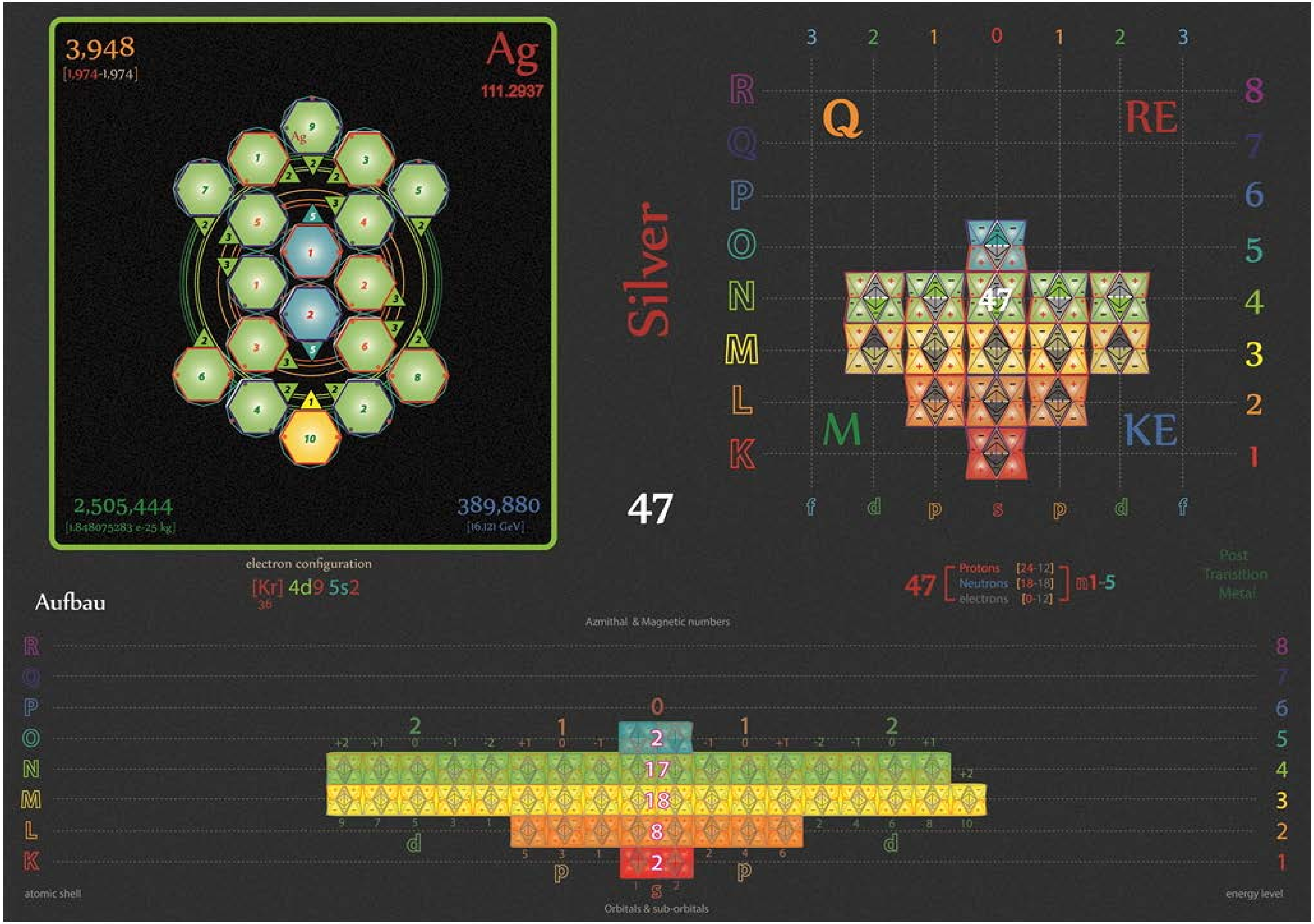


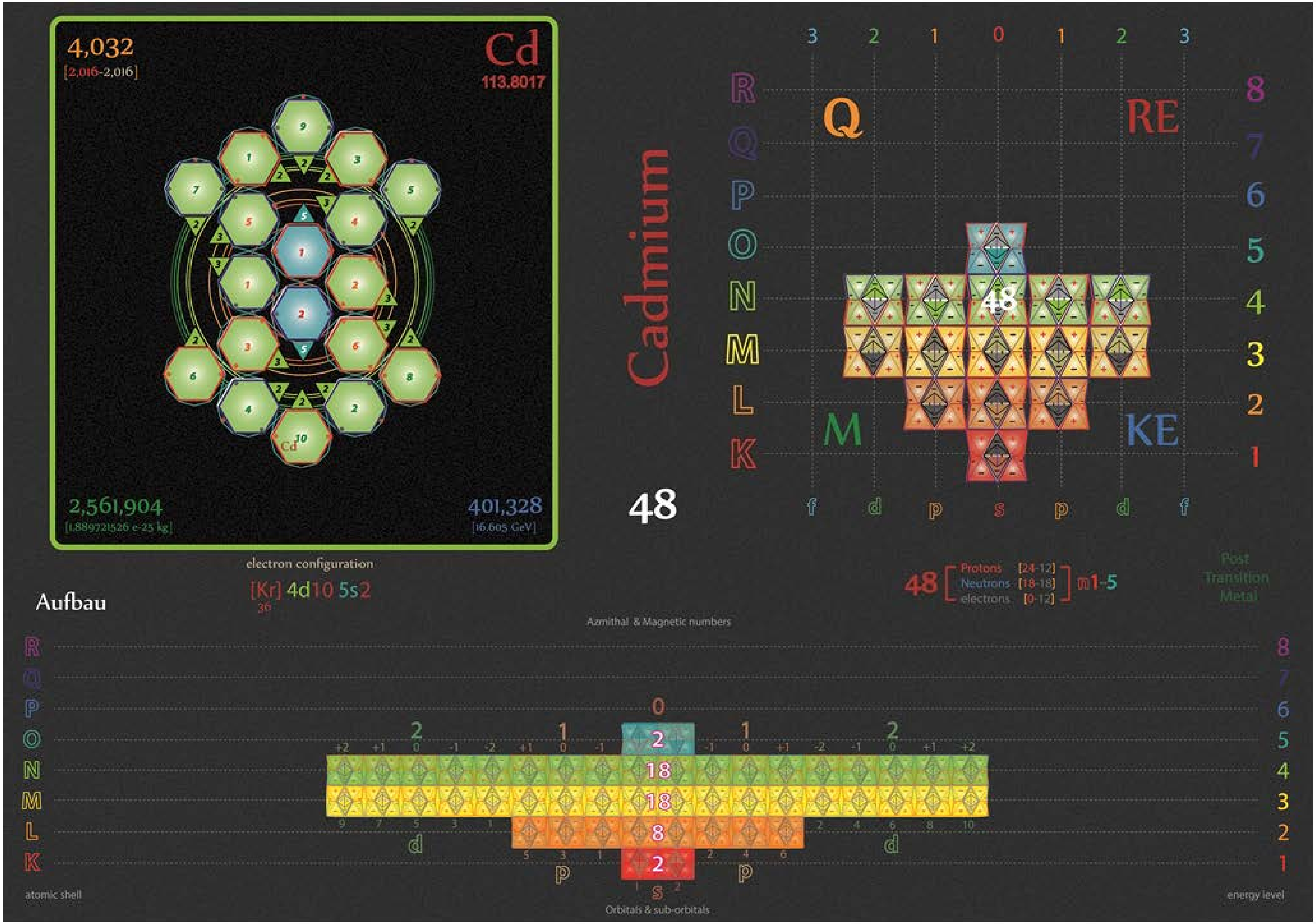
Tetryonics 51.44 - Ruthenium atom

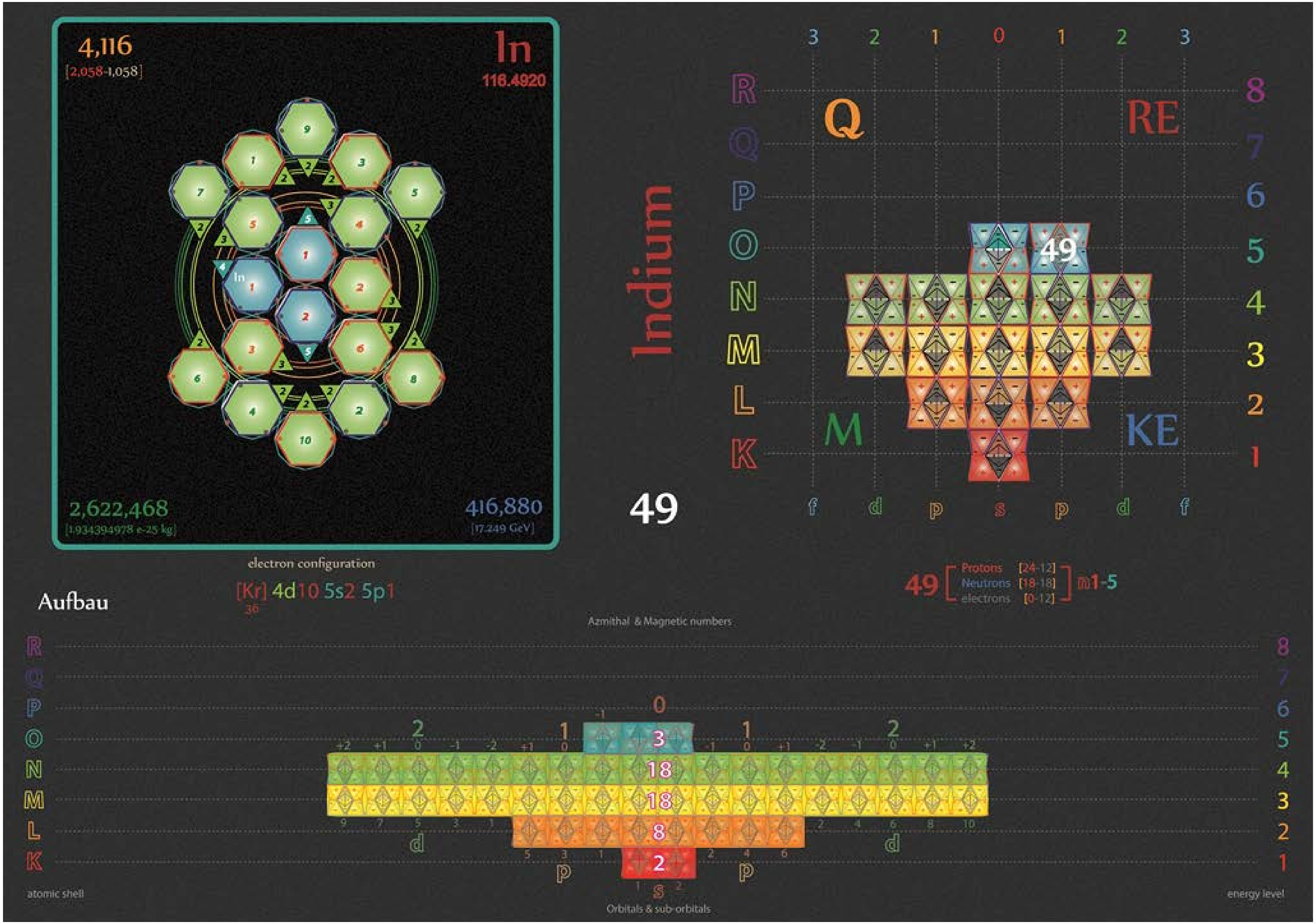

3,780
[1,890-1,890]
Rh
106.2777
2,392,524
[1.764782796 e-25 kg]
366,984
[15.184 GeV]
electron configuration
[Kr] 4d7 5s2
36
Rhodium
45
Q
RE
M
KE
45 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-5
Transition Metal
Aufbau
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

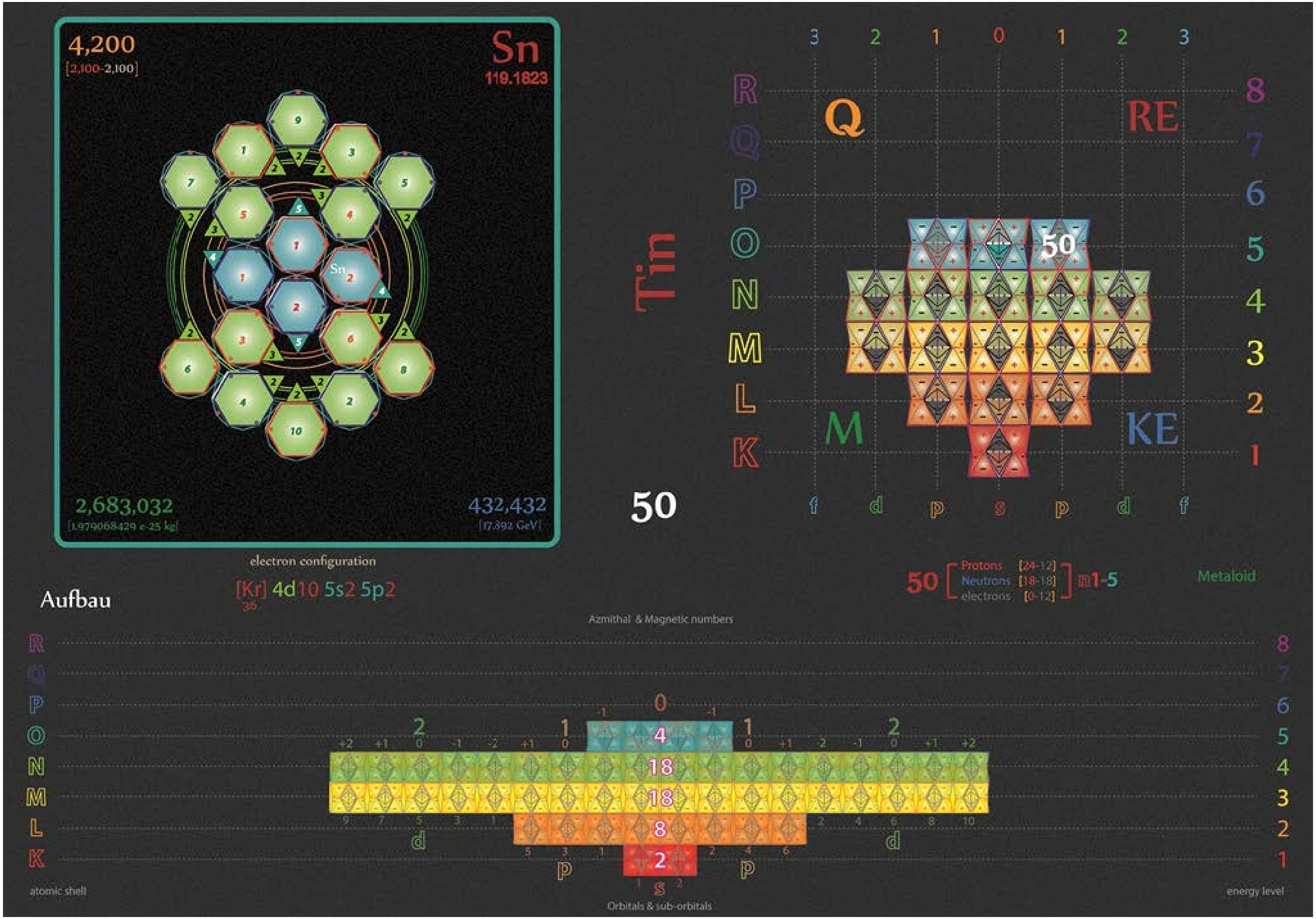


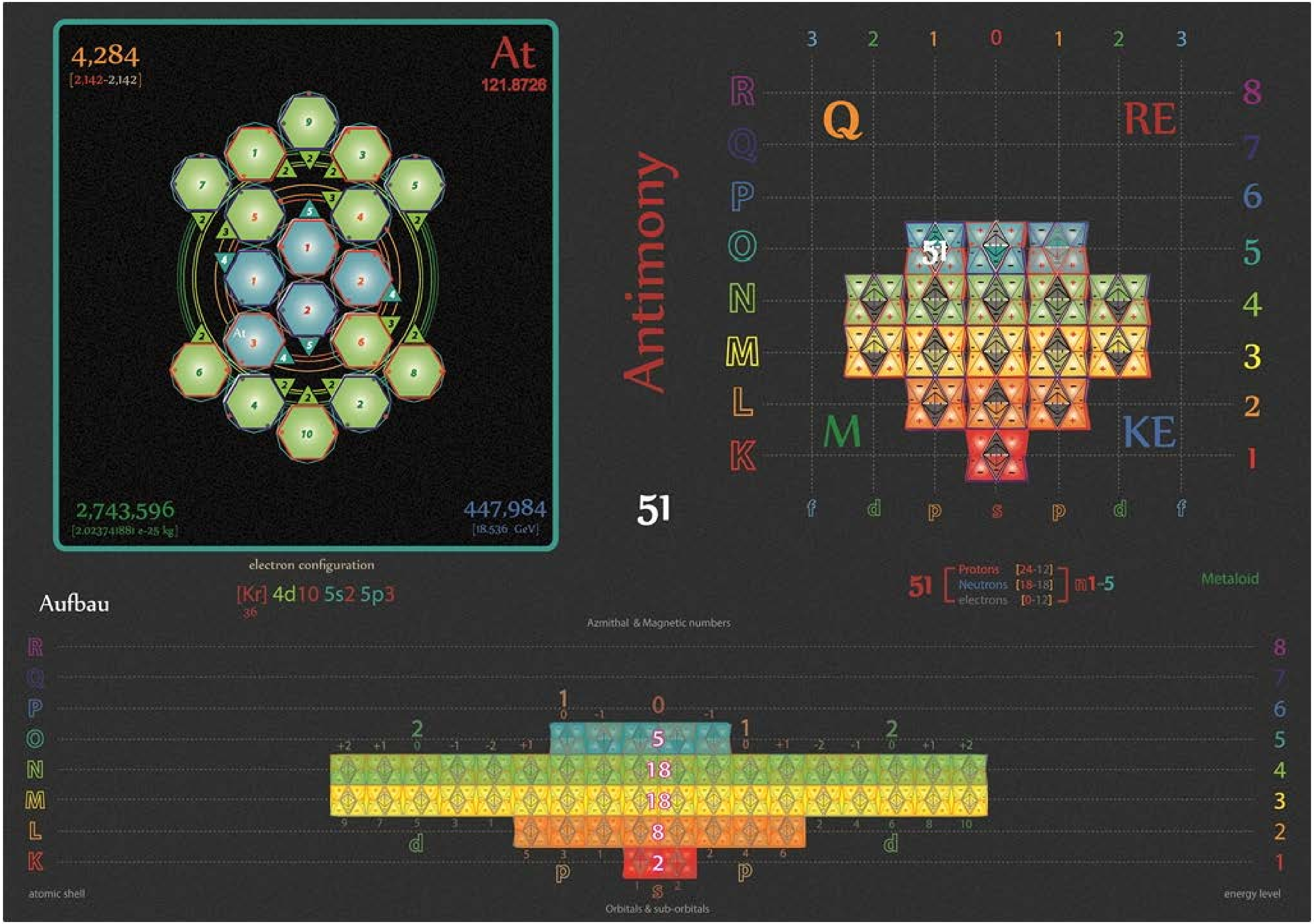
Tetryonics 51.46 - Palladium atom

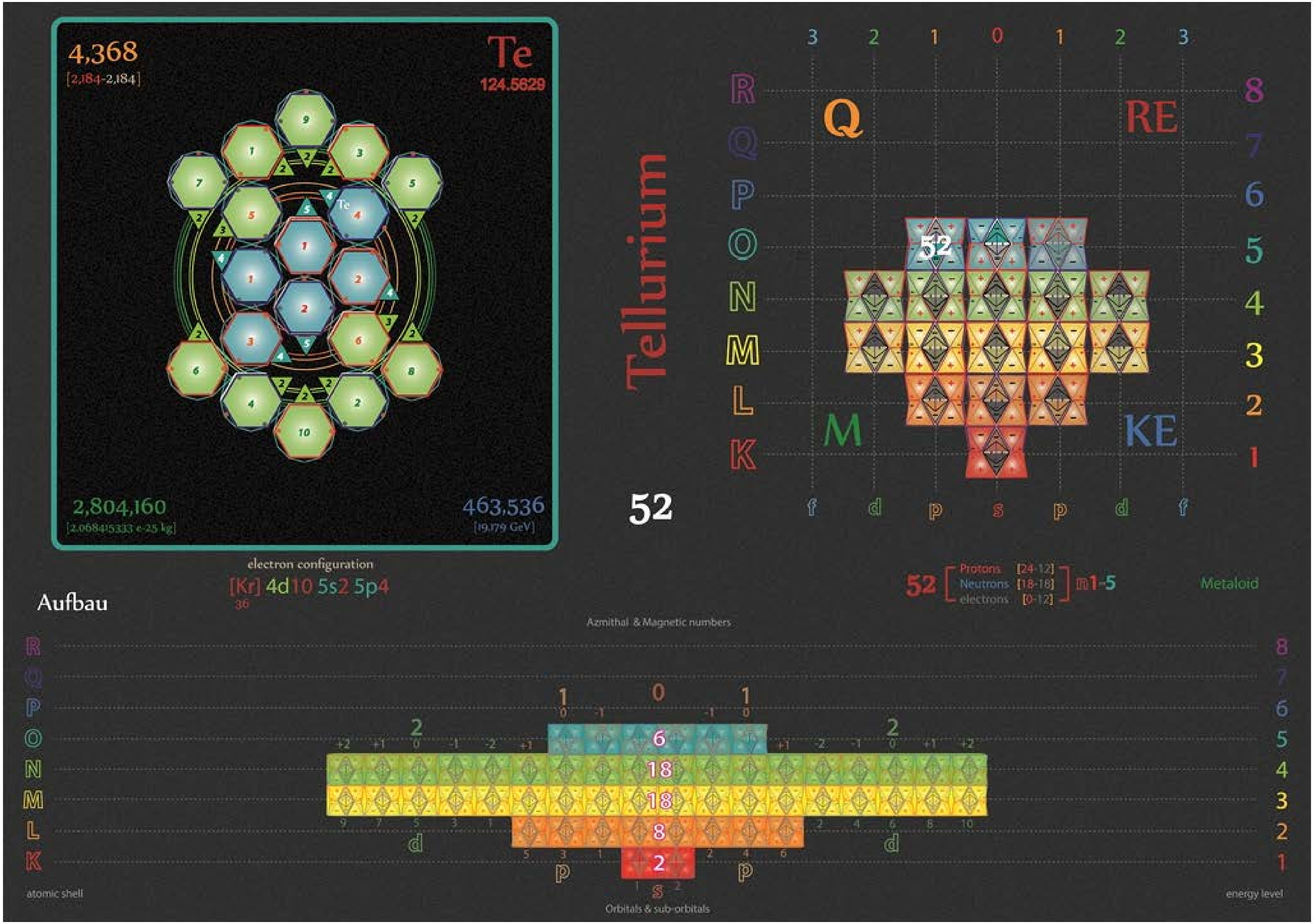

3,948
[1,974-1,974]
Ag
111.2937
2,505,444
[1.848075283 e-25 kg]
389,880
[16.121 GeV]
Silver
47
electron configuration
[Kr] 4d9 5s2
36
Aufbau
Azmithal & Magnetic numbers
Q
RE
M
KE
47
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-5
Post Transition Metal
atomic shell
energy level
Orbitals & sub-orbitals


4,032
[2,016-2,016]
Cd
113.8017
2,561,904
[1.889721526 e-25 kg]
401,328
[16.605 GeV]
Cadmium
48
electron configuration
[Kr] 4d10 5s2
36
Aufbau
R Q P O N M L K
8 7 6 5 4 3 2 1
Q
RE
M
KE
f d p s p d f
48 [Protons [24-12] Neutrons [18-18] electrons [0-12]] n1-5
Post Transition Metal
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

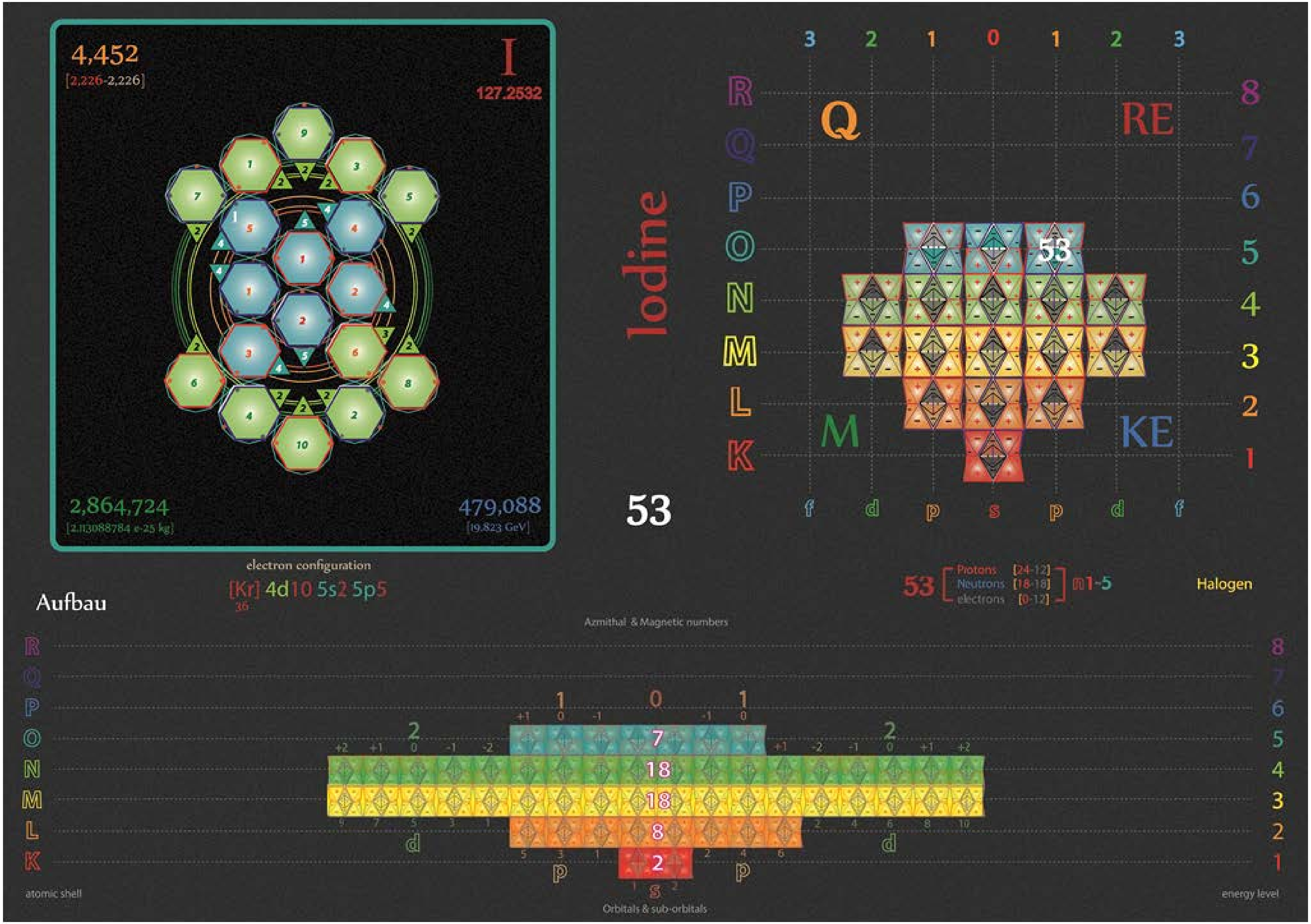

4,116
[2,058-1,058]
In
116.4920
2,622,468
[1.934394978 e-25 kg]
416,880
[17.249 GeV]
Indium
49
Q
RE
M
KE
49 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-5
electron configuration
[Kr] 4d10 5s2 5p1
36
Aufbau
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

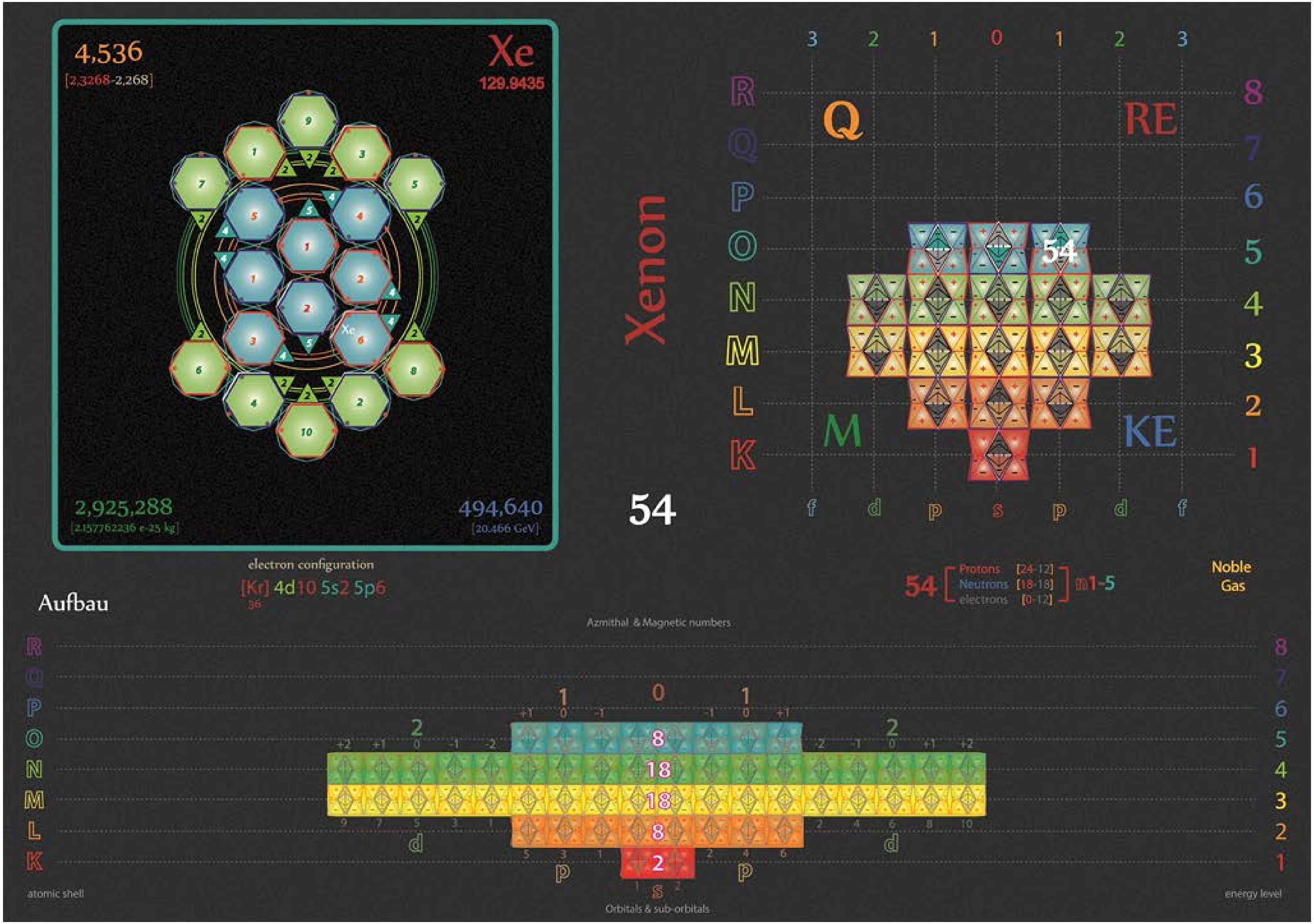

4,200
[2,100-2,100]
Sn
119.1823
2,683,032
[1.979068429 e-25 kg]
432,432
[17.392 GeV]
Tin
50
Q
RE
M
KE
electron configuration
[Kr] 4d10 5s2 5p2
36
Aufbau
50 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-5
Metaloid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

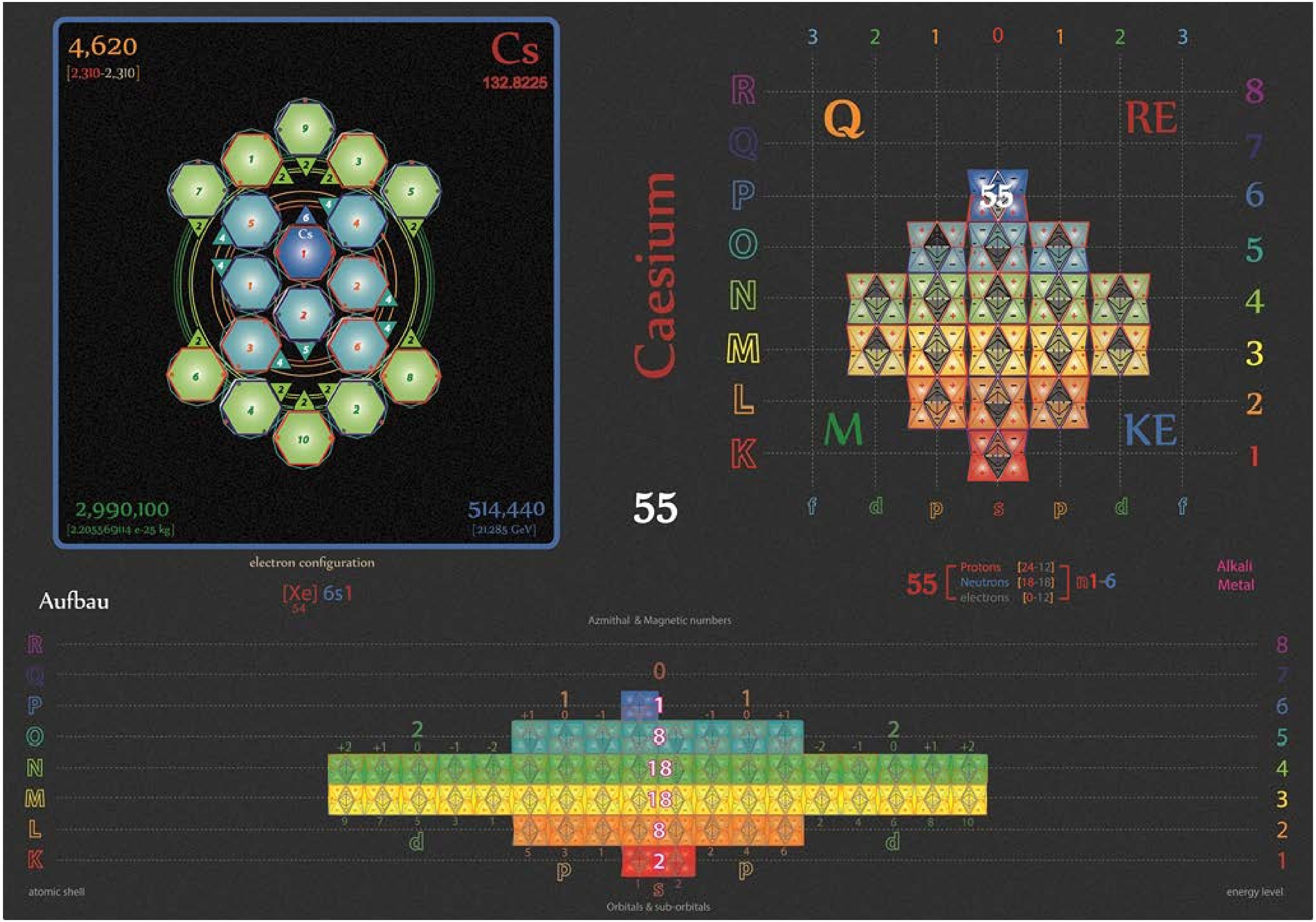

4,284
[2,142-2,142]
At
121.8726
2,743,596
[2.02374188 e-25 kg]
447,984
[18,536 GeV]
Antimony
51
R Q P O N M L K
8 7 6 5 4 3 2 1
3 2 1 0 1 2 3
Q
RE
M
KE
f d p s p d f
electron configuration
Aufbau
[Kr] 4d10 5s2 5p3
36
51
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-5
Metaloid
Azmithal & Magnetic numbers
5
18
18
8
2
d
p
s
atomic shell
energy level
Orbitals & sub-orbitals



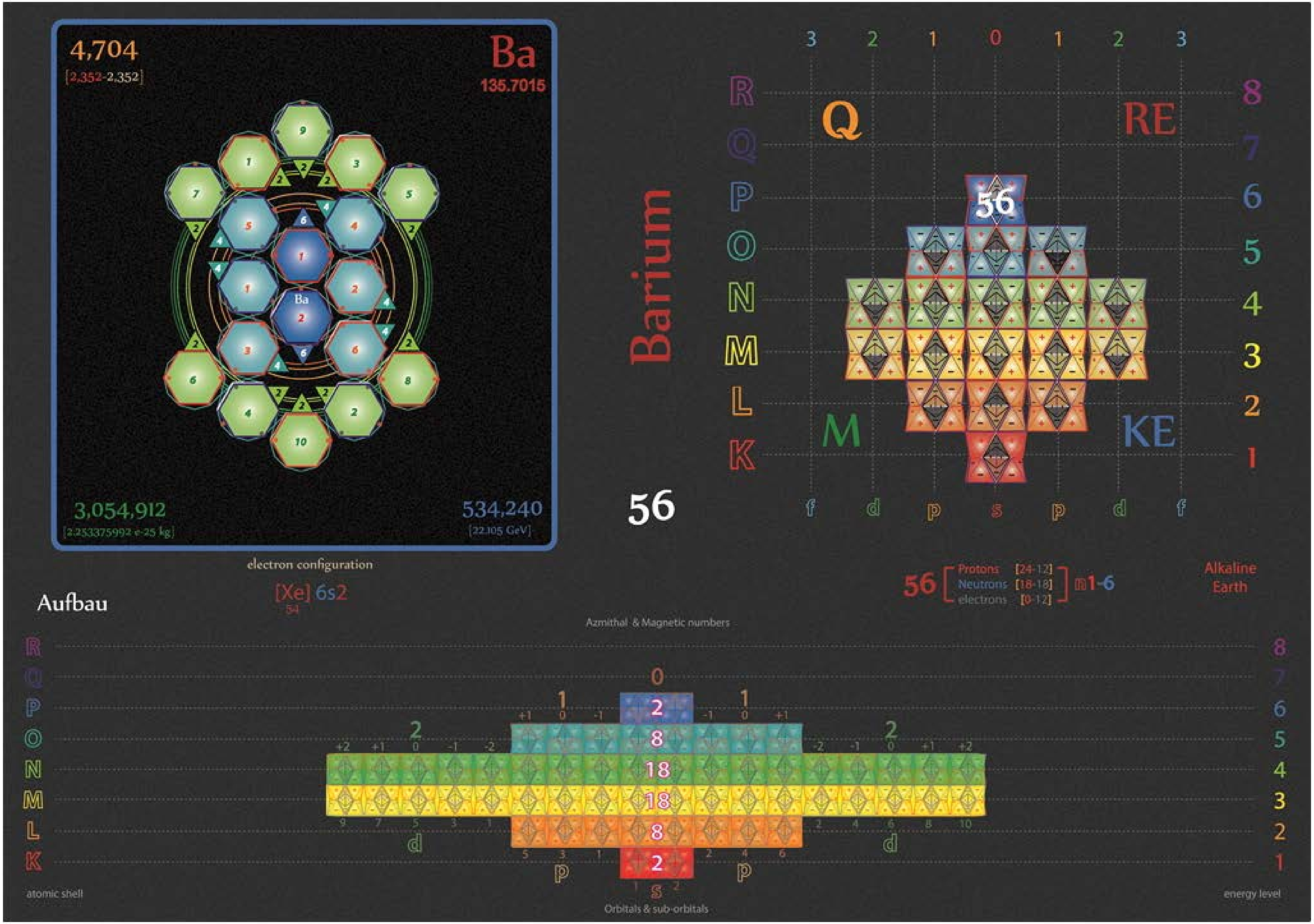
Tetryonics 51.52 - Tellurium atom


4,452
[2,226-2,226]
I
127.2532
2,864,724
[2.113088784 e-25 kg]
479,088
[19.823 GeV]
Iodine
53
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
electron configuration
[Kr] 4d10 5s2 5p5
36
Aufbau
53 [Protons [24-12] Neutrons [18-18] electrons [0-12]] n1-5
Halogen
Azmithal & Magnetic numbers
7
18
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

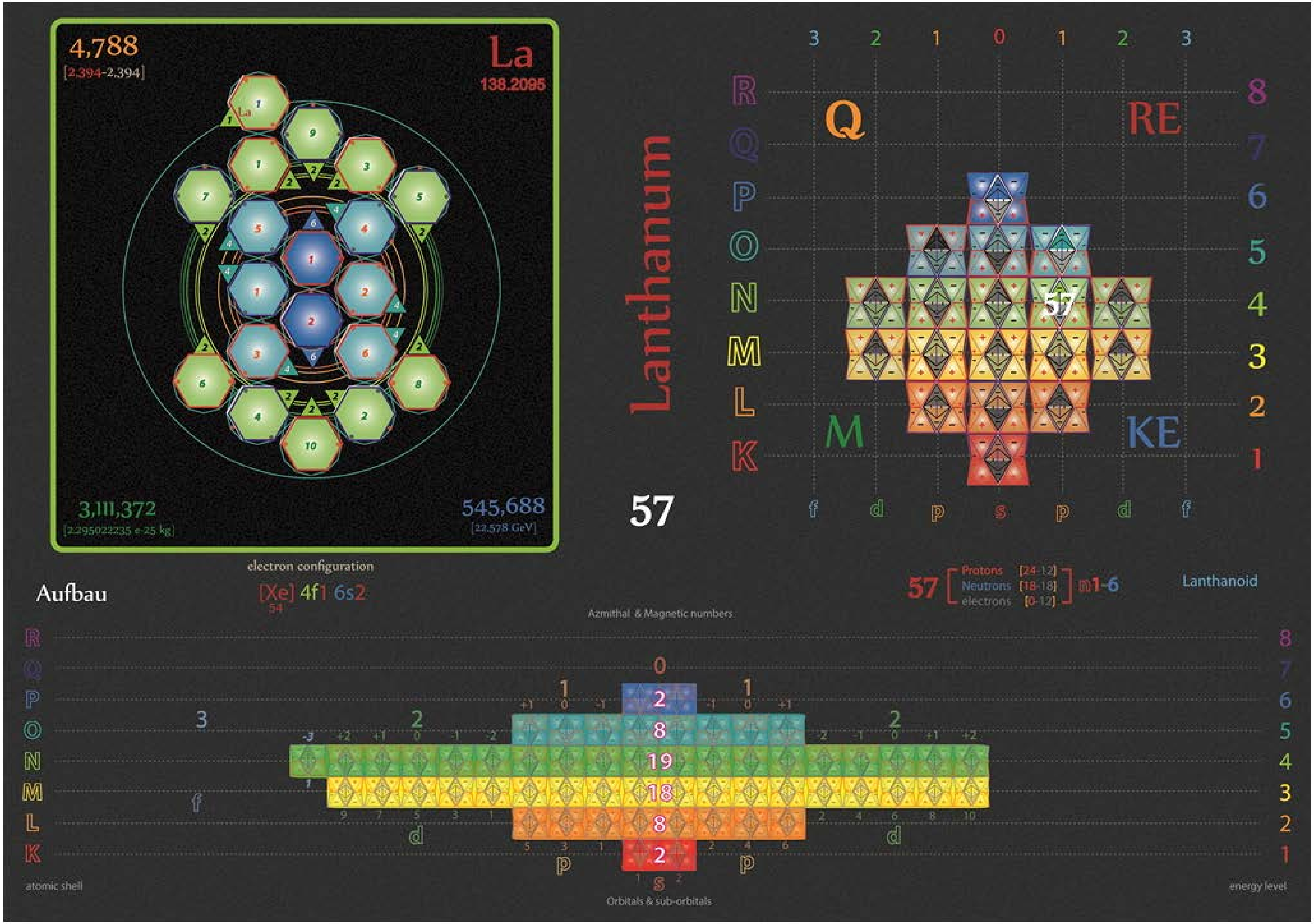

4,536
[2,3268-2,268]
Xe
129.9435
2,925,288
[2.157762236 e-25 kg]
494,640
[20.466 GeV]
Xenon
54
R Q P O N M L K
8 7 6 5 4 3 2 1
Q
RE
M
KE
f d p s p d f
electron configuration
[Kr] 4d10 5s2 5p6
36
Aufbau
54 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-5
Noble Gas
Azmithal & Magnetic numbers
8
18
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

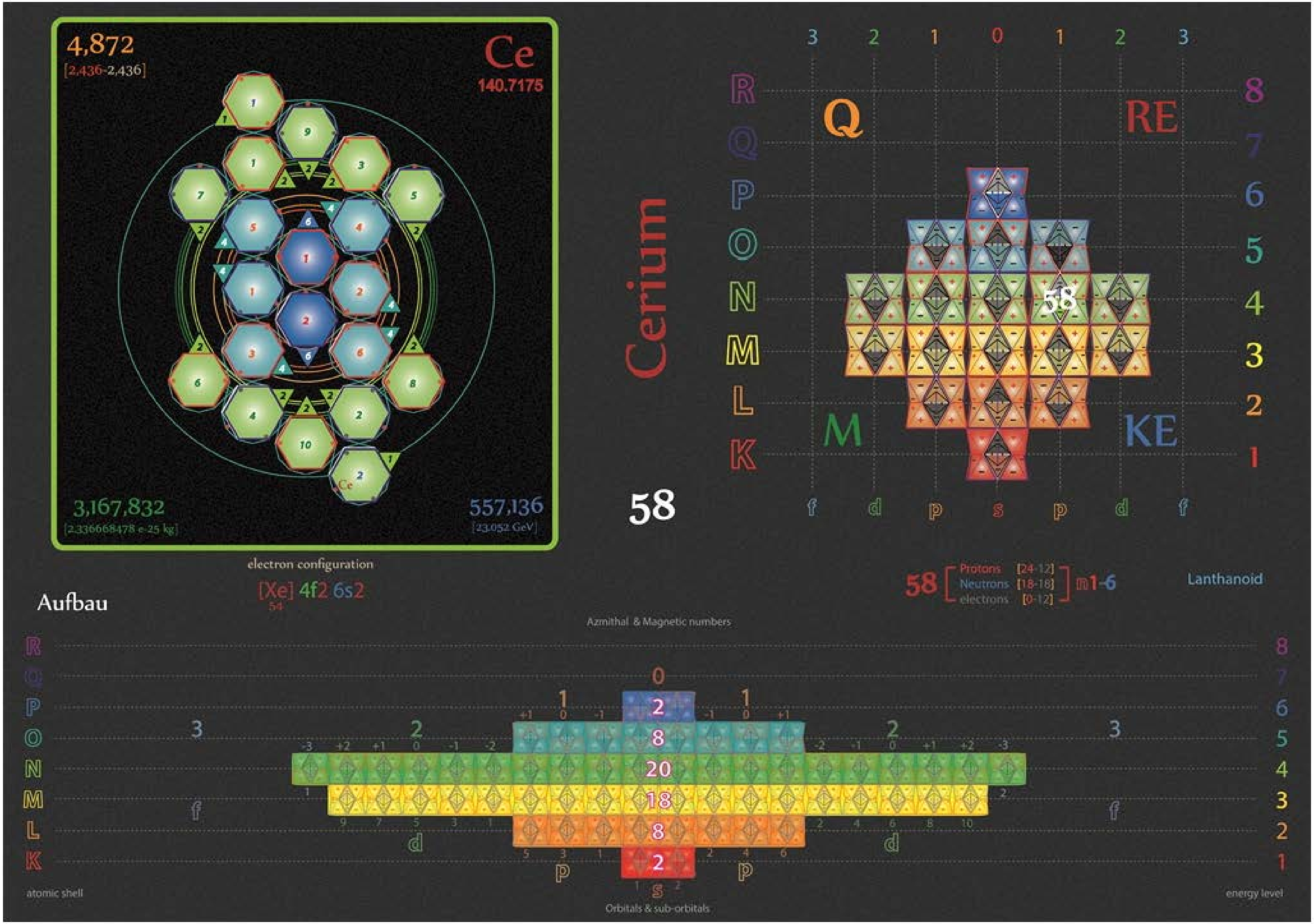


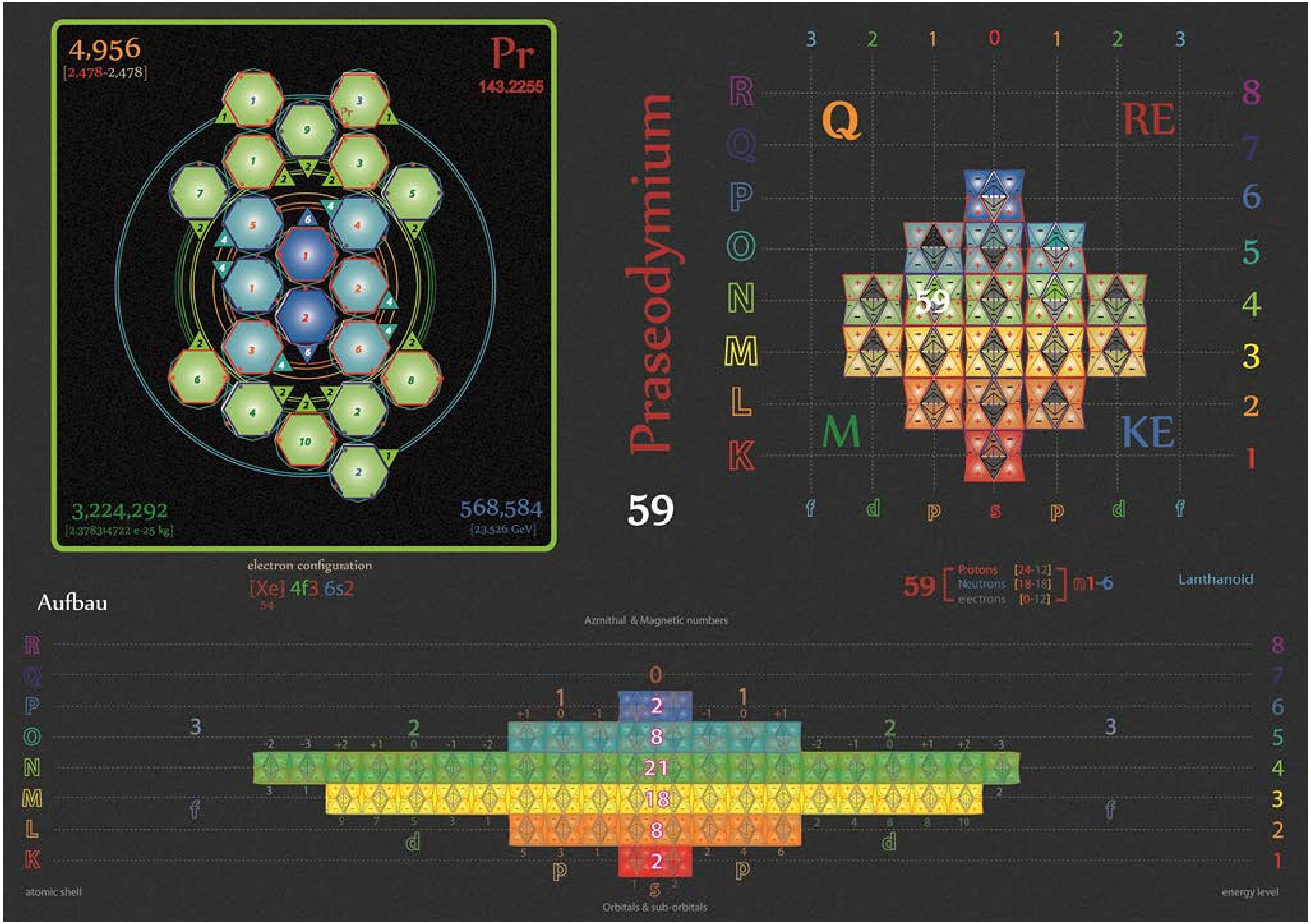
Tetryonics 51.55 - Caesium atom

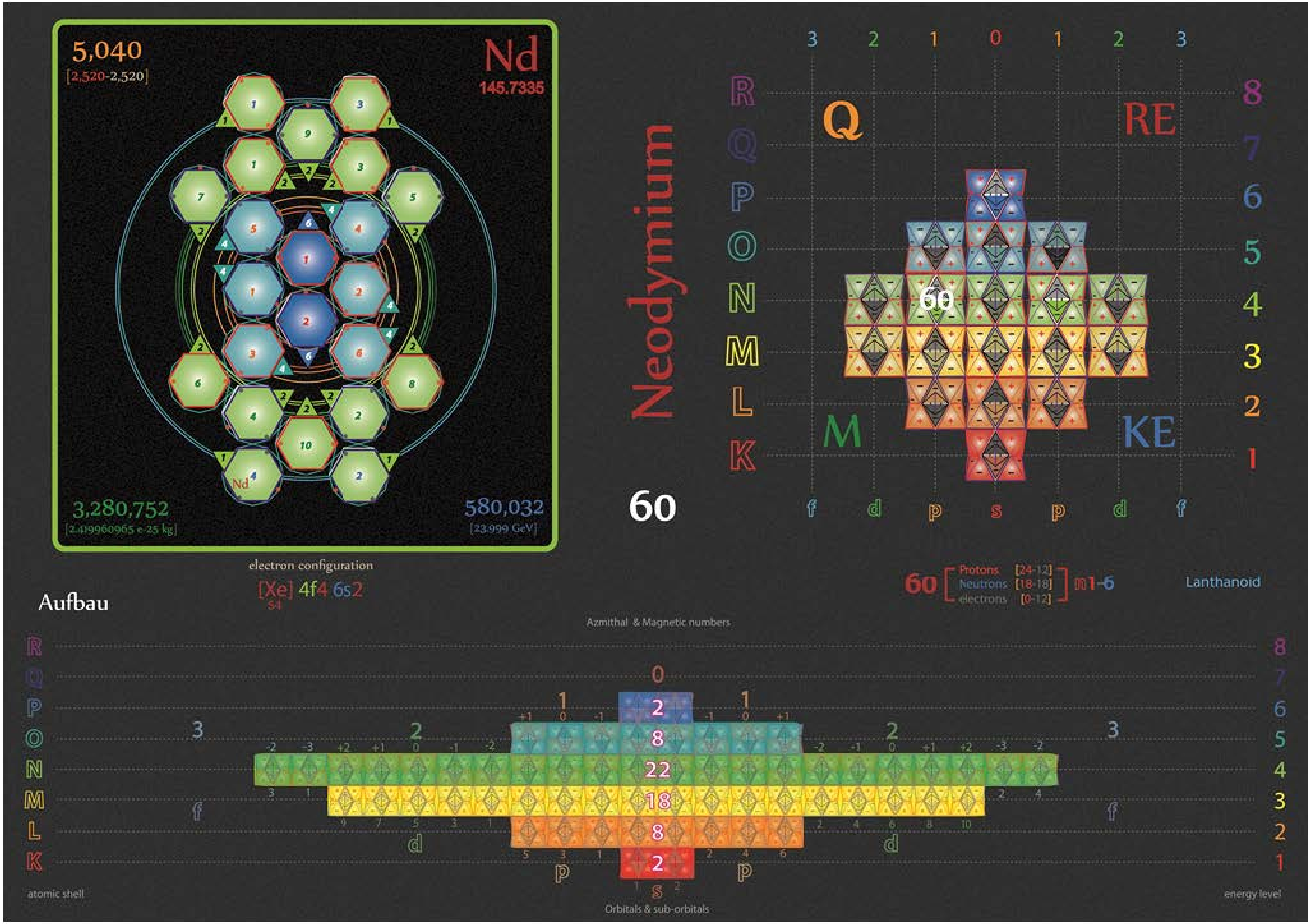


Tetryonics 51.56 - Barium atom

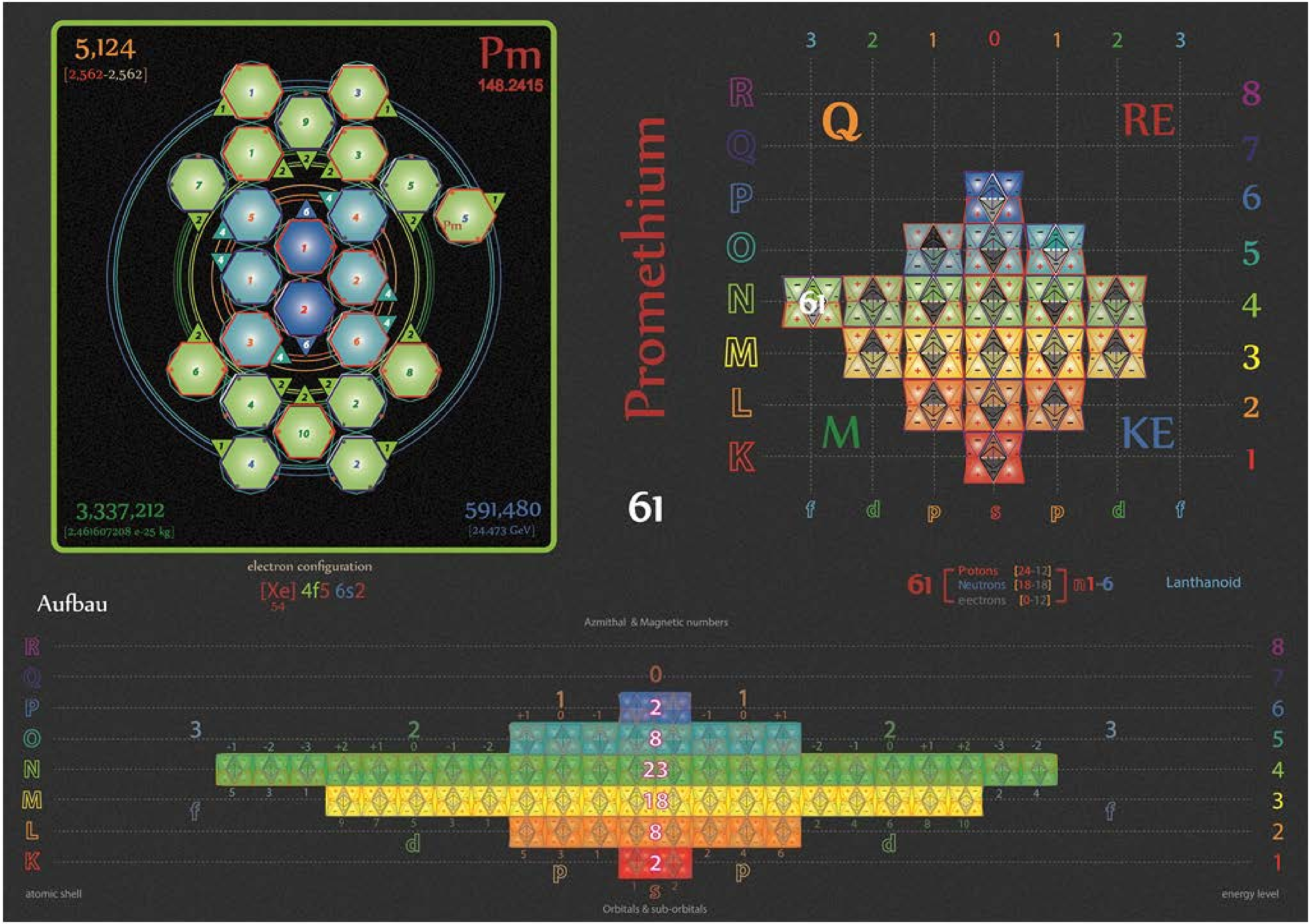

4,788
[2,394-2,394]
La
138.2095
3,111,372
[2.295022235 e-25 kg]
545,688
[22.578 GeV]
Lanthanum
57
Q
RE
M
KE
electron configuration
[Xe] 4f1 6s2
54
Aufbau
57 Protons [24-12] Neutrons [18-18] electrons [0-12] m1-6
Lanthanoid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals


4,872
[2,436-2,436]
Ce
140.7175
3,167,832
[2.336668478 e-25 kg]
557,136
[23.052 GeV]
Cerium
58
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
electron configuration
[Xe] 4f2 6s2
54
Aufbau
58 Protons [24-12] Neutrons [18-18] electrons [0-12] m1-6
Lanthanoid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

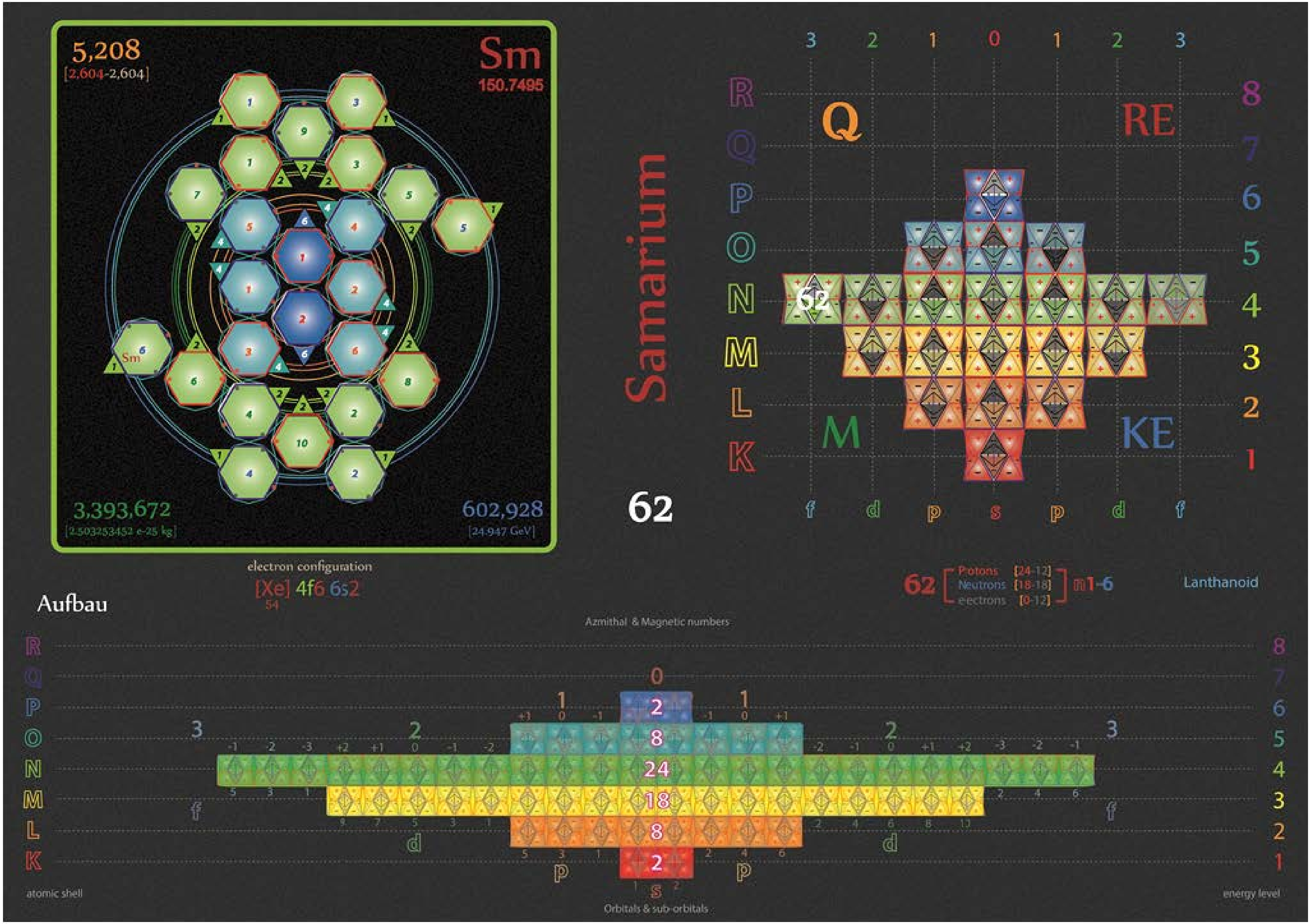

4,956
[2,478-2,478]
Pr
143.2255
3,224,292
[2.378314722 e-25 kg]
568,584
[23.526 GeV]
Praseodymium
59
Q
RE
M
KE
59
electron configuration
[Xe] 4f3 6s2
54
Aufbau
59
Potons [24-12]
Neutrons [18-18]
electrons [0-12]
n1-6
Lanthanoid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

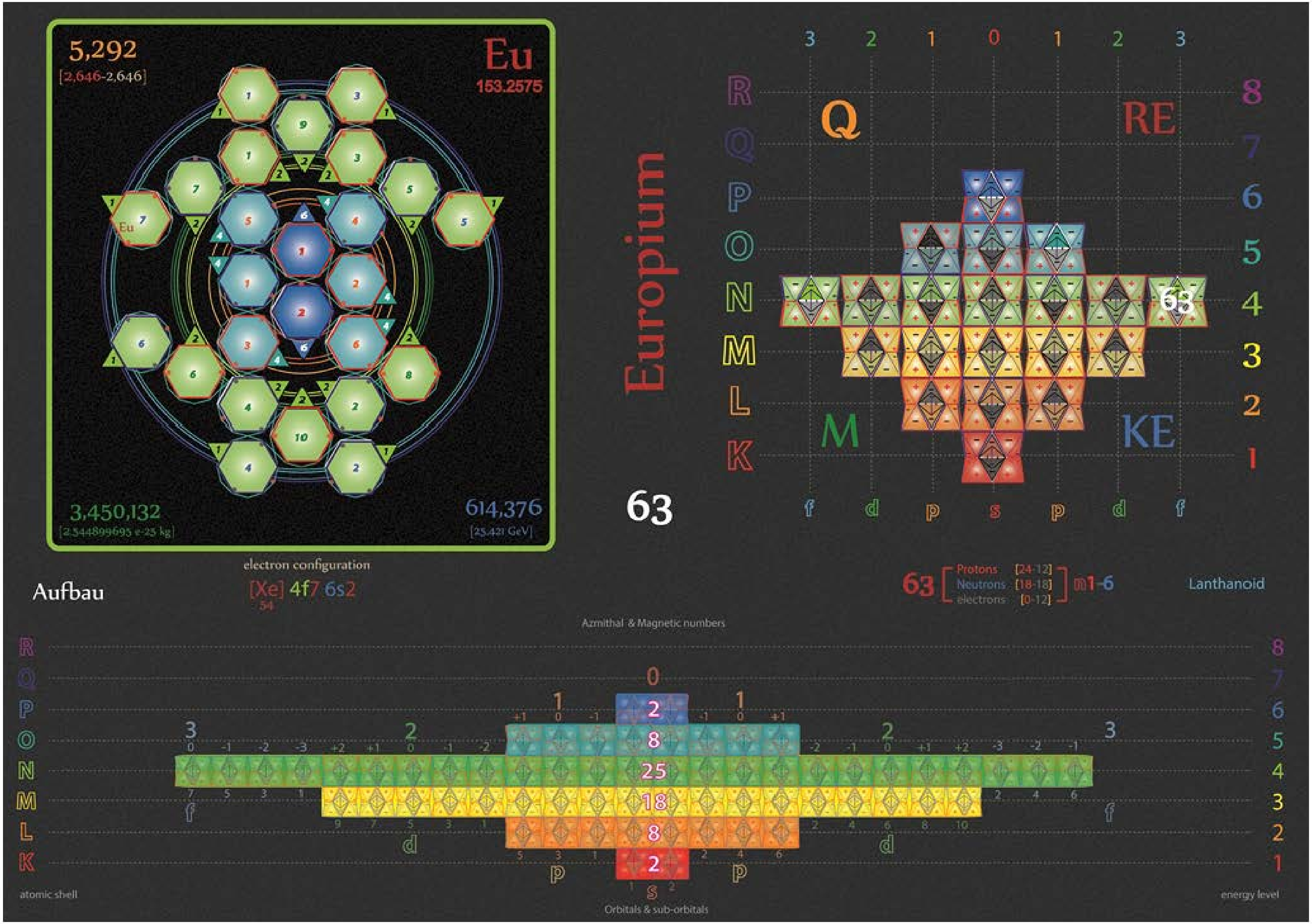


5,040
[2,520-2,520]
Nd
145.7335
3,280,752
[2.419960965 e-25 kg]
580,032
[23.999 GeV]
Neodymium
60
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
3 2 1 0 1 2 3
f d p s p d f
electron configuration
[Xe] 4f4 6s2
54
Aufbau
60 [Protons [24-12] neutrons [18-18] electrons [0-12]] m1-6
Lanthanoid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

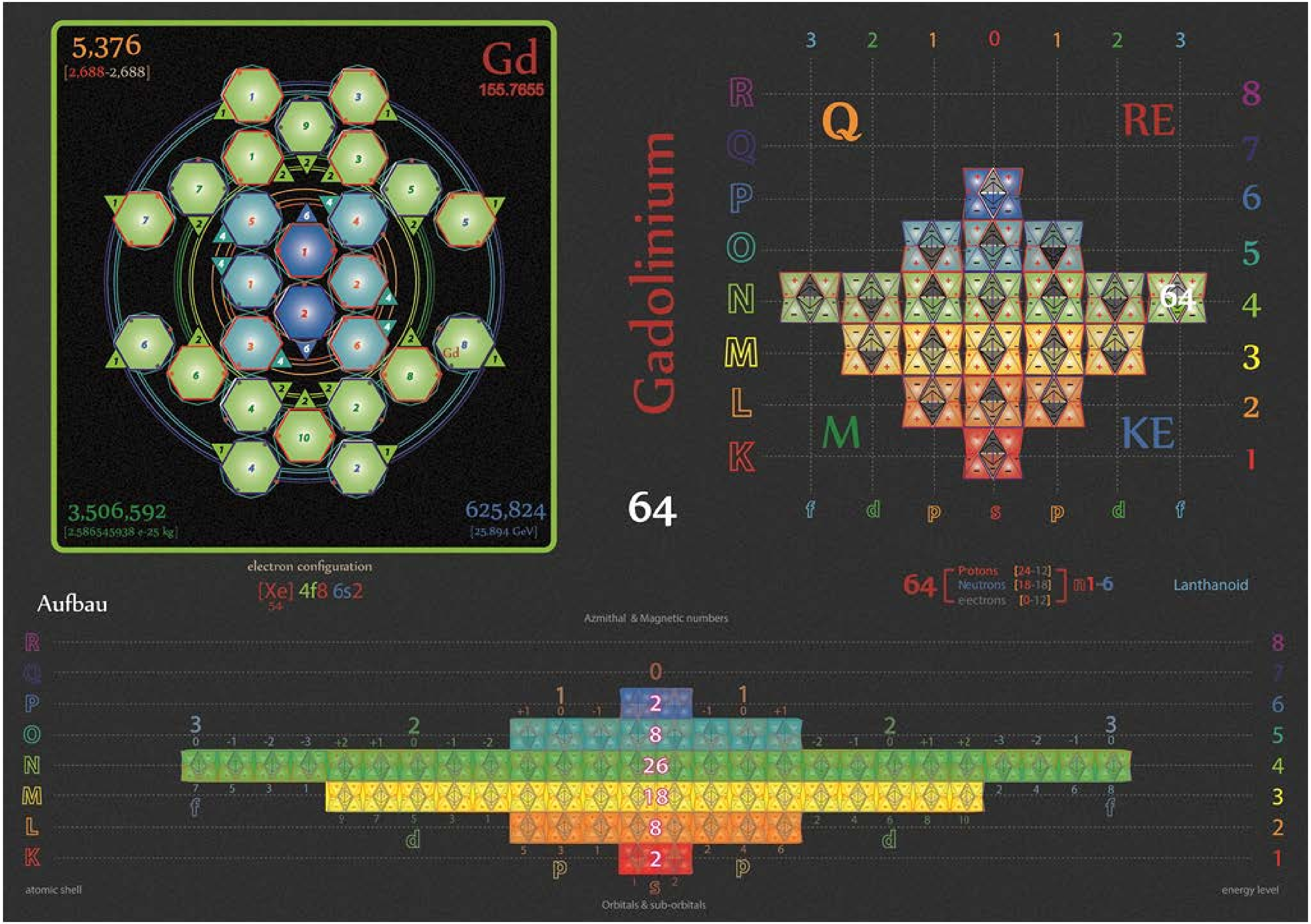


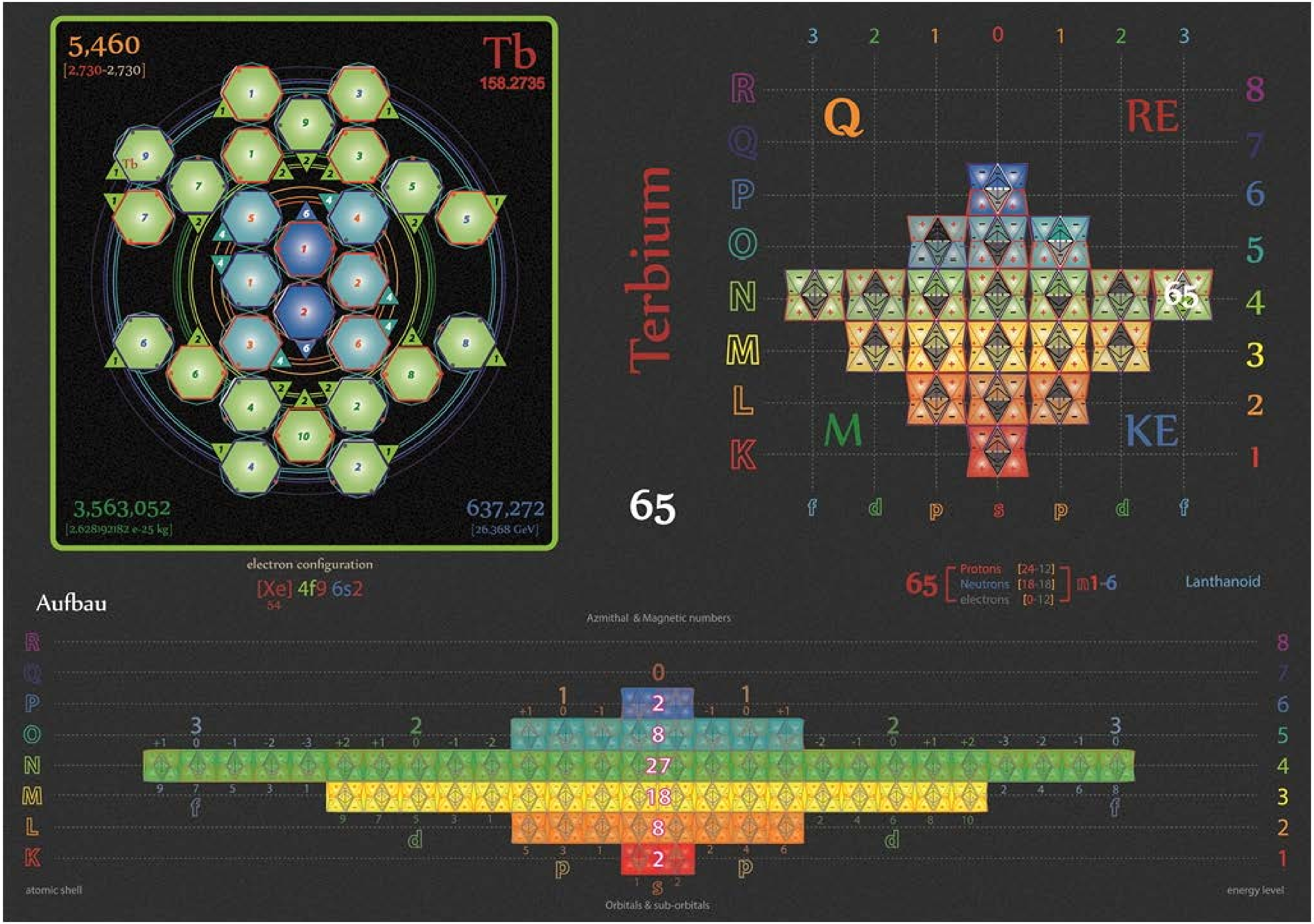
Tetryonics 51.61 - Promethium atom


5,208
[2,604-2,604]
Sm
150.7495
3,393,672
[2.503253452 e-25 kg]
602,928
[24.947 GeV]
Samarium
62
R
Q
P
O
N
M
L
K
Q
RE
M
KE
8
7
6
5
4
3
2
1
3 2 1 0 1 2 3
f d p s p d f
electron configuration
[Xe] 4f6 6s2
54
Aufbau
62
Potons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-6
Lanthanoid
Azmithal & Magnetic numbers
2
8
24
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

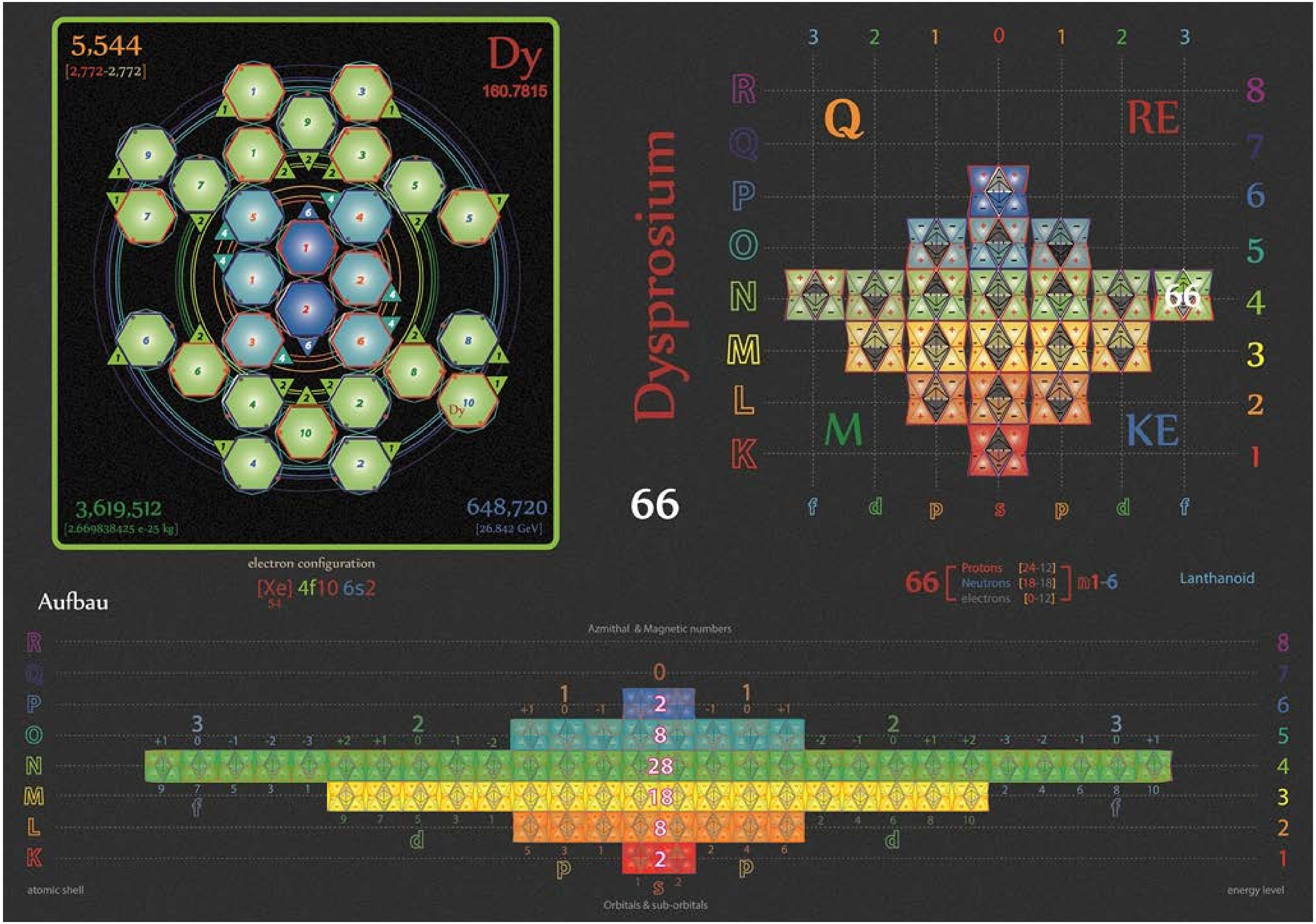


Tetryonics 51.63 - Europium atom

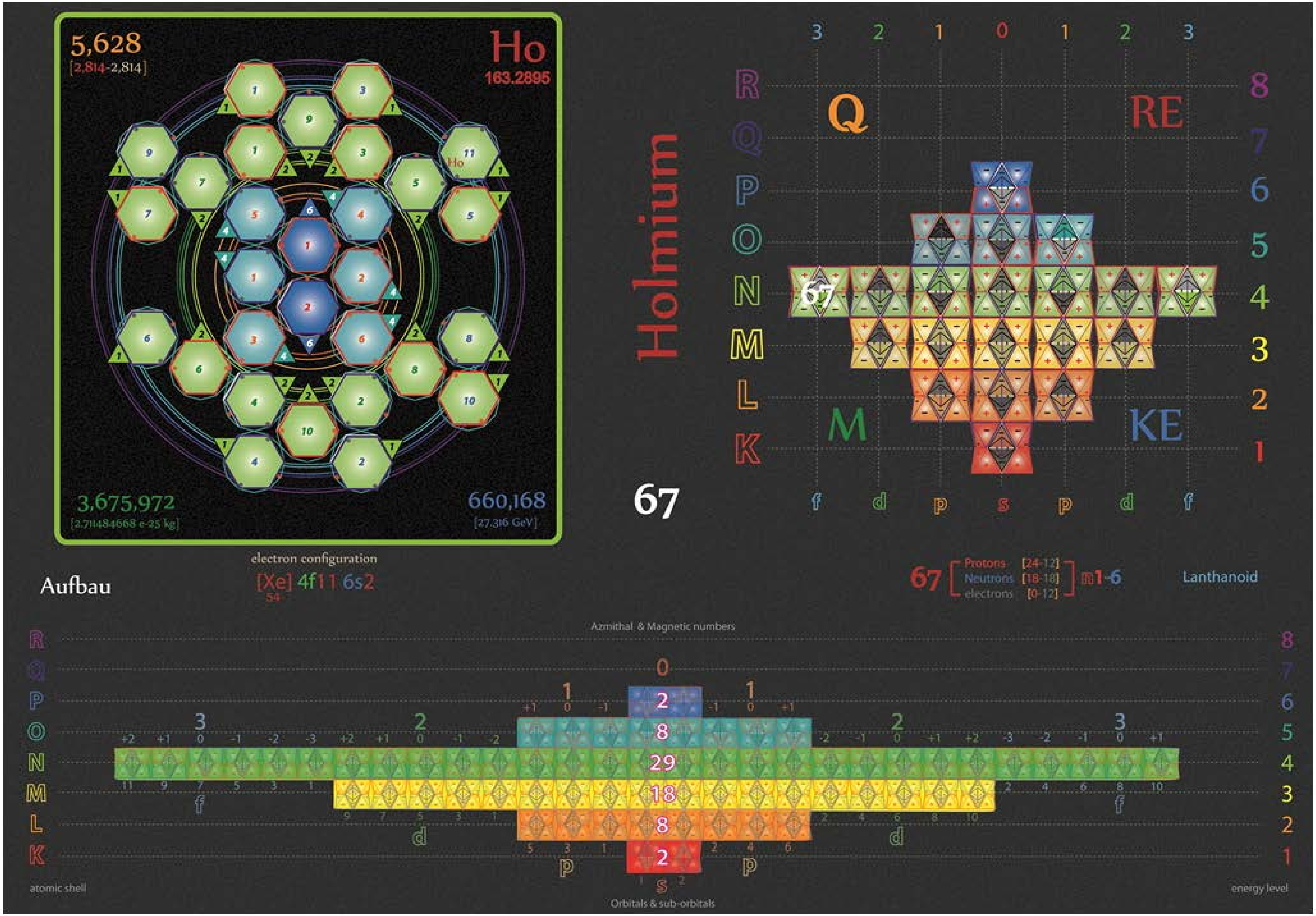

5,376
[2,688-2,688]
Gd
155.7655
3,506,592
[2.586545938 e-25 kg]
625,824
[25.894 GeV]
Gadolinium
64
electron configuration
[Xe] 4f8 6s2
54
Aufbau
Q
RE
M
KE
R
Q
P
O
N
M
L
K
f d p s p d f
64 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-6
Lanthanoid
Azimuthal & Magnetic numbers
2
8
26
18
8
2
Orbitals & sub-orbitals
atomic shell
energy level



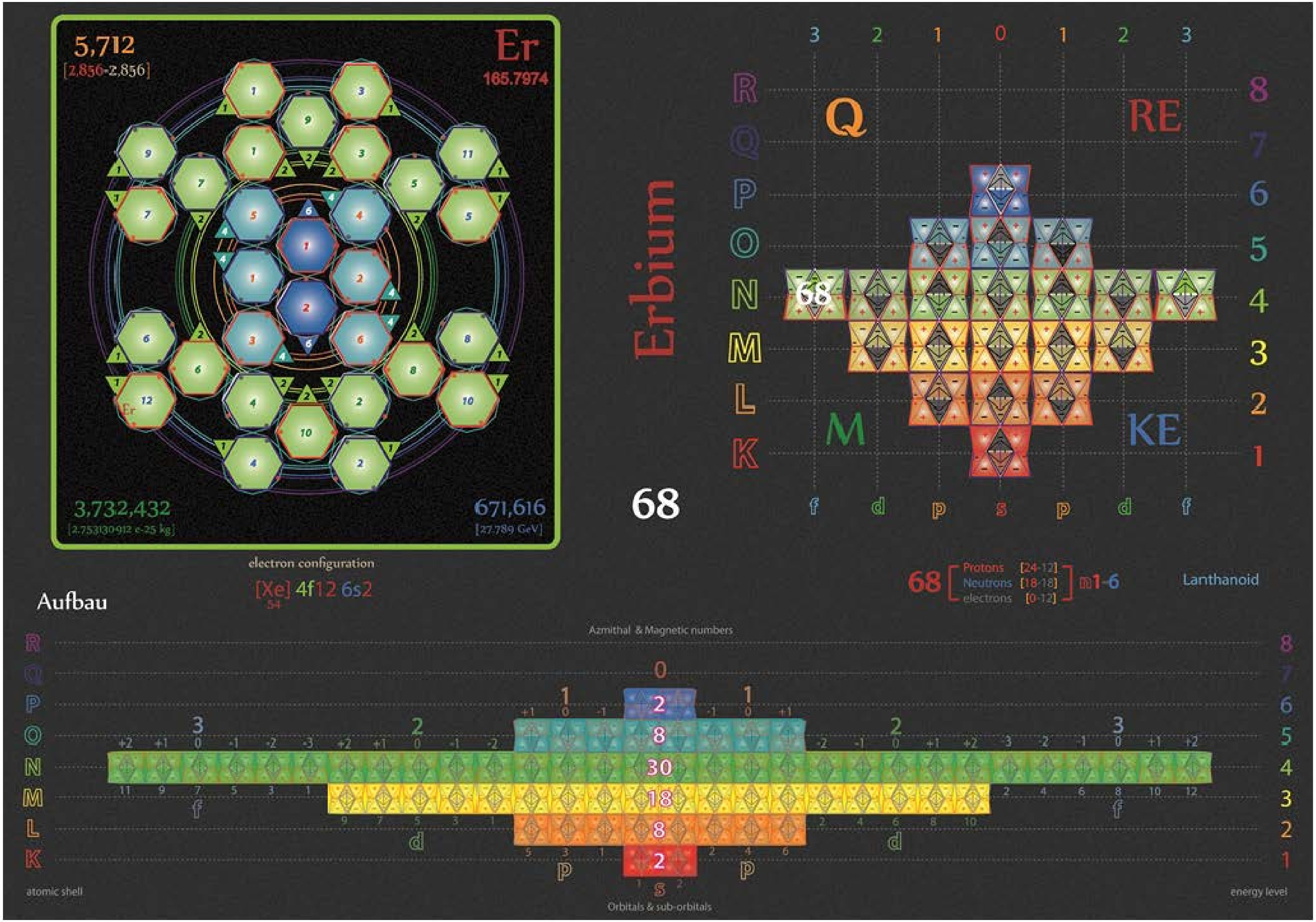
Tetryonics 51.65 -Terbium atom



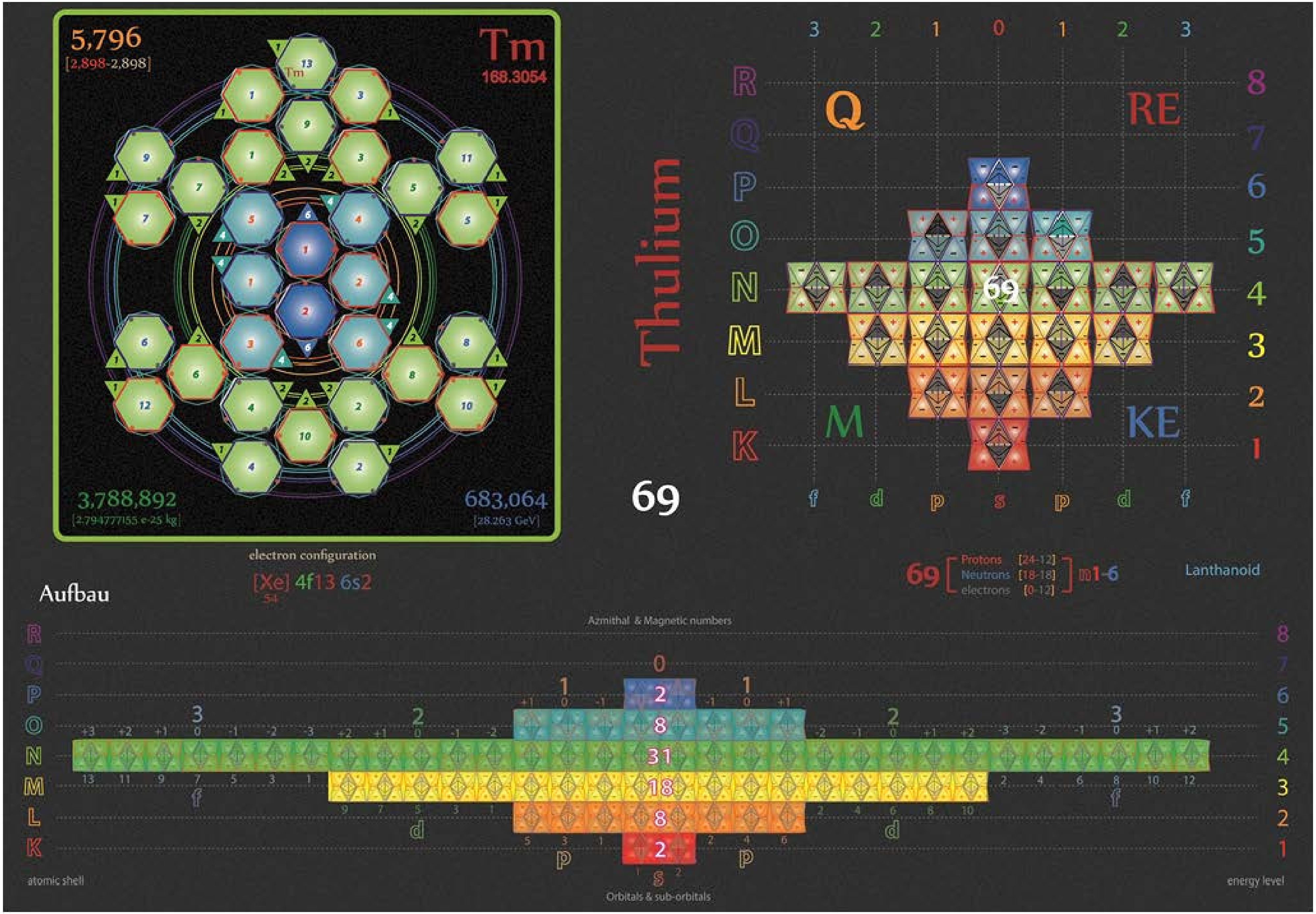
Tetryonics 51.66 - Dysprosium atom



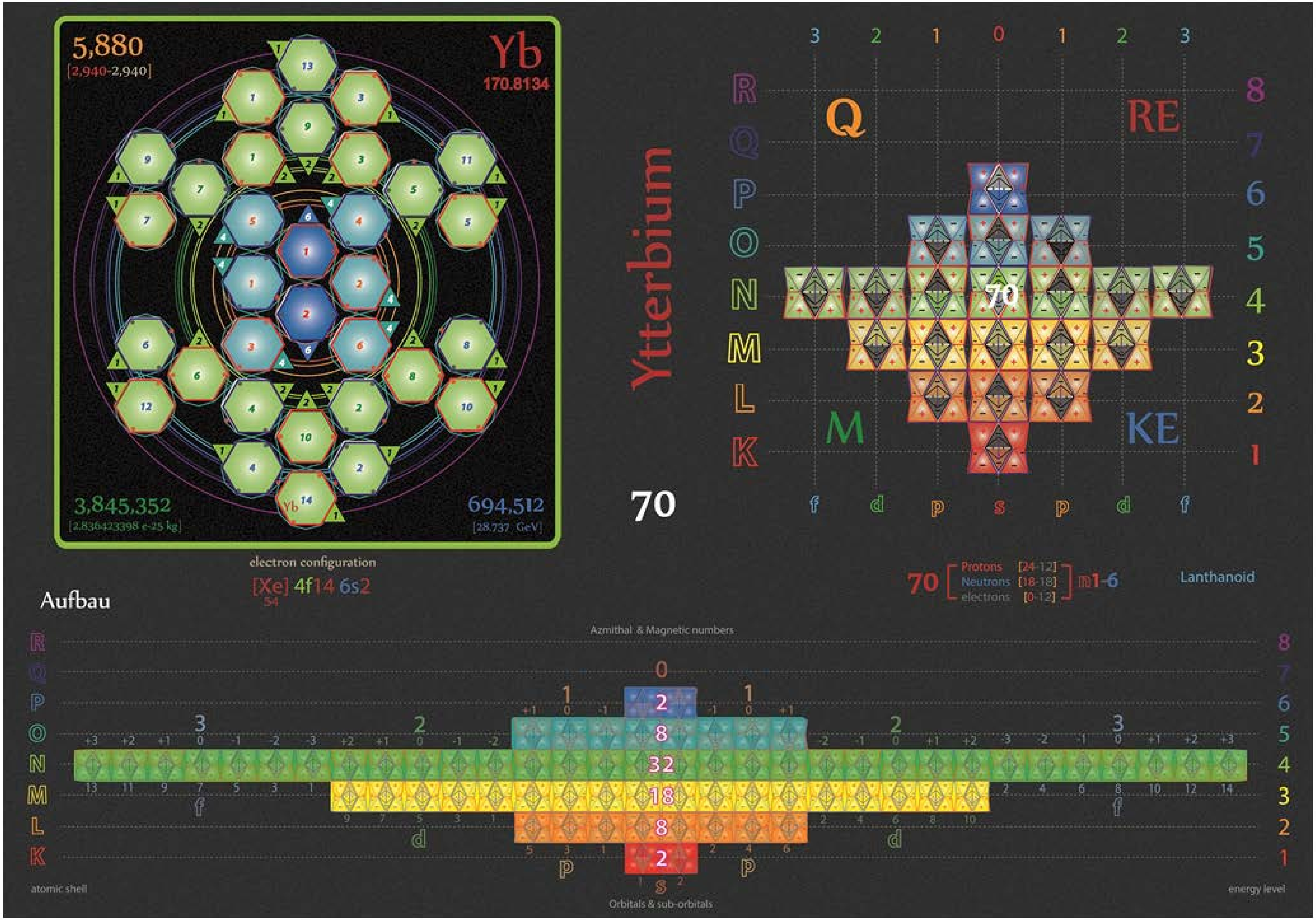
Tetryonics 51.67 - Holmium atom

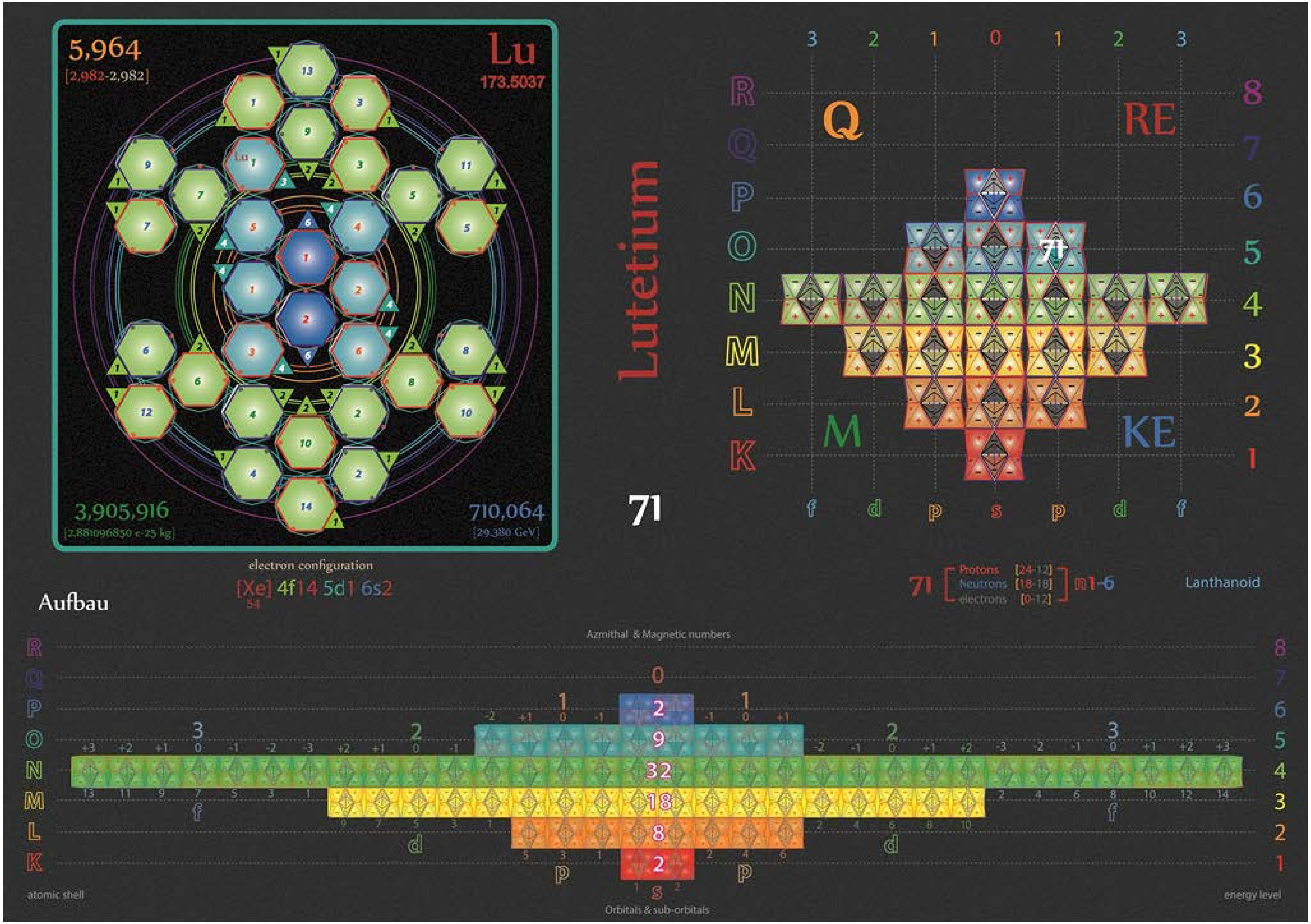


Tetryonics 51.68 - Erbium atom

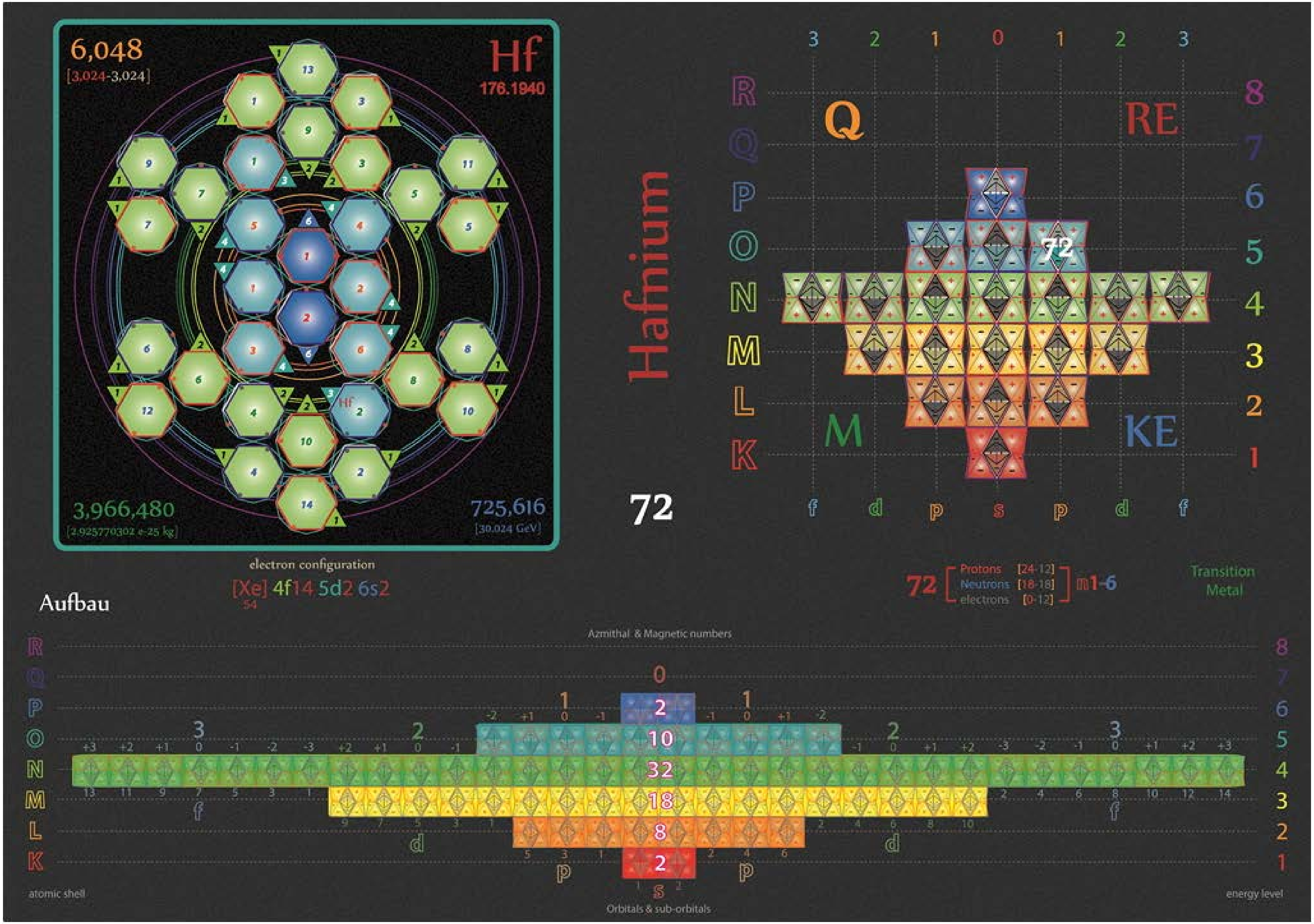


Tetryonics 51.69 - Thulium atom

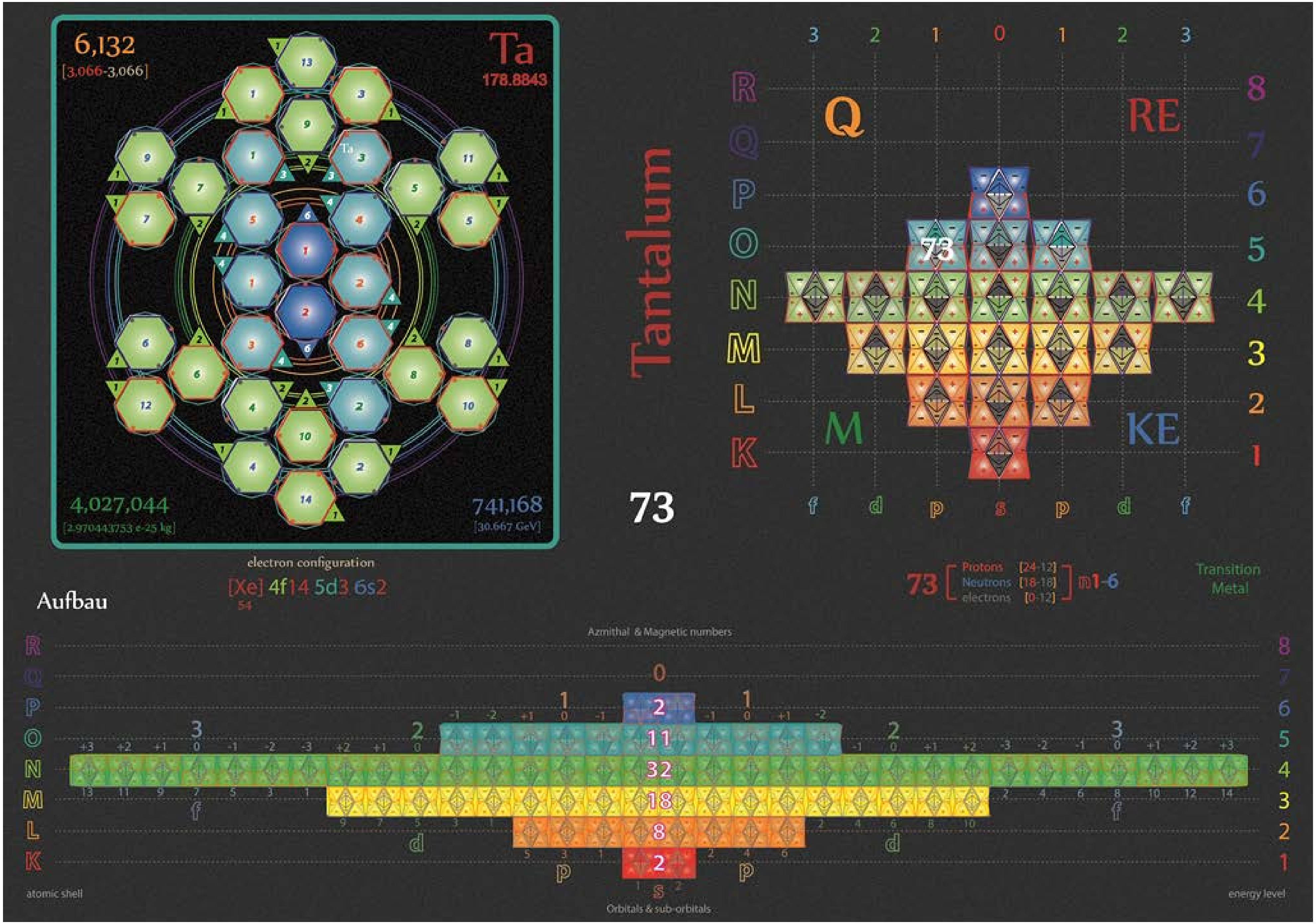

5,880
[2,940-2,940]
Yb
170.8134
3,845,352
[2.836423398 e-25 kg]
694,512
[28.737 GeV]
Ytterbium
70
electron configuration
[Xe] 4f14 6s2
54
Aufbau
Q
RE
M
KE
70 Protons [24-12] Neutrons [18-18] electrons [0-12] m1-6
Lanthanoid
Azmithal & Magnetic numbers
Orbitals & sub-orbitals
atomic shell
energy level

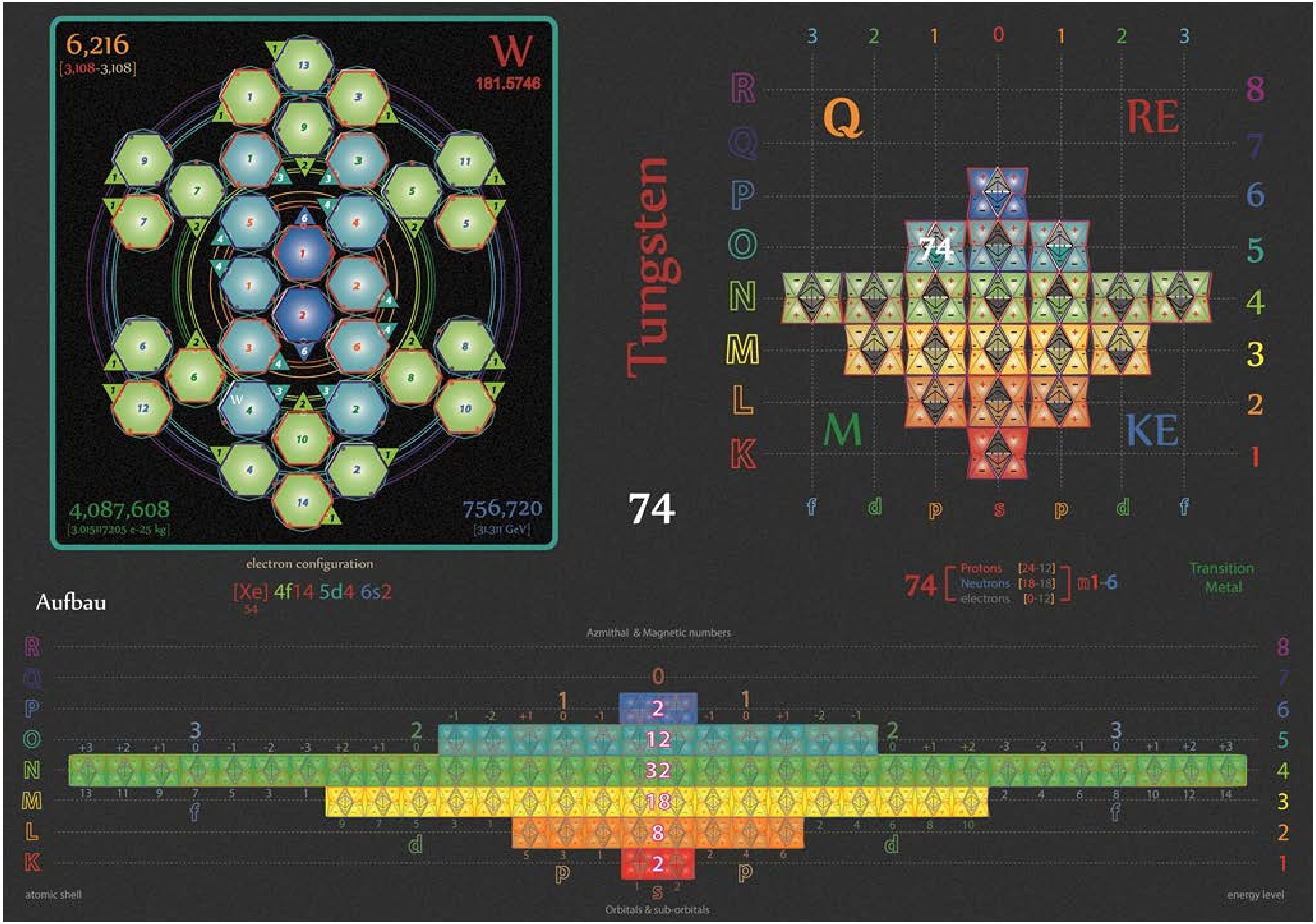


Tetryonics 51.71 - Lutetium atom

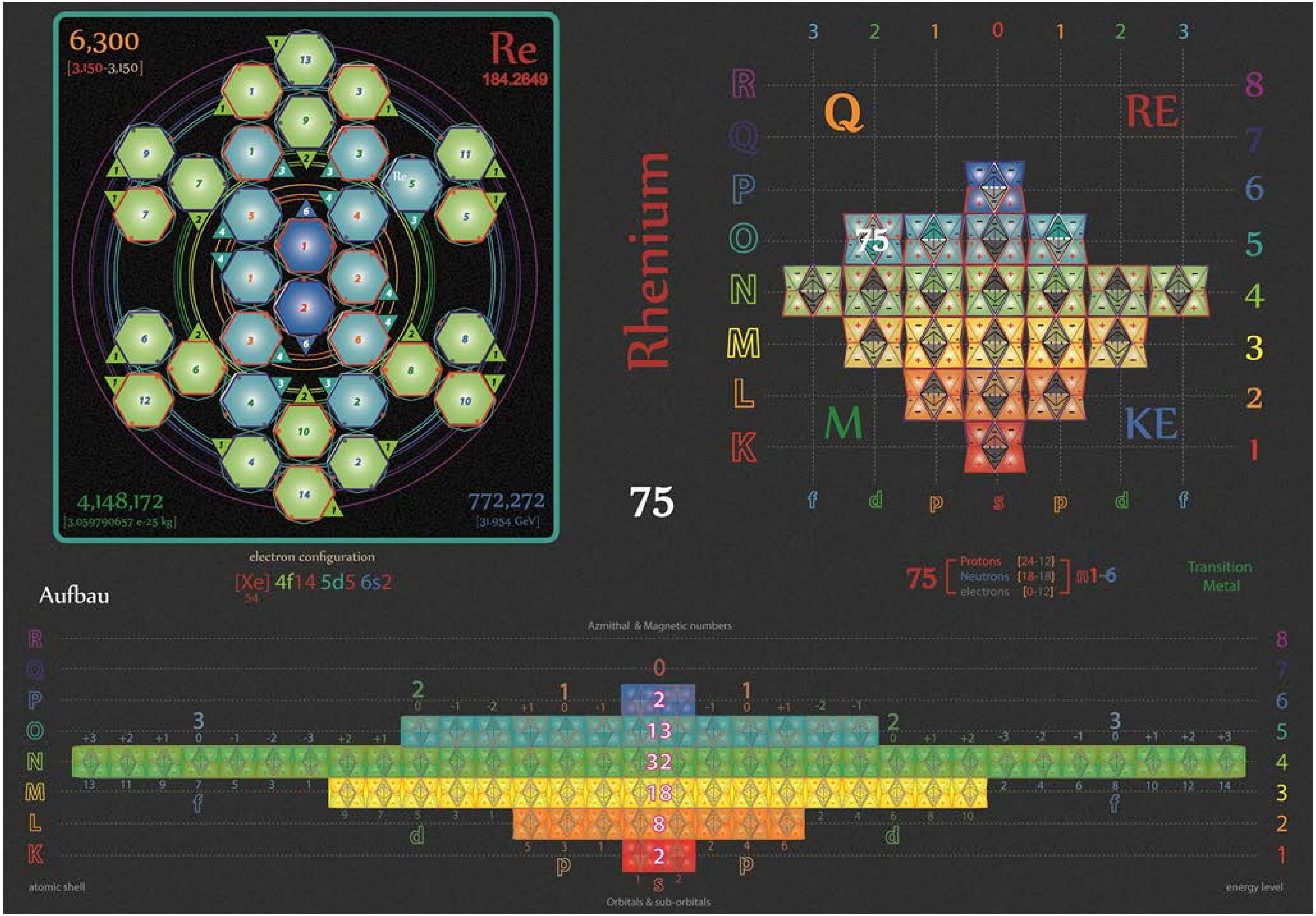


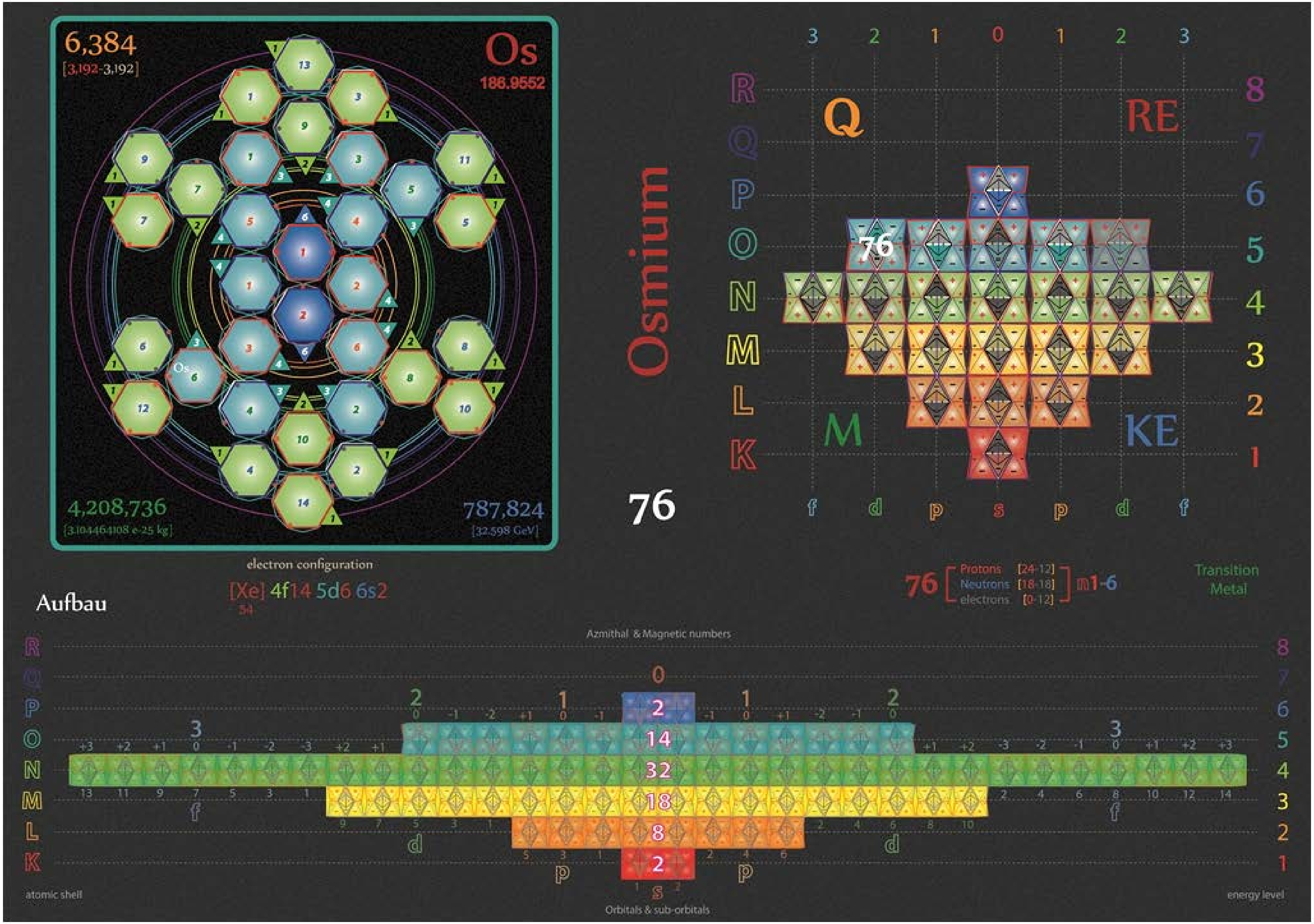
6,048
[3,024-3,024]
Hf
176.1940
3,966,480
[2.925770302 e-25 kg]
725,616
[30.024 GeV]
Hafnium
72
electron configuration
[Xe] 4f14 5d2 6s2
54
Aufbau
R Q P O N M L K
8 7 6 5 4 3 2 1
Q
RE
M
KE
f d p s p d f
72 Protons [24-12] Neutrons [18-18] electrons [0-12] m1-6
Transition Metal
Azmithal & Magnetic numbers
Orbitals & sub-orbitals
atomic shell
energy level

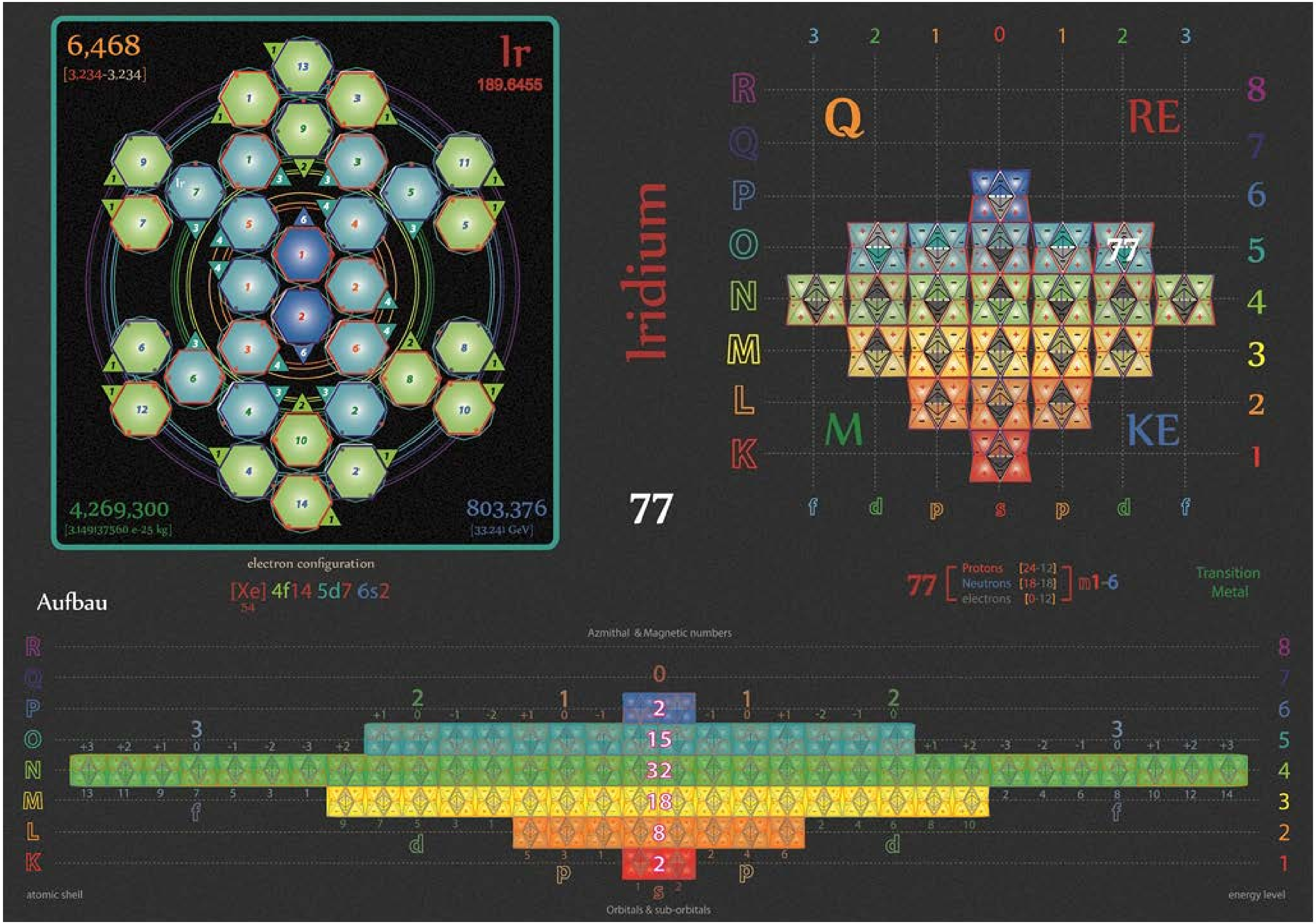

6,132
[3,066-3,066]
Ta
178.8843
4,027,044
[2.970443753 e-25 kg]
741,168
[30.667 GeV]
Tantalum
73
R Q P O N M L K
8 7 6 5 4 3 2 1
Q
RE
M
KE
f d p s p d f
electron configuration
[Xe] 4f14 5d3 6s2
54
Aufbau
73 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-6
Transition Metal
Azmithal & Magnetic numbers
2
11
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals



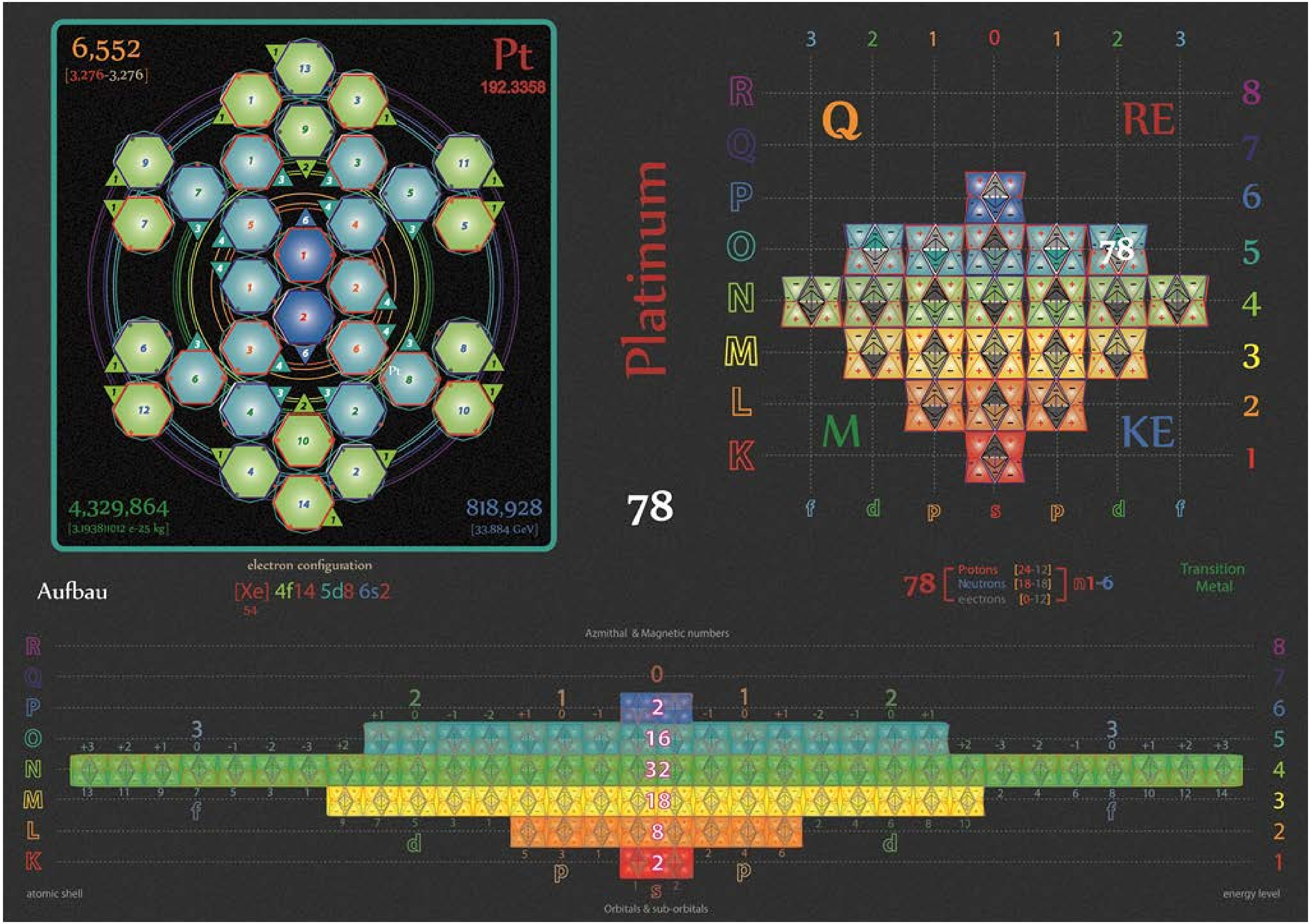
Tetryonics 51.74 - Tungsten atom


6,300
[3,150-3,150]
Re
184.2849
4,148,172
[3.059790657 e-25 kg]
772,272
[31.954 GeV]
Rhenium
75
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
electron configuration
[Xe] 4f14 5d5 6s2
54
75 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-6
Transition Metal
Aufbau
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

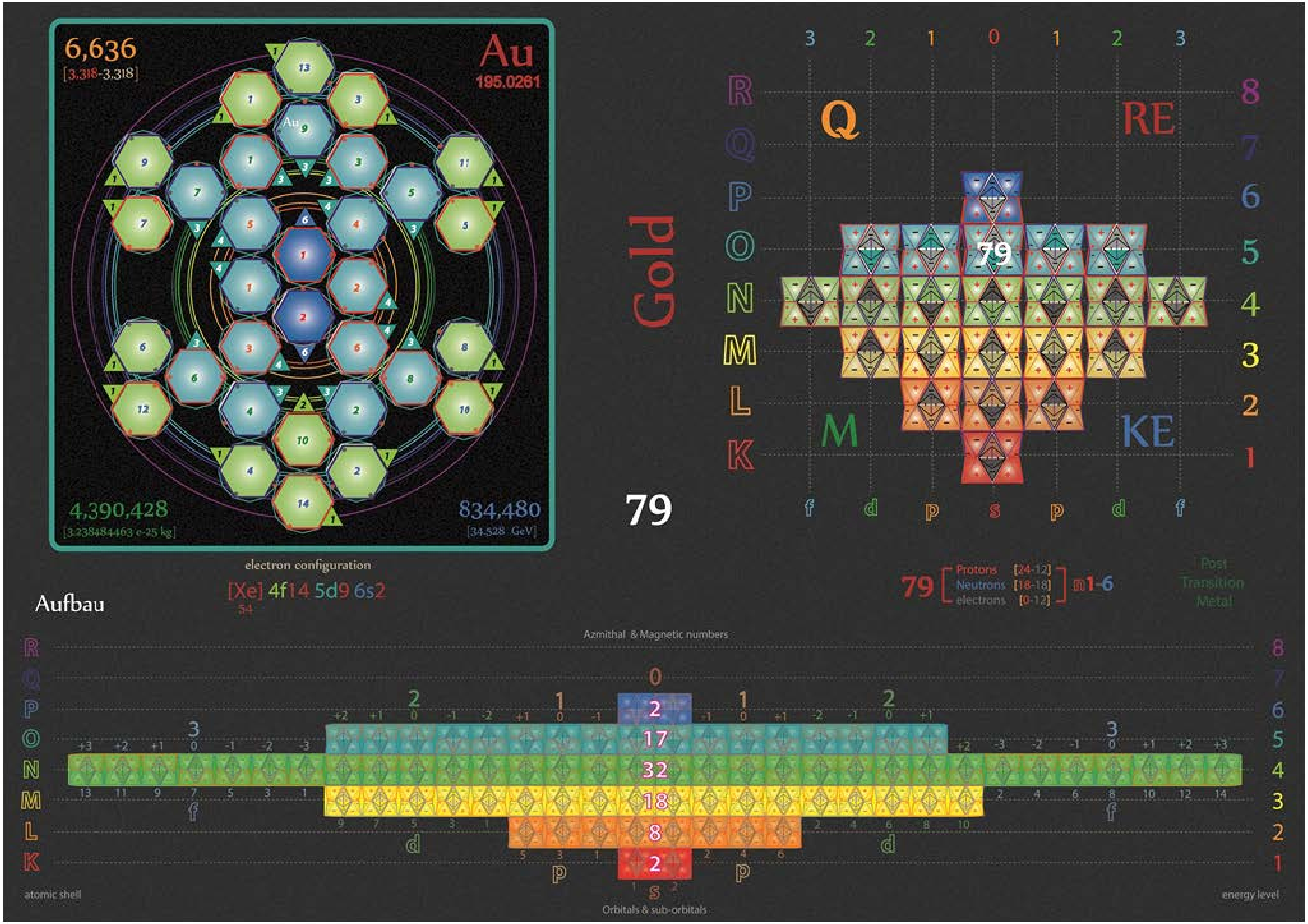

6,384
[3,192-3,192]
Os
186.9552
4,208,736
[3.104464108 e-25 kg]
787,824
[32.598 GeV]
Osmium
76
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
electron configuration
[Xe] 4f14 5d6 6s2
Aufbau
76 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-6
Transition Metal
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals



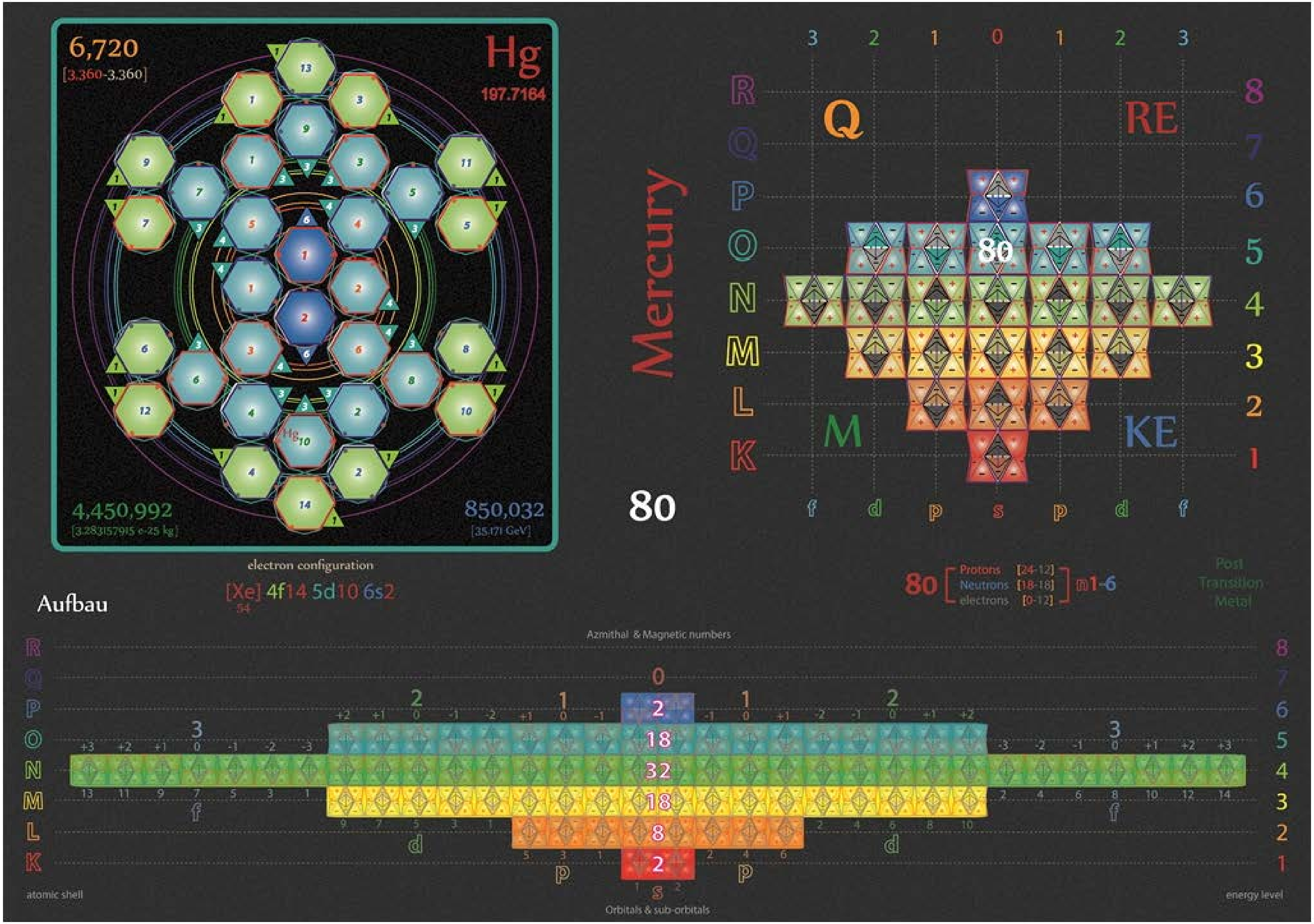
Tetryonics 51.77 - Iridium atom



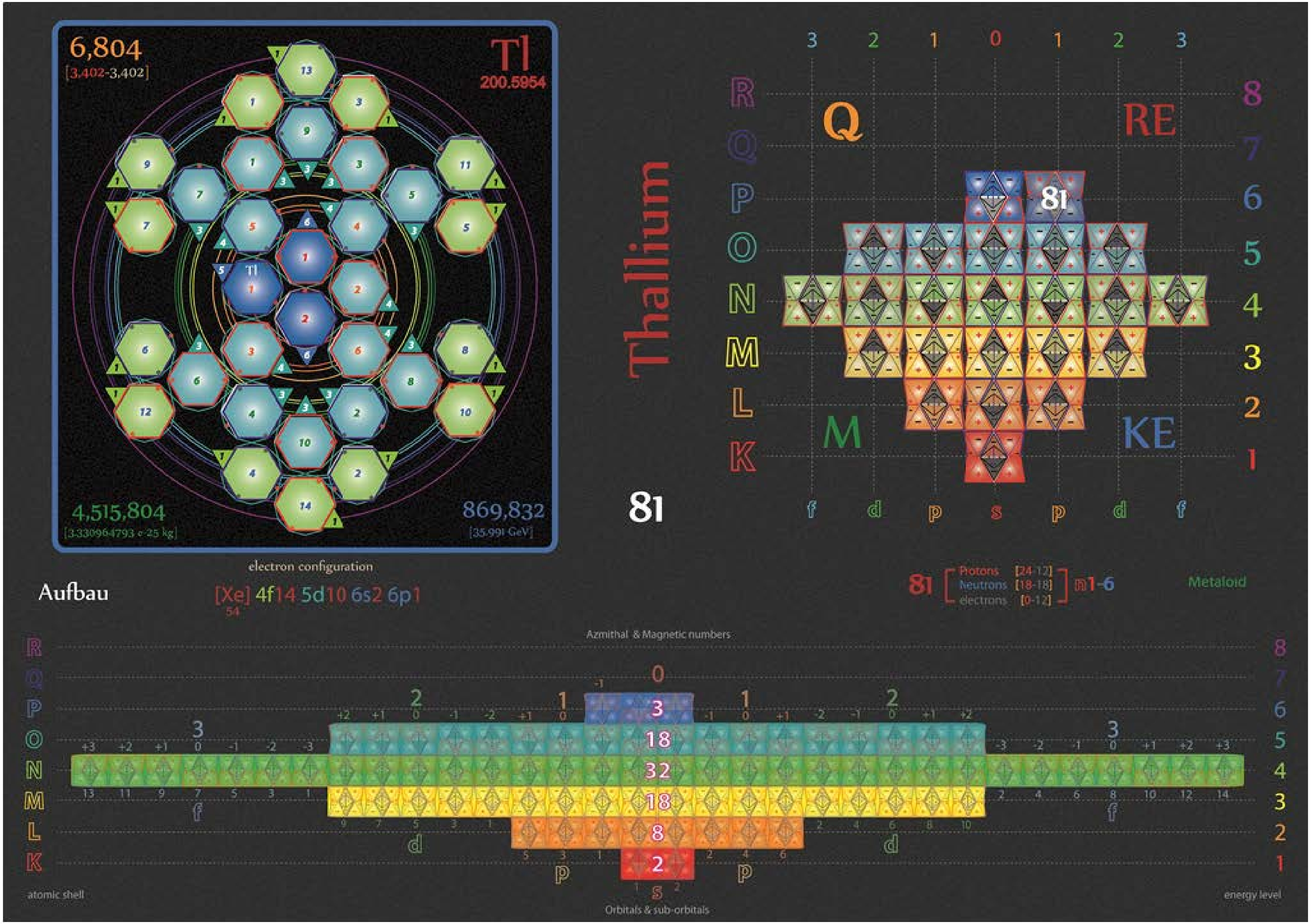
Tetryonics 51.78 - Platinum atom



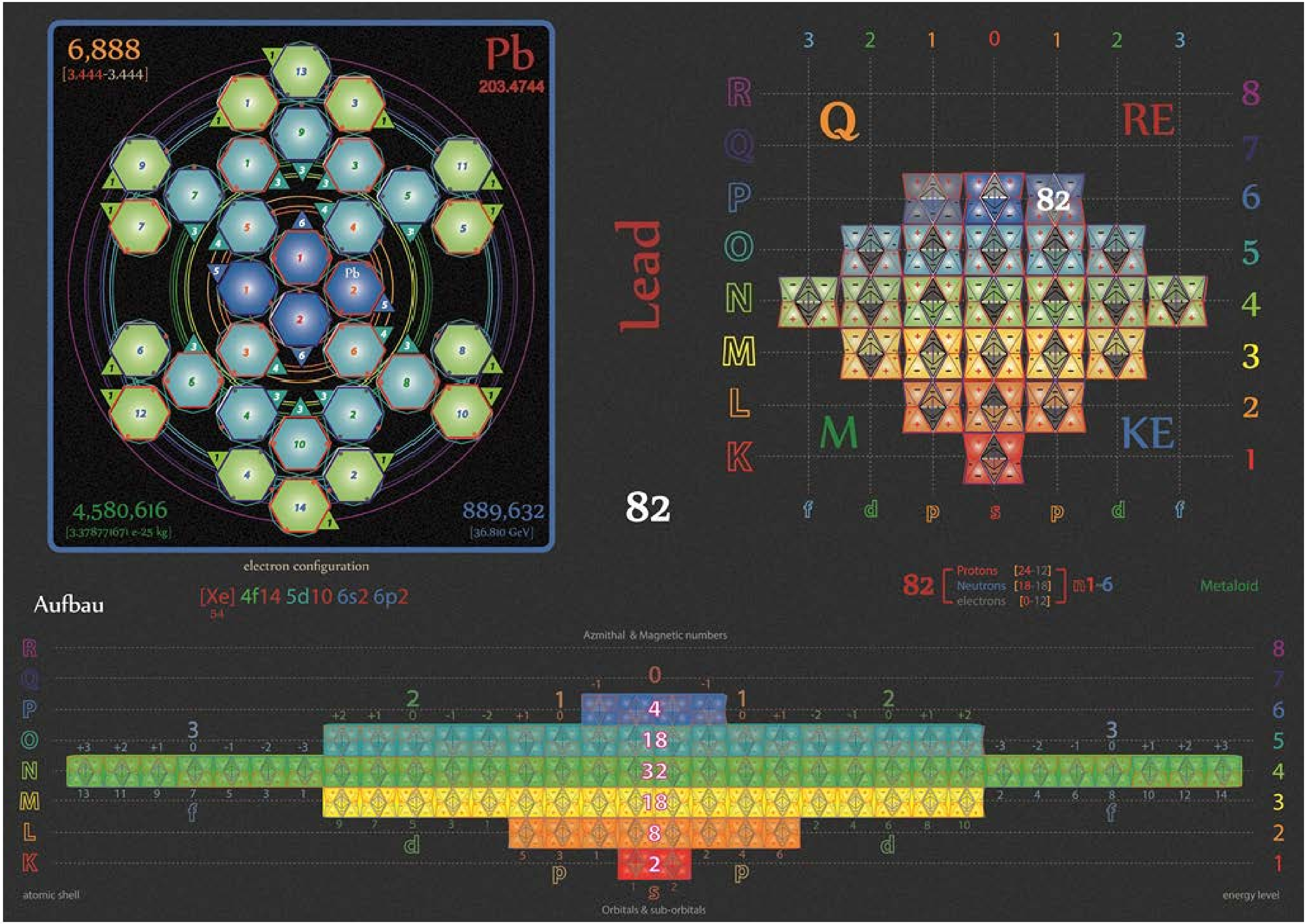
Tetryonics 51.79 - Gold atom

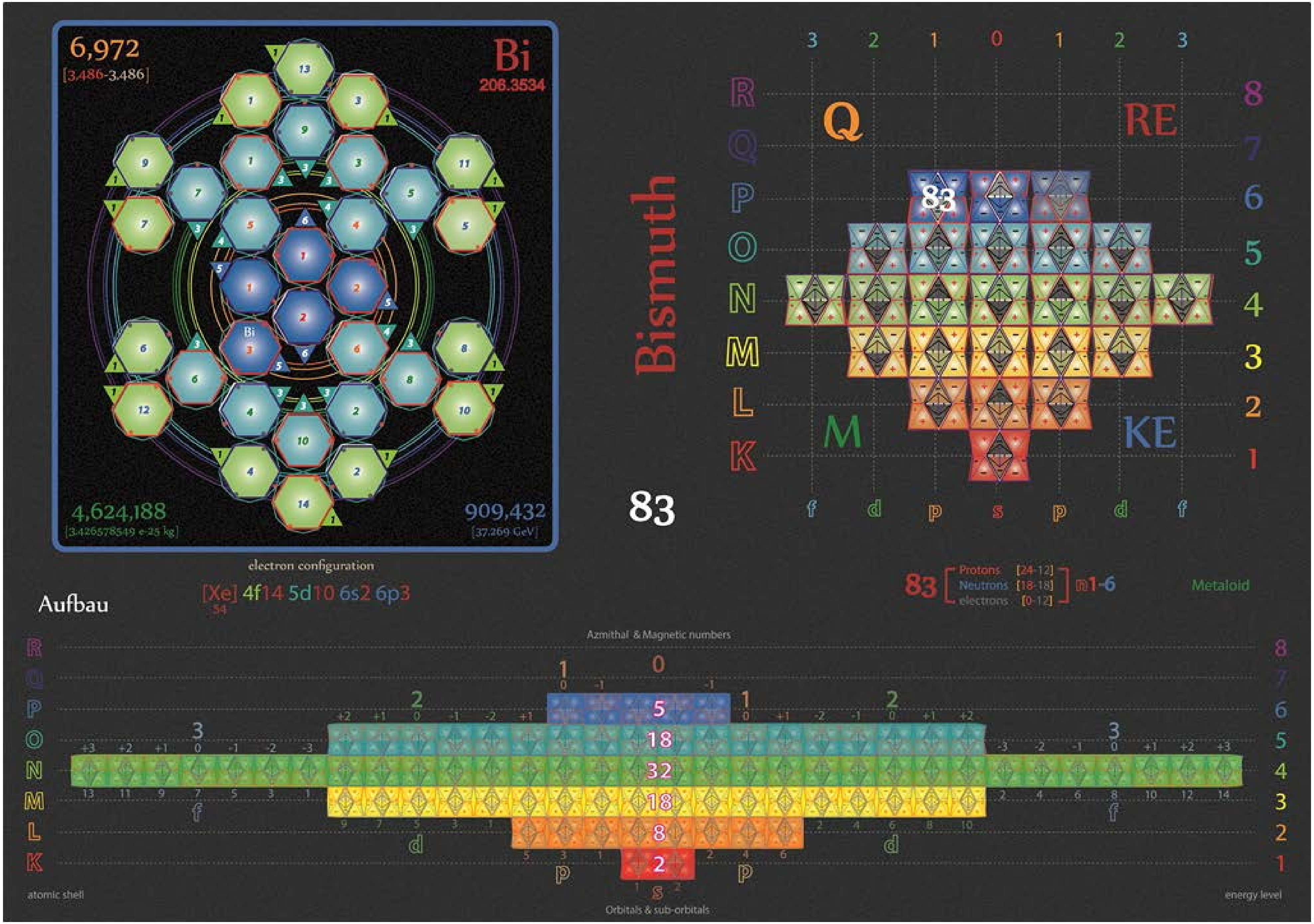


Tetryonics 51.80 - Mercury atom

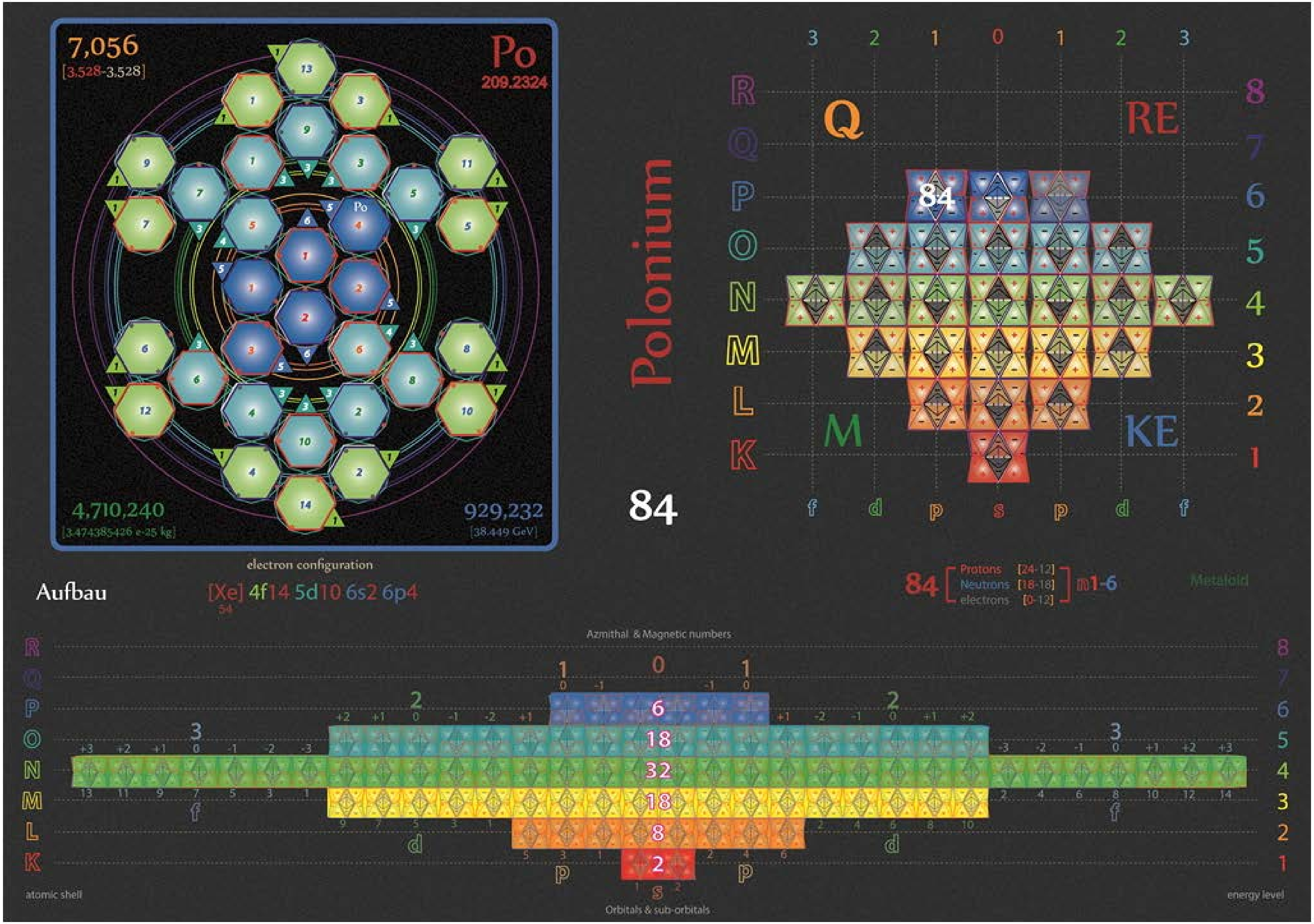


6,804
[3,402-3,402]
Tl
200.5954
4,515,804
[3.330964793 e-25 kg]
869,832
[35.991 GeV]
Thallium
81
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
electron configuration
Aufbau
[Xe] 4f14 5d10 6s2 6p1
54
81 Protons [24-12] Neutrons [18-18] electrons [0-12] n1-6
Metaloid
Azmithal & Magnetic numbers
3
18
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

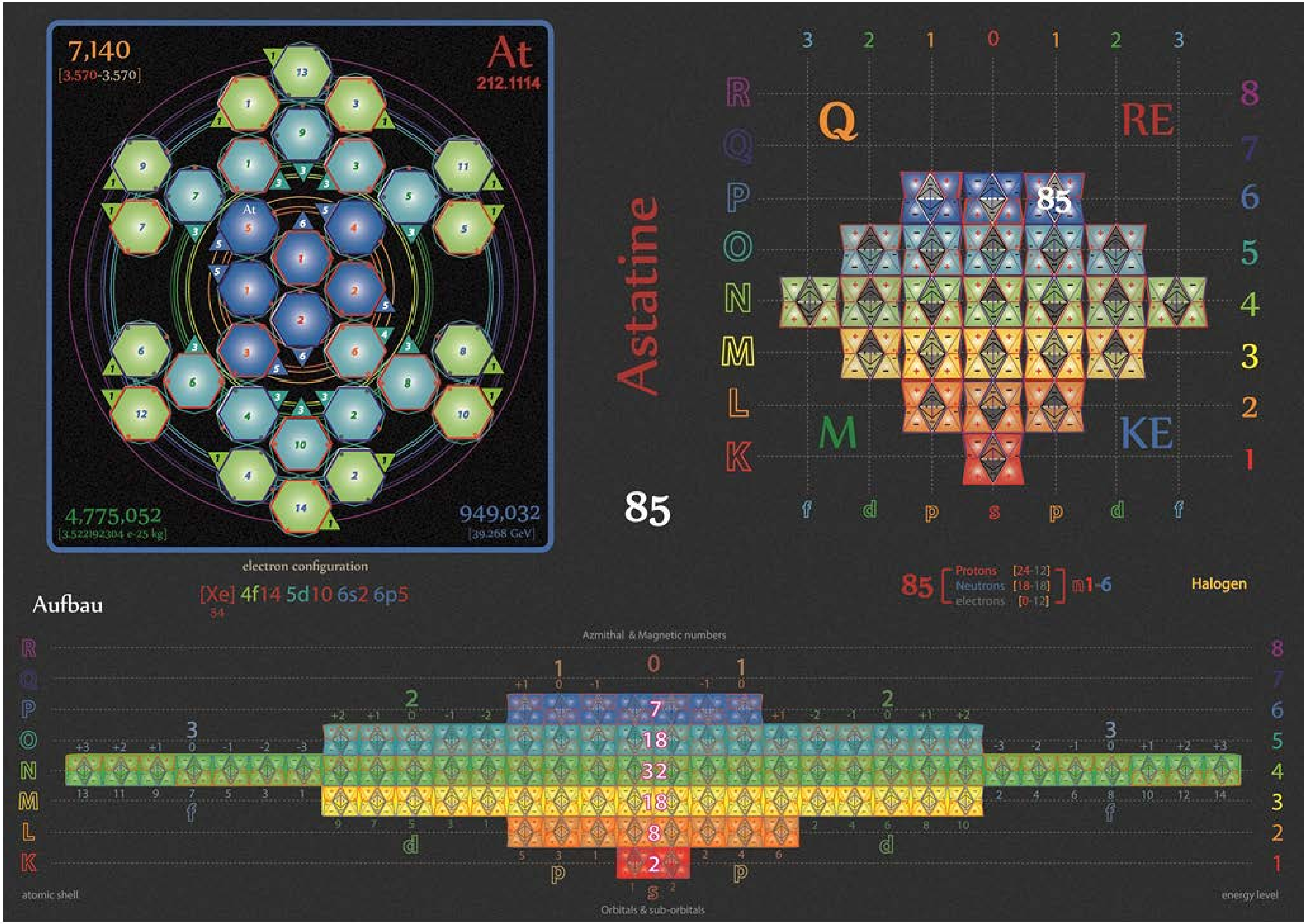

6,888
[3.444-3.444]
Pb
203.4744
4,580,616
[3.37877167l e-25 kg]
889,632
[36.810 GeV]
Lead
82
R Q P O N M L K
Q
RE
M
KE
3 2 1 0 1 2 3
8 7 6 5 4 3 2 1
f d p s p d f
electron configuration
Aufbau
[Xe] 4f14 5d10 6s2 6p2
54
82 Protons [24-12] Neutrons [18-18] electrons [0-12] m1-6
Metaloid
Azmithal & Magnetic numbers
4
18
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals



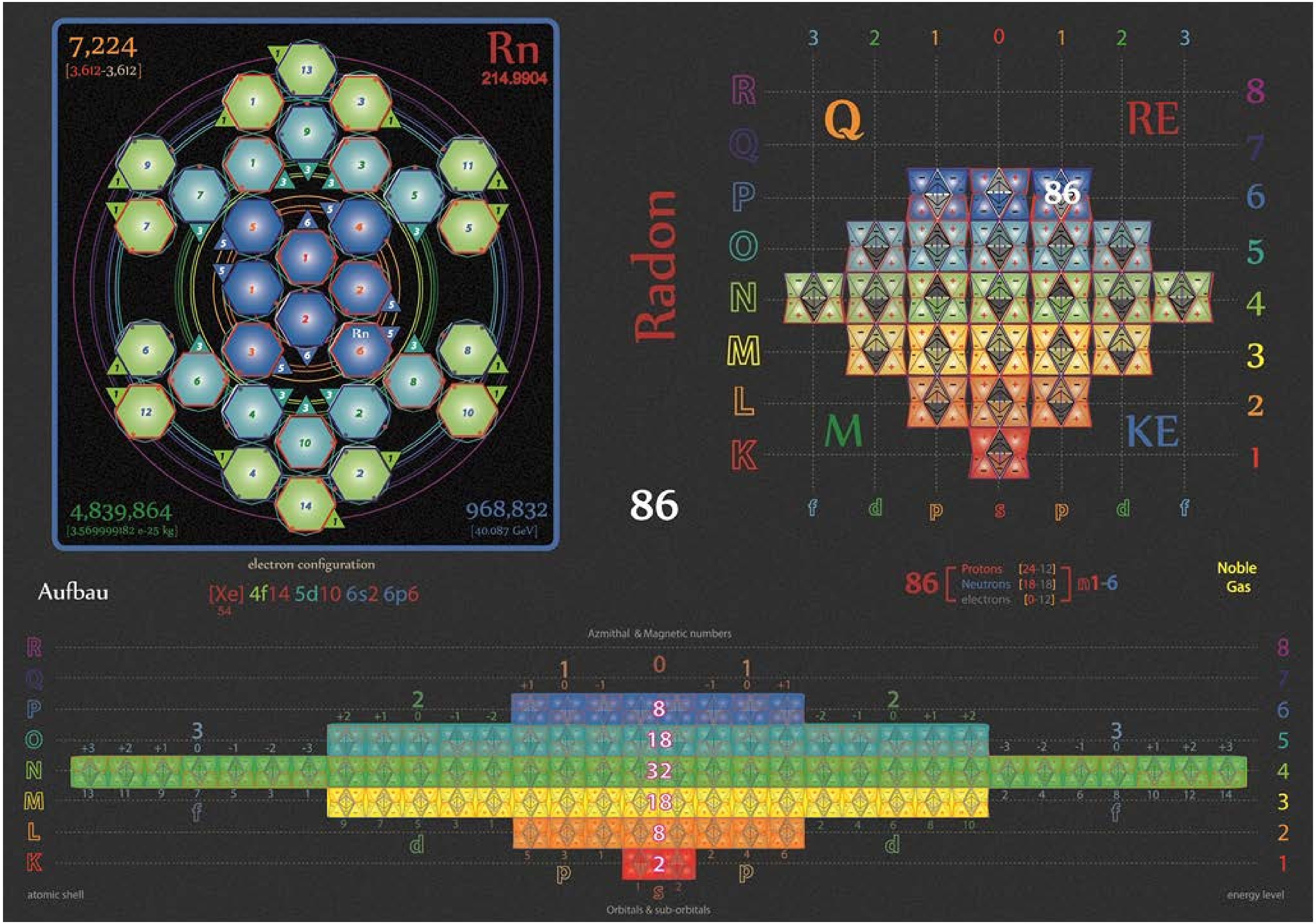
Tetryonics 51.83 - Bismuth atom



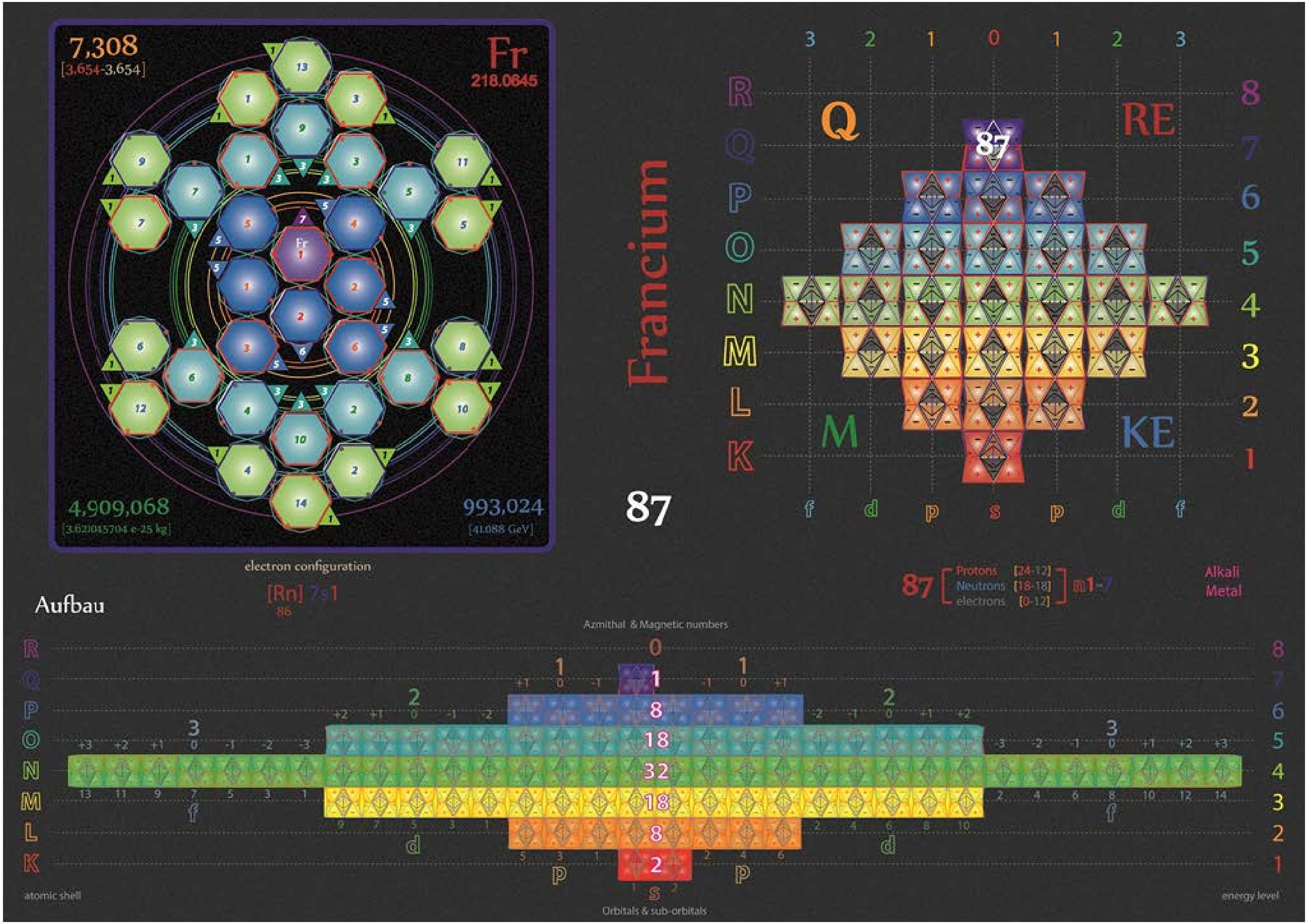
Tetryonics 51.84 - Polonium atom



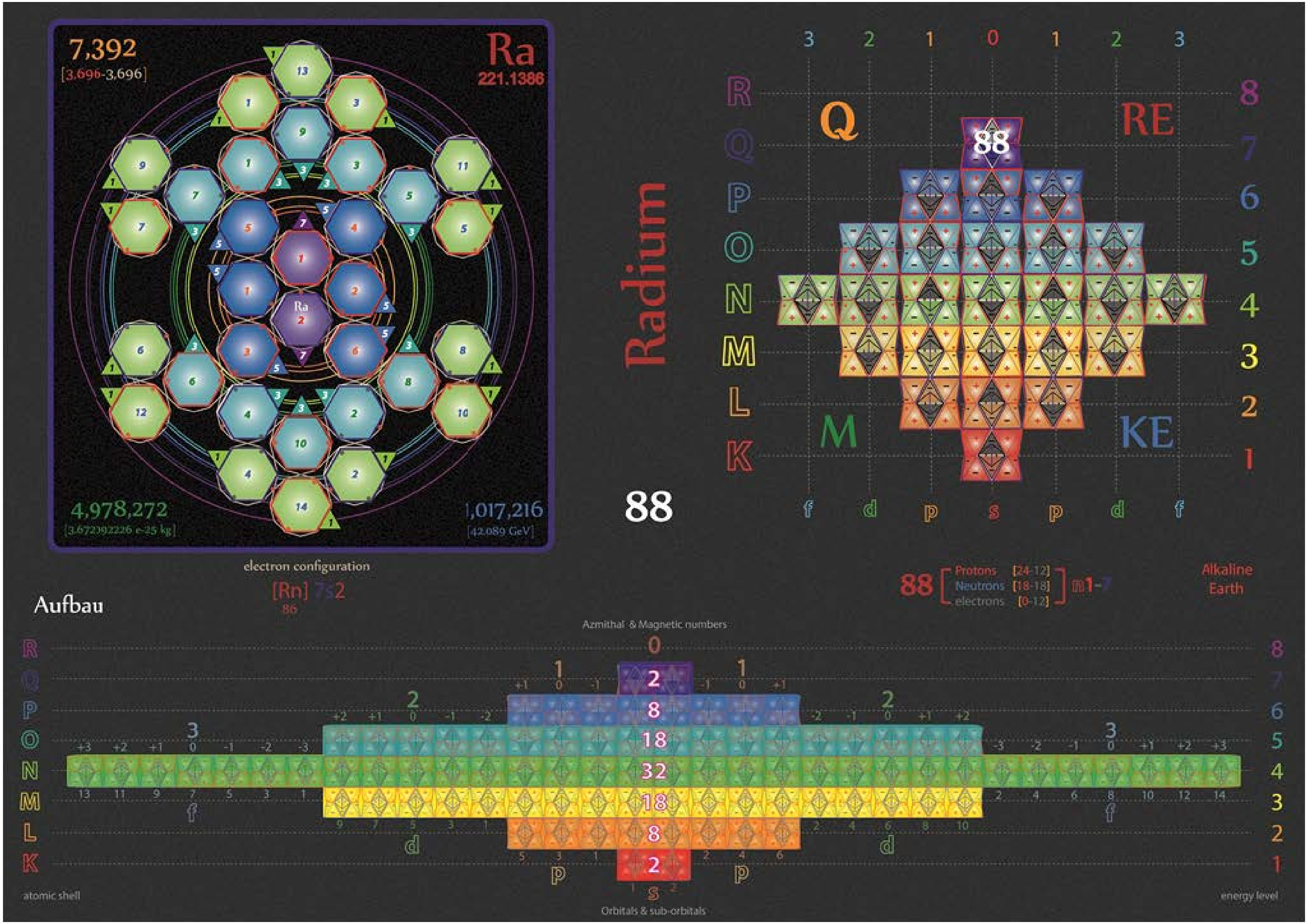
Tetryonics 51.85 - Astatine atom



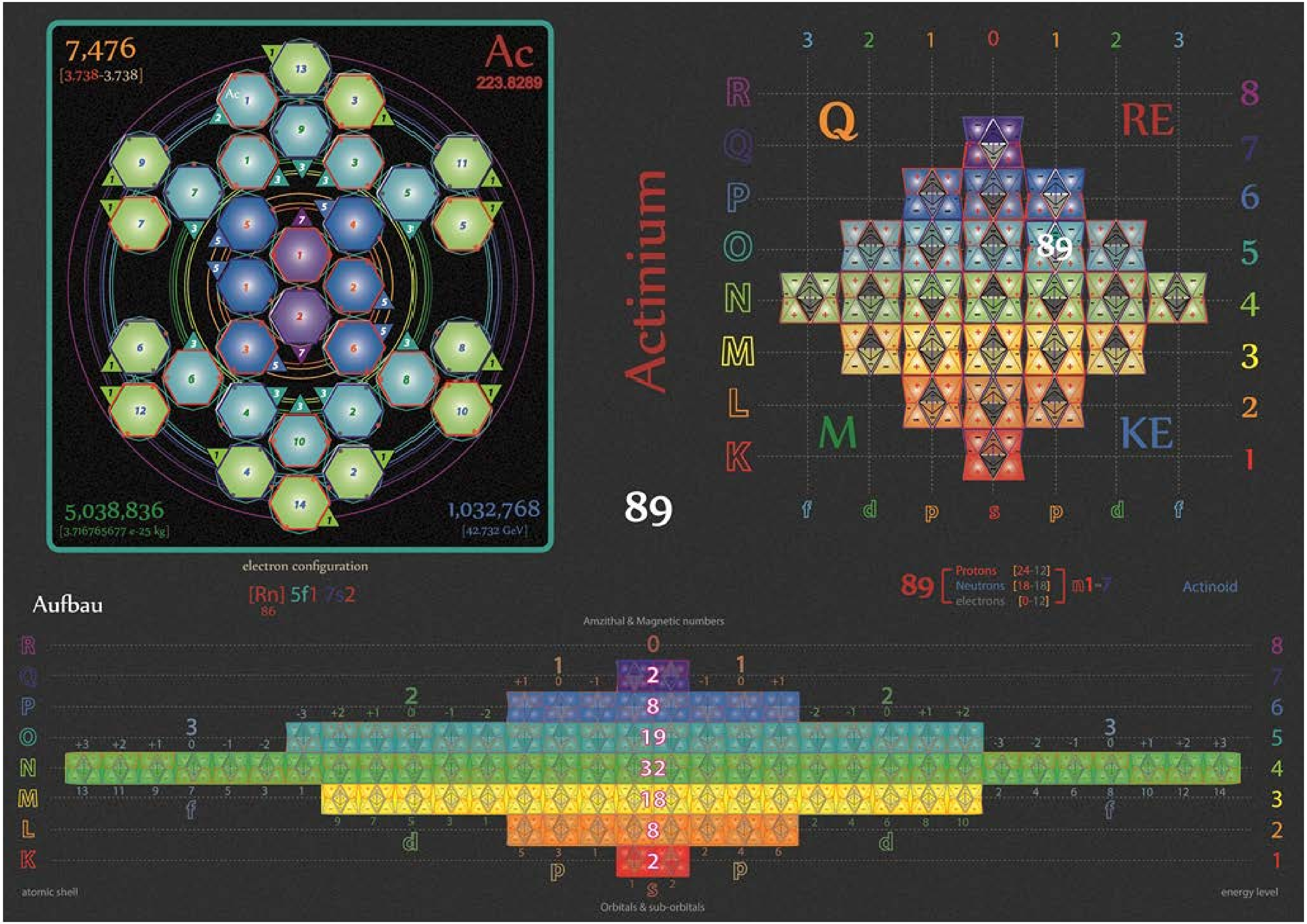
Tetryonics 51.86 - Radon atom



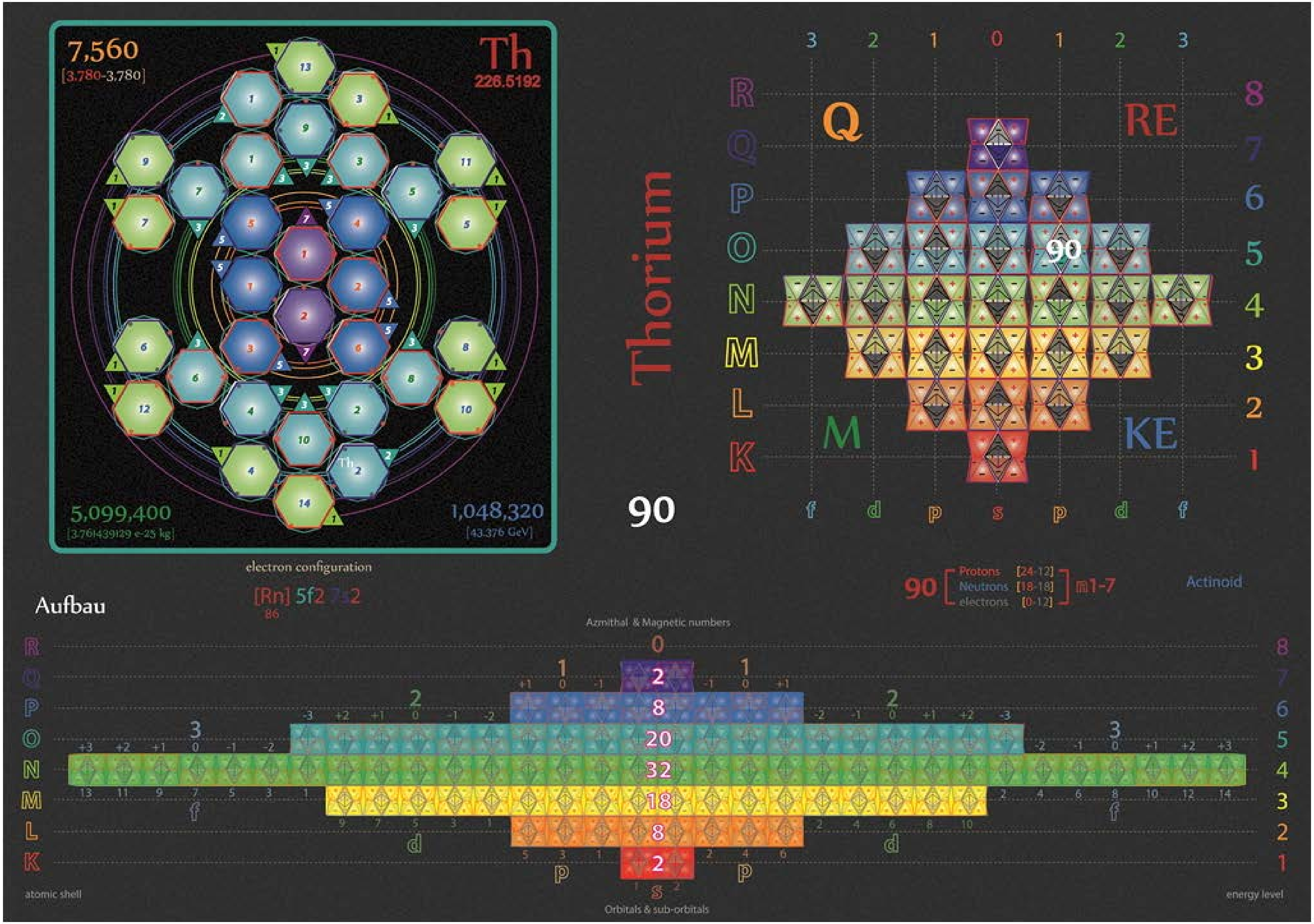
Tetryonics 51.87 - Francium atom

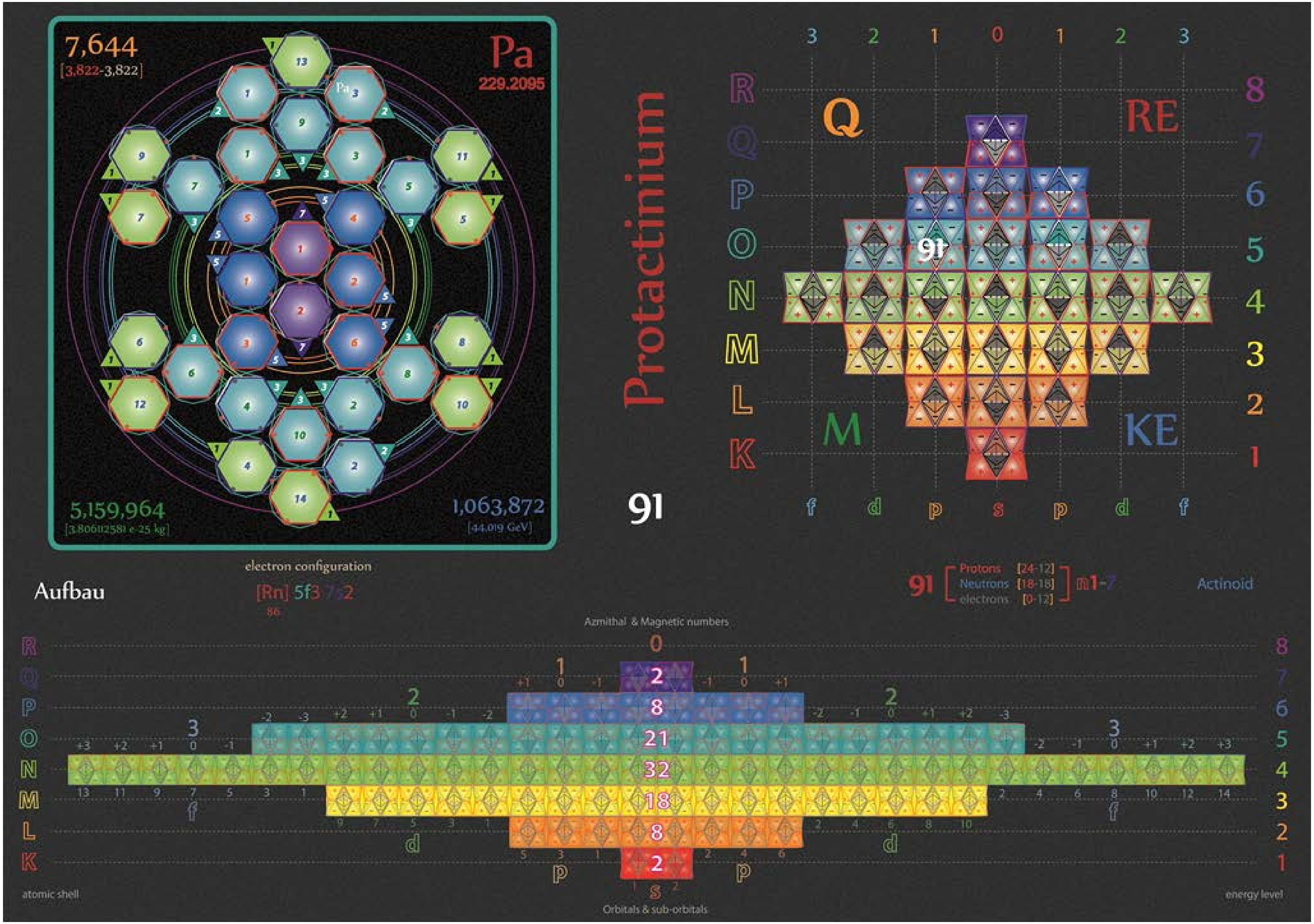


7,392
[3,696-3,696]
Ra
221.1386
Ra
2
4,978,272
[3.672]92226 e-25 kg]
1,017,216
[42.089 GeV]
Radium
88
R
Q
P
O
N
M
L
K
Q
RE
M
KE
88
3 2 1 0 1 2 3
8 7 6 5 4 3 2 1
f d p s p d f
electron configuration
[Rn] 7s2
86
88
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-7
Alkaline
Earth
Aufbau
Azmithal & Magnetic numbers
2
8
18
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

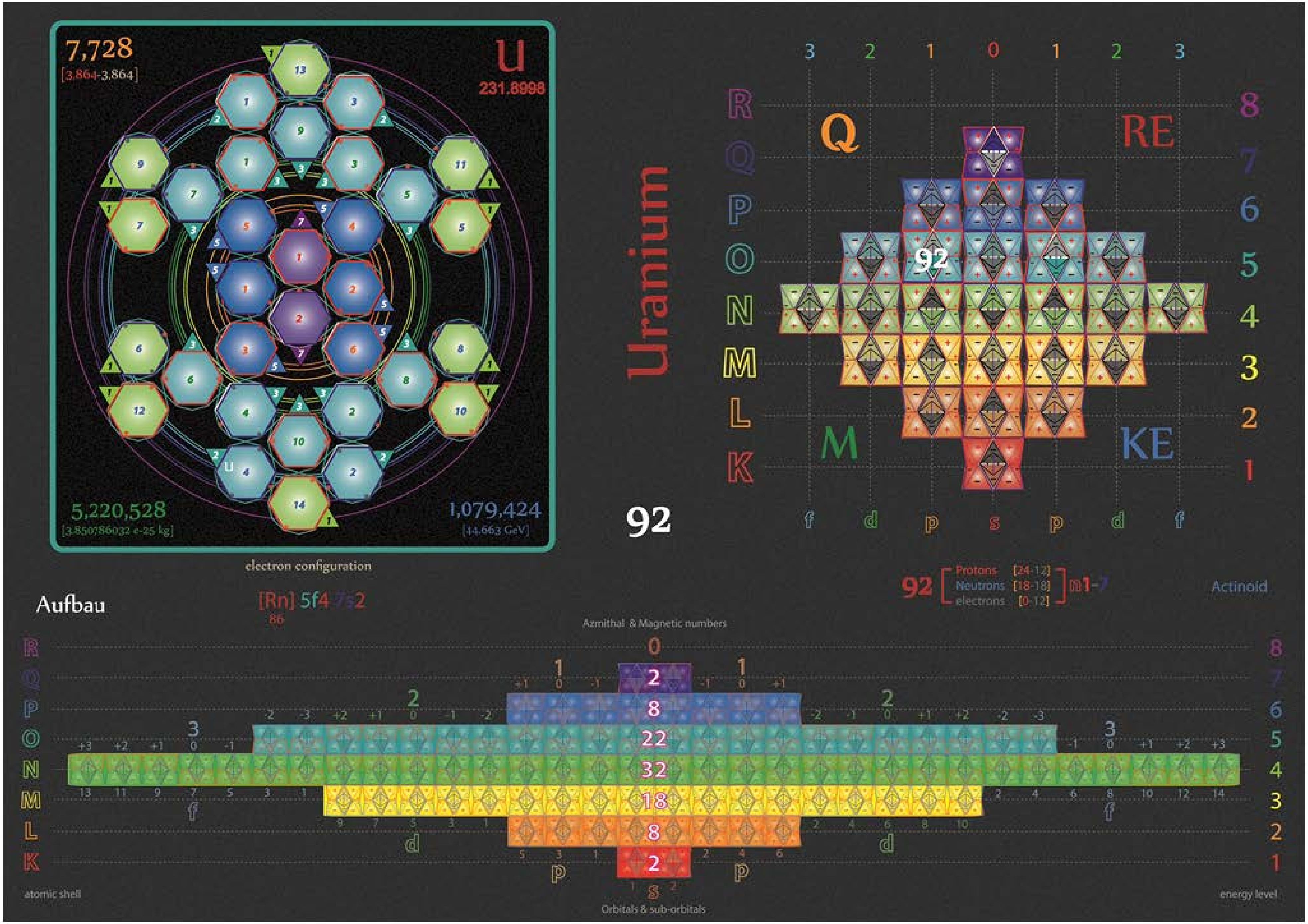


Tetryonics 51.89 - Actinium atom

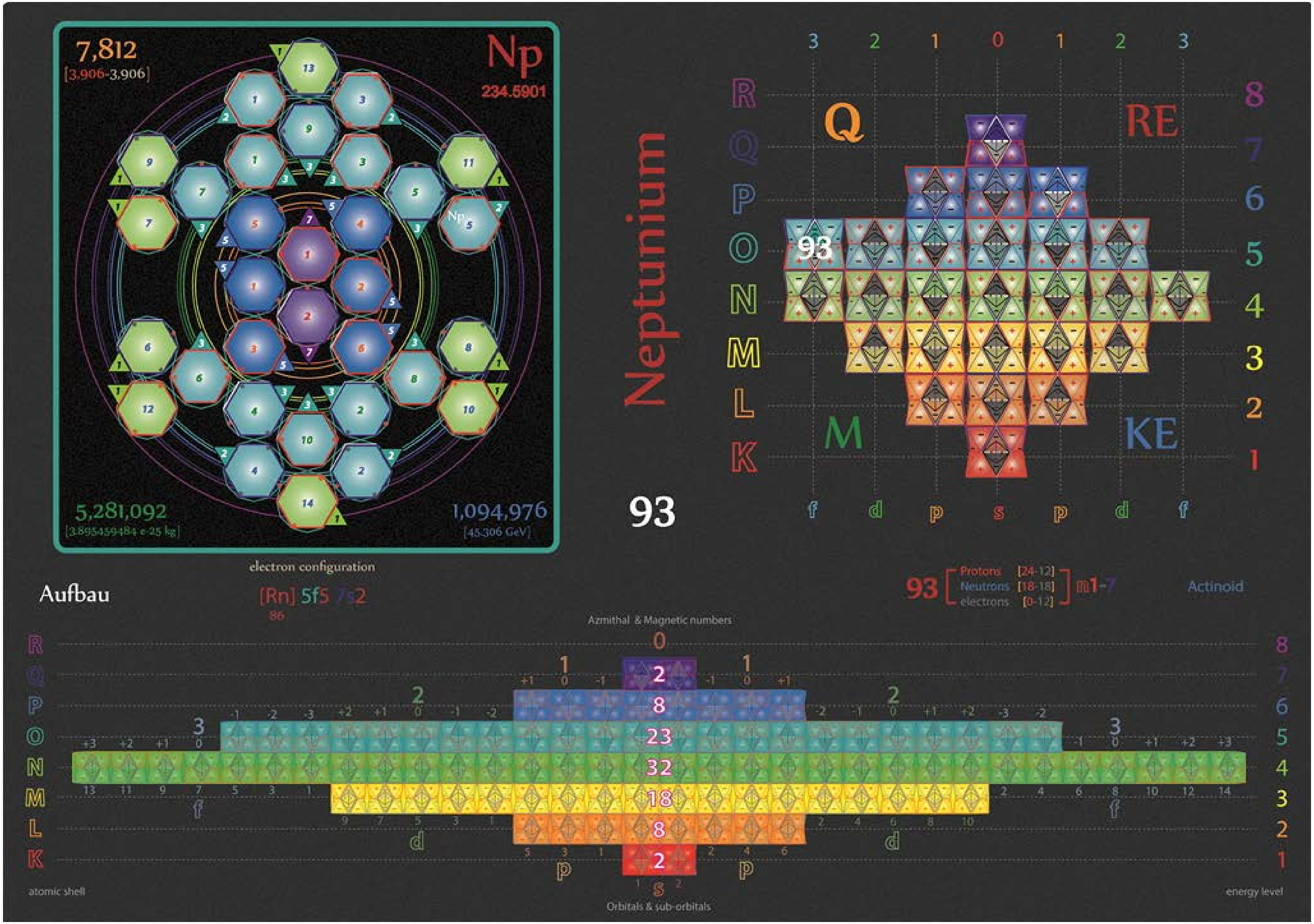

7,560
[3,780-3,780]
Th
226.5192
5,099,400
[3.761439129 e-25 kg]
1,048,320
[43.376 GeV]
Thorium
90
Q
RE
M
KE
electron configuration
[Rn] 5f2 7s2
86
Aufbau
90
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-7
Actinoid
Azmithal & Magnetic numbers
Orbitals & sub-orbitals
atomic shell
energy level



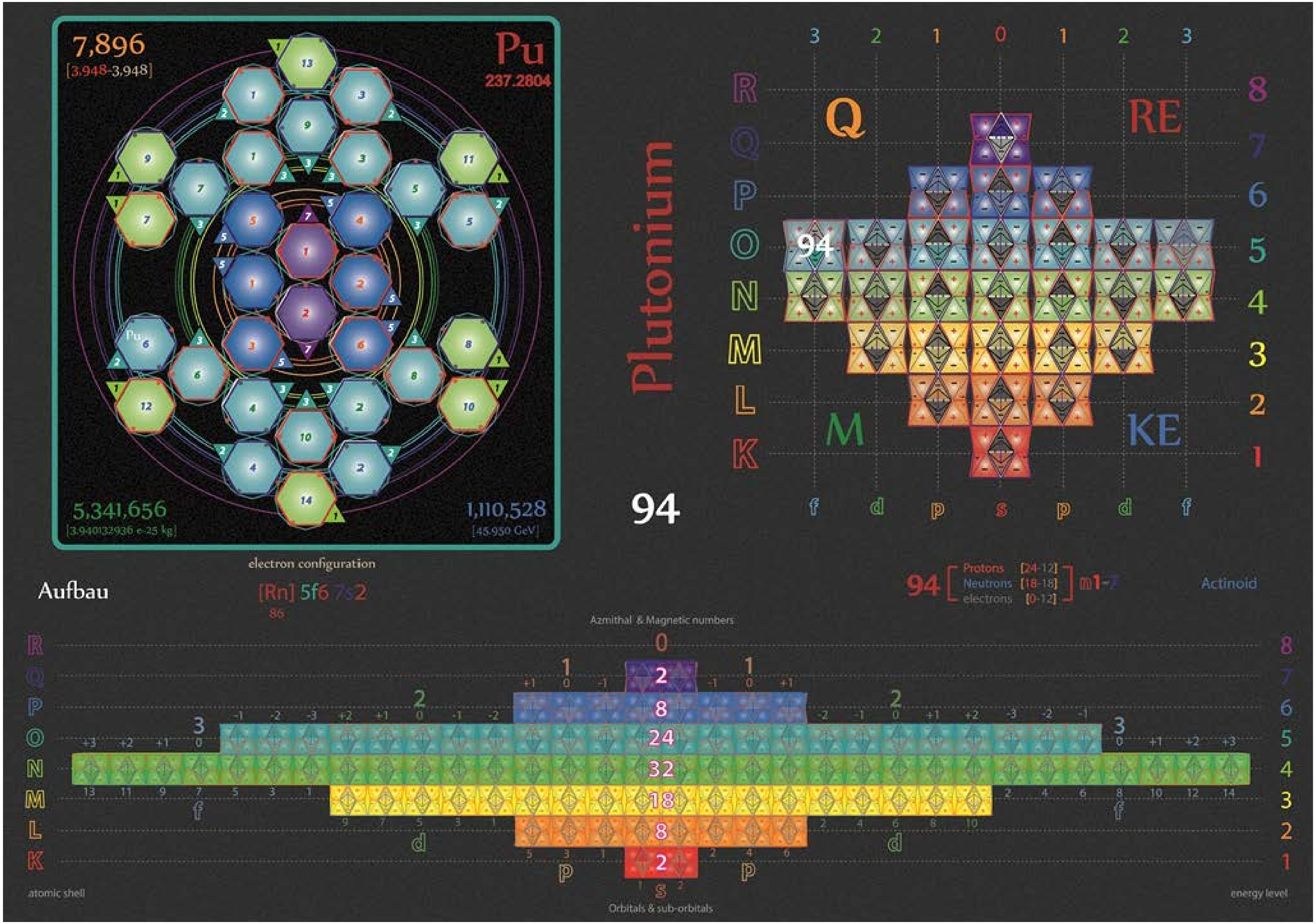
Tetryonics 51.91 - Protactinium atom

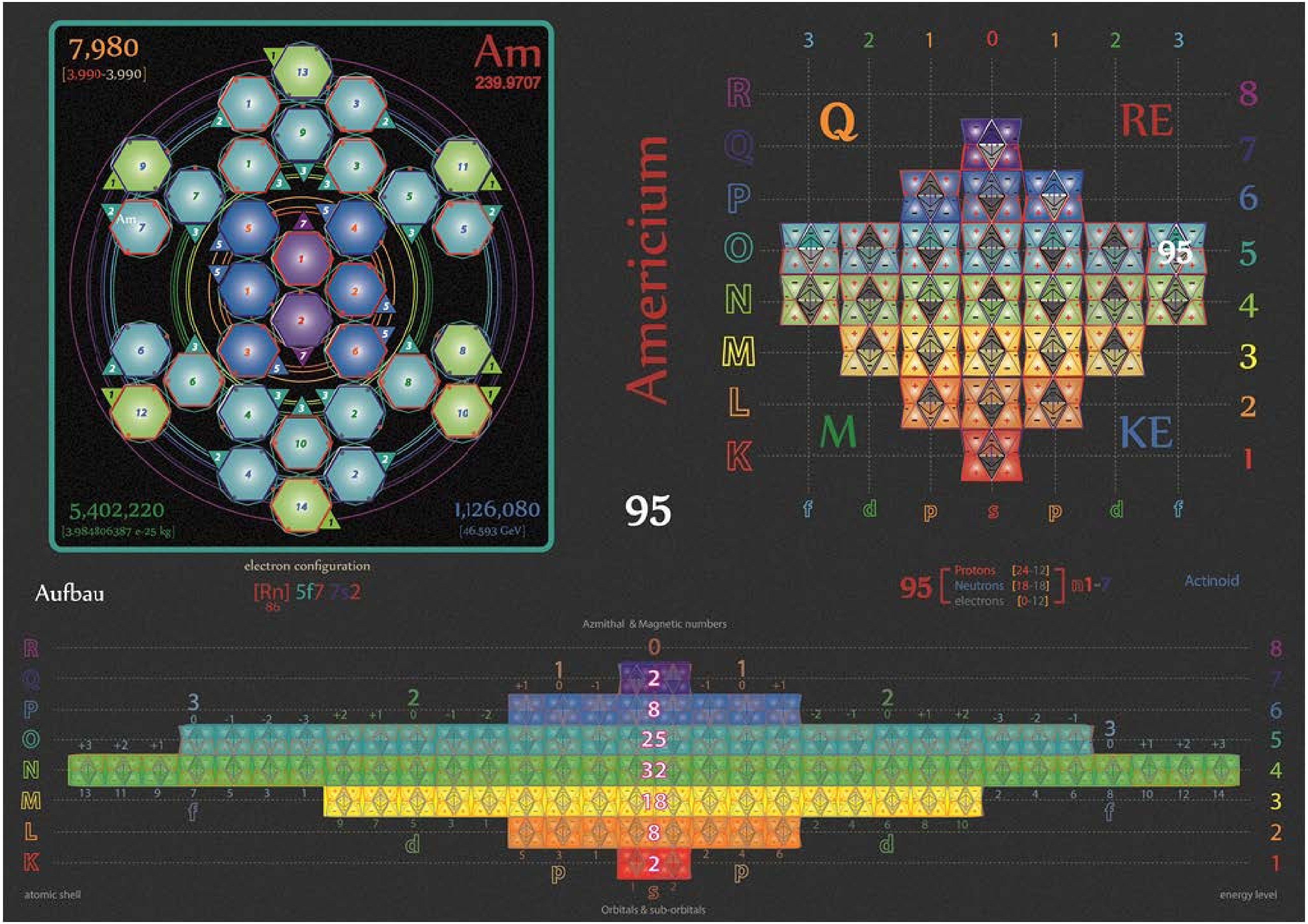


7,728
[3,864-3,864]
U
231.8998
5,220,528
[3.850786032 e-25 kg]
1,079,424
[14.663 GeV]
Uranium
92
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
3 2 1 0 1 2 3
f d p s p d f
electron configuration
Aufbau
[Rn] 5f4 7s2
86
92
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
n1-7
Actinoid
Azmithal & Magnetic numbers
2
8
22
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

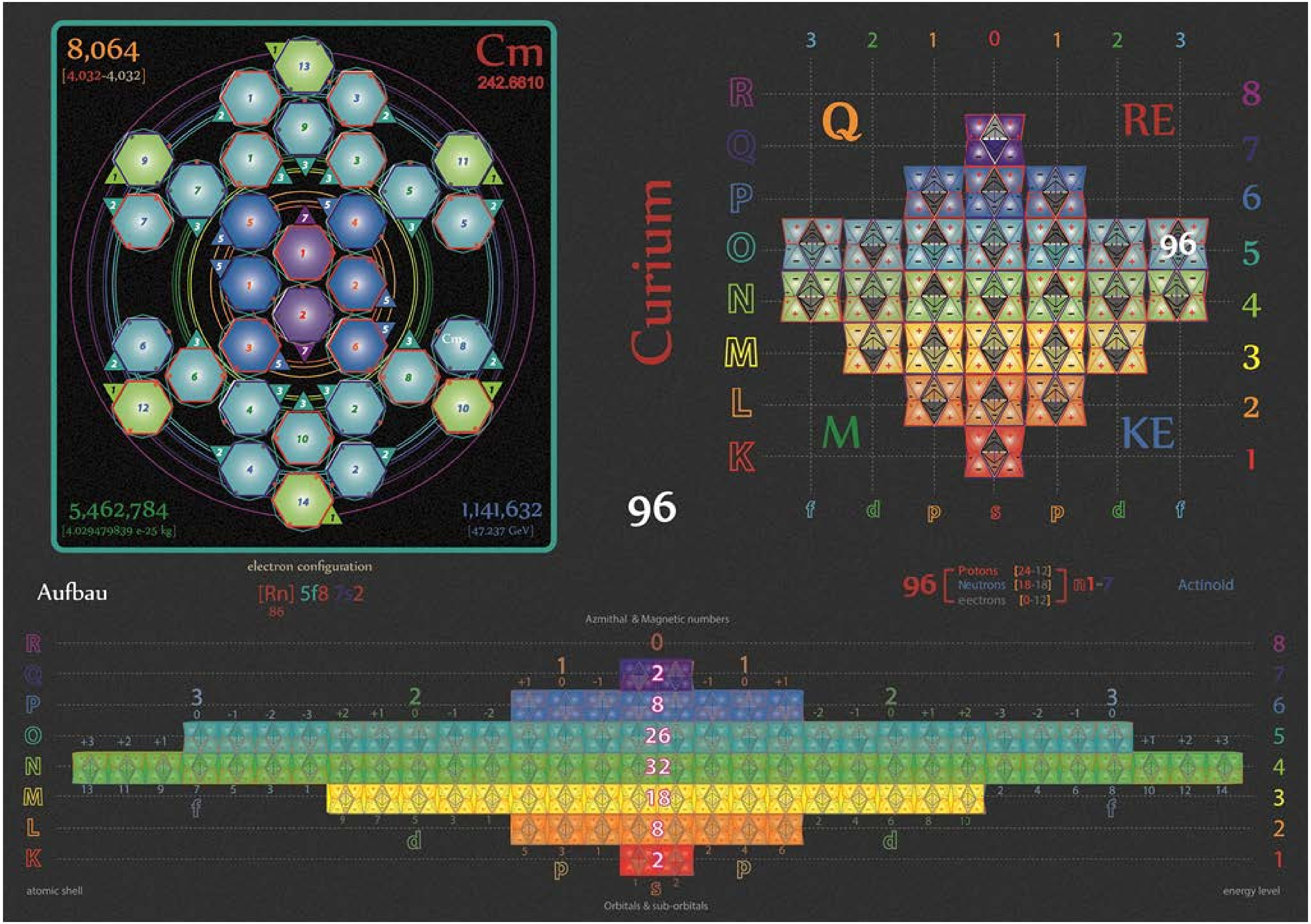


7,812
[3,906-3,906]
Np
234.5901
5,281,092
[3.895459484 e-25 kg]
1,094,976
[45.306 GeV]
Neptunium
93
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
3 2 1 0 1 2 3
f d p s p d f
electron configuration
Aufbau
[Rn] 5f5 7s2
86
93 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-7
Actinoid
Azmithal & Magnetic numbers
2
8
23
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

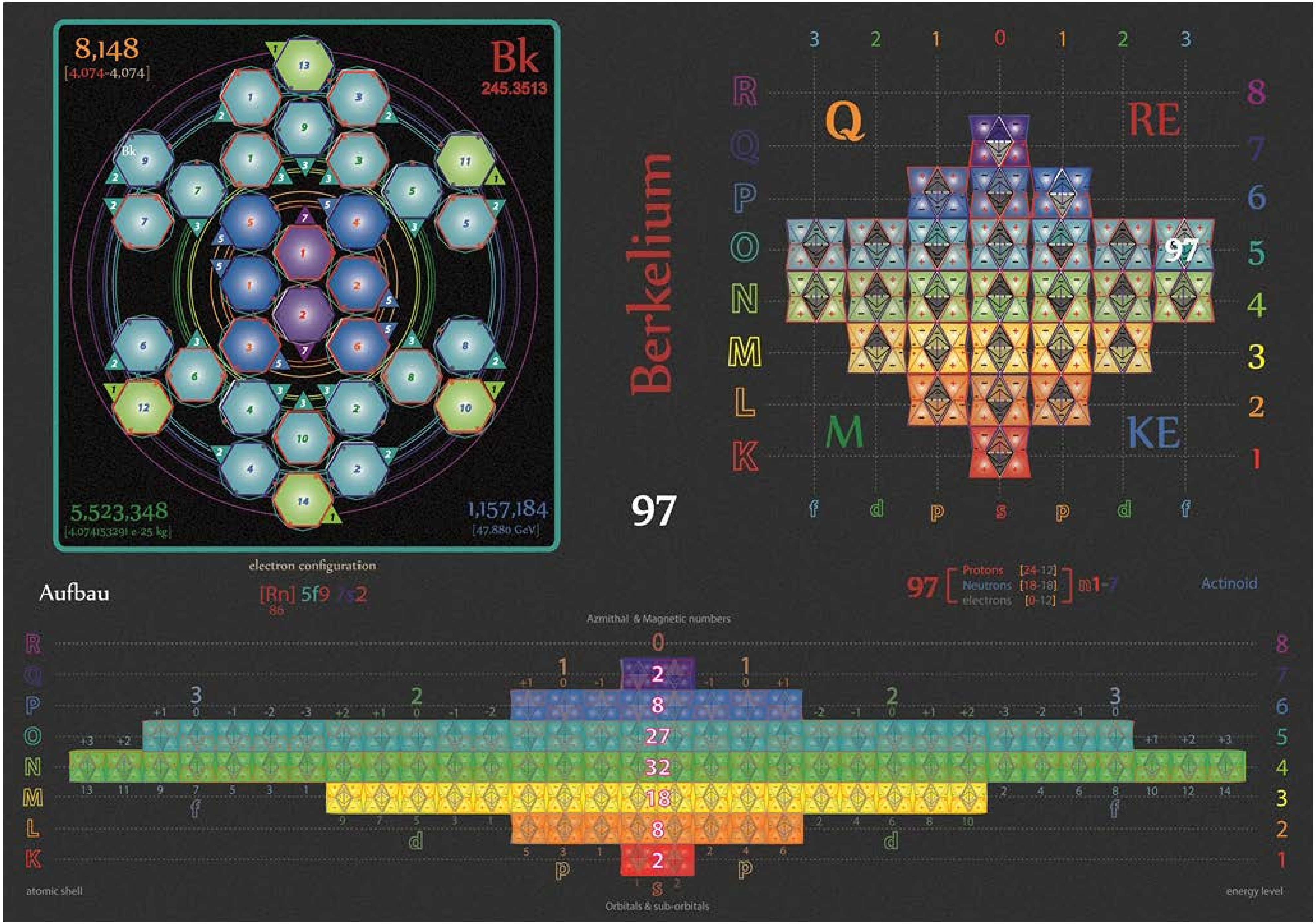

7,896
[3,948-3,948]
Pu
237.2804
5,341,656
[3.940132936 e-25 kg]
1,110,528
[45.950 GeV]
Plutonium
94
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
electron configuration
Aufbau
[Rn] 5f6 7s2
86
94 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-7
Actinoid
Azmithal & Magnetic numbers
2
8
24
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

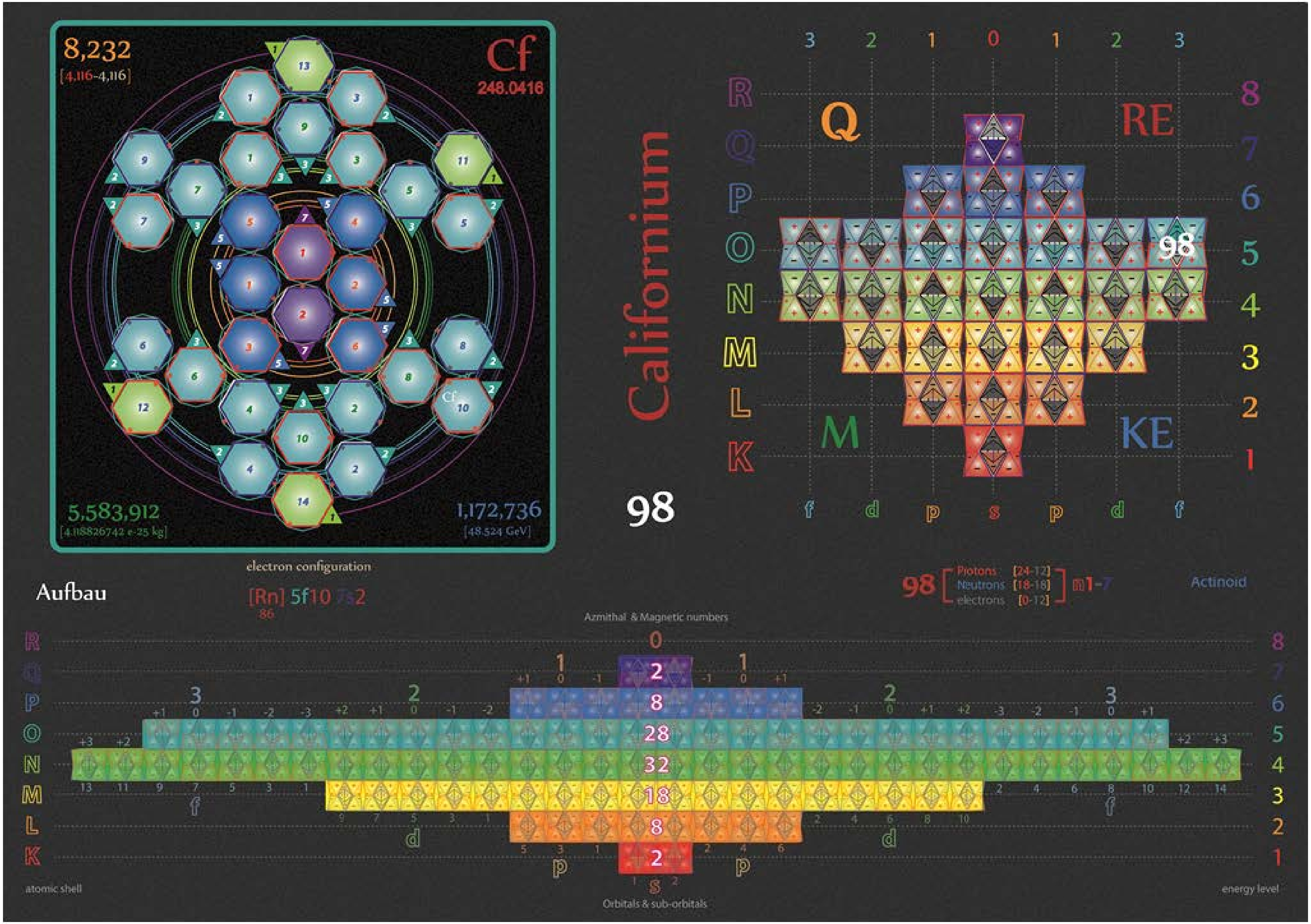


Tetryonics 51.95 - Americium atom

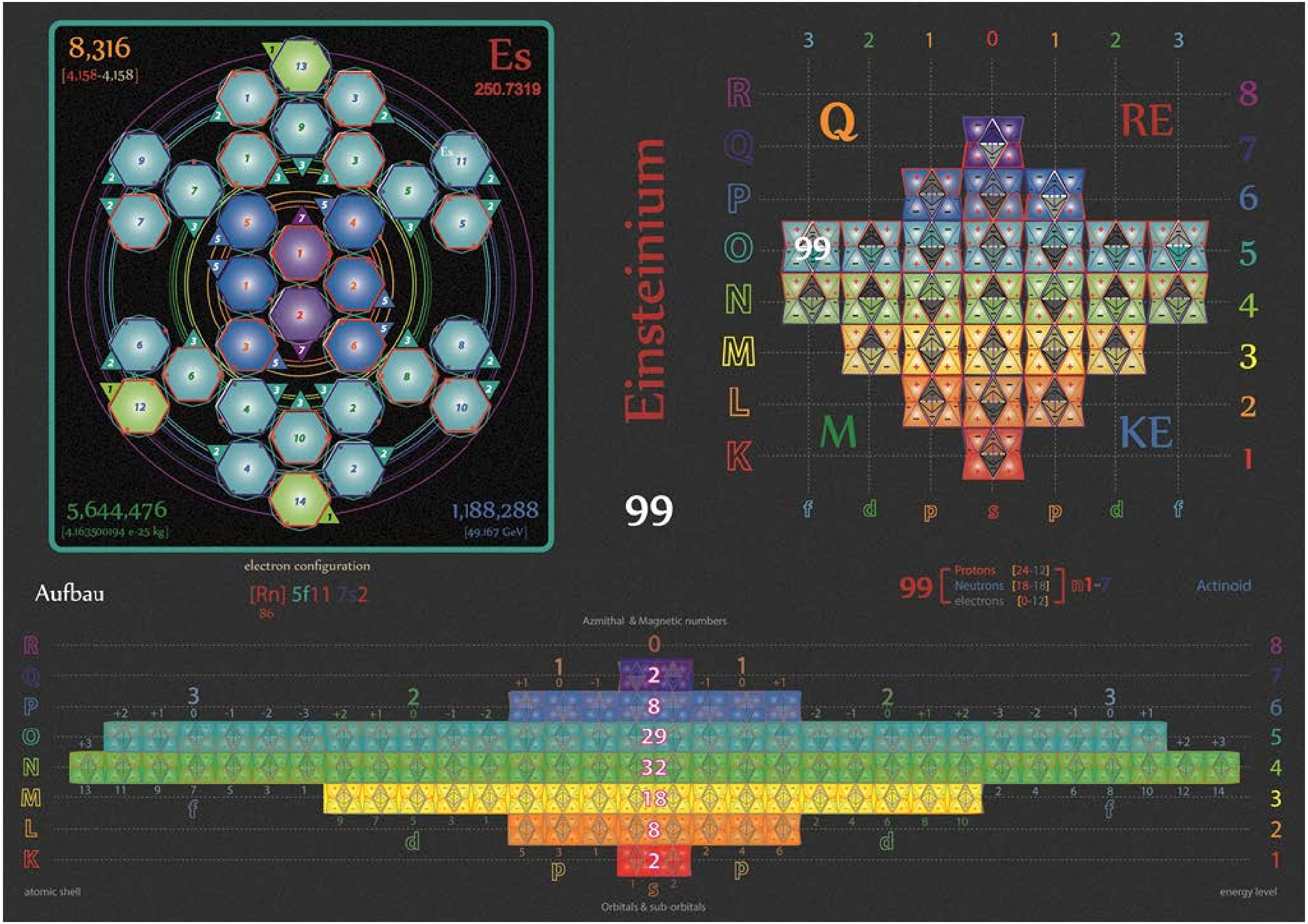


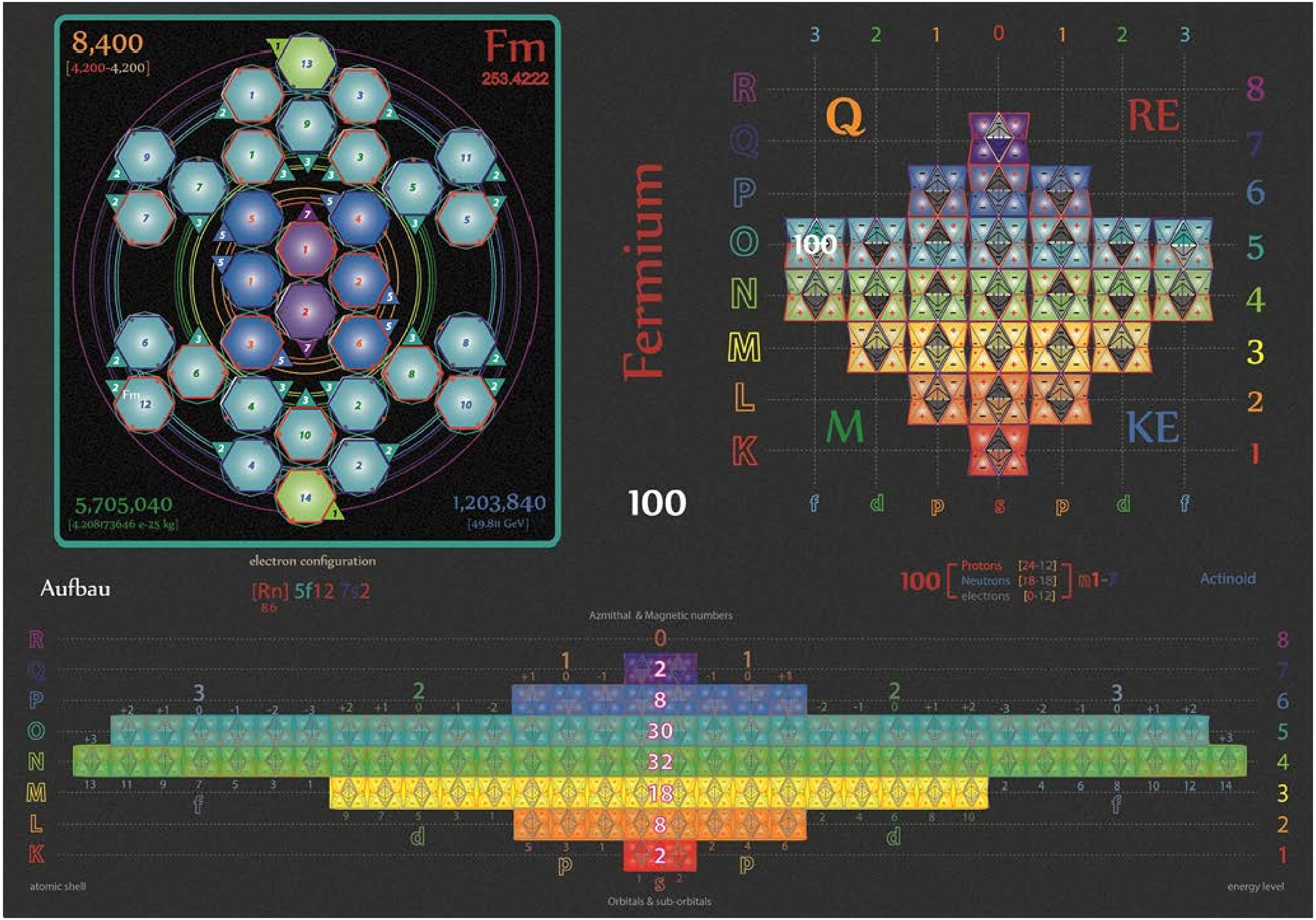
Tetryonics 51.96 - Curium atom

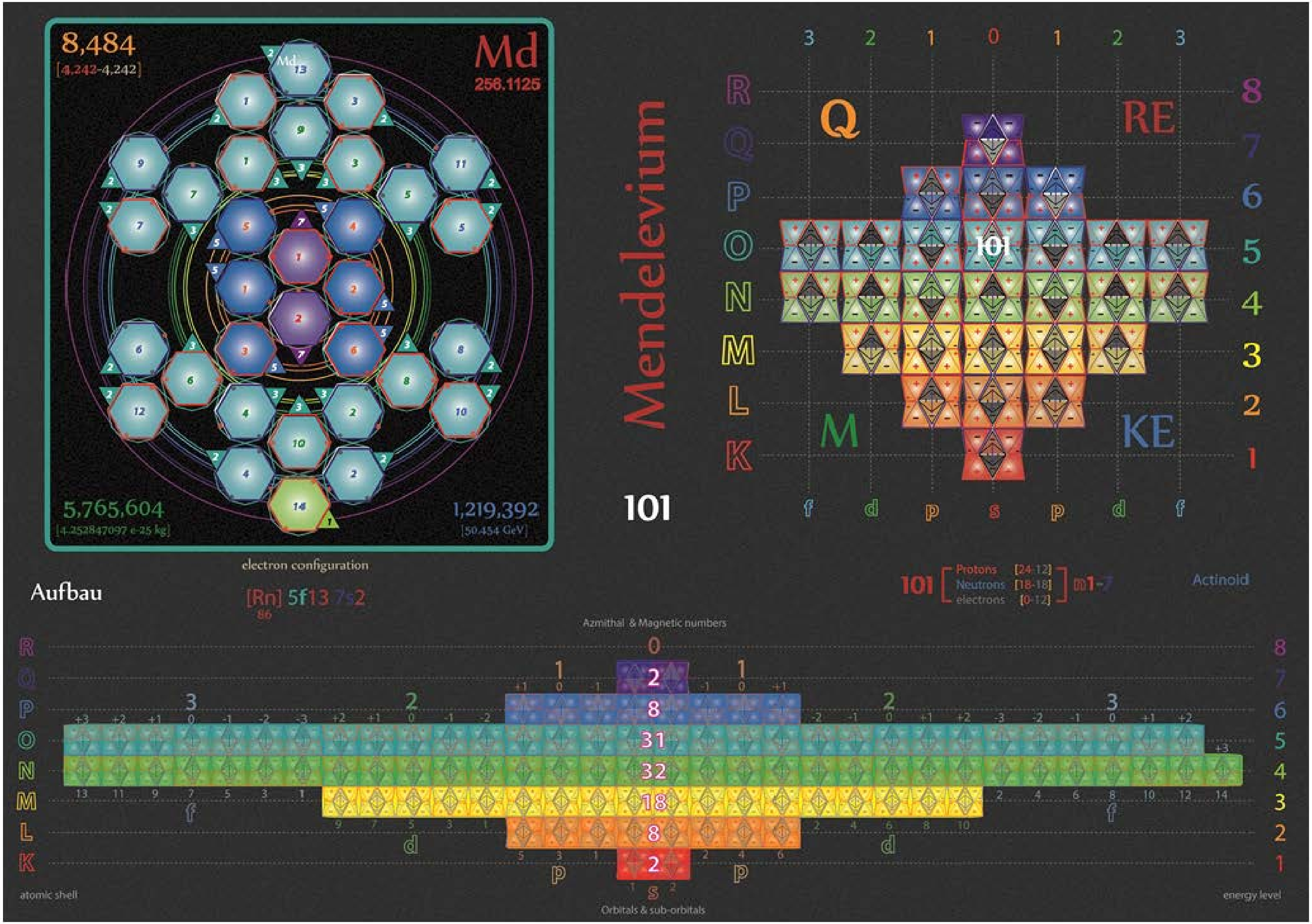

8,148
[4.074-4.074]
Bk
245.3513
5,523,348
[4.07415329I e-25 kg]
1,157,184
[47.880 GeV]
Berkelium
97
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
3 2 1 0 1 2 3
f d p s p d f
electron configuration
Aufbau
[Rn] 5f9 7s2
86
97 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-7
Actinoid
Azmithal & Magnetic numbers
2
8
27
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

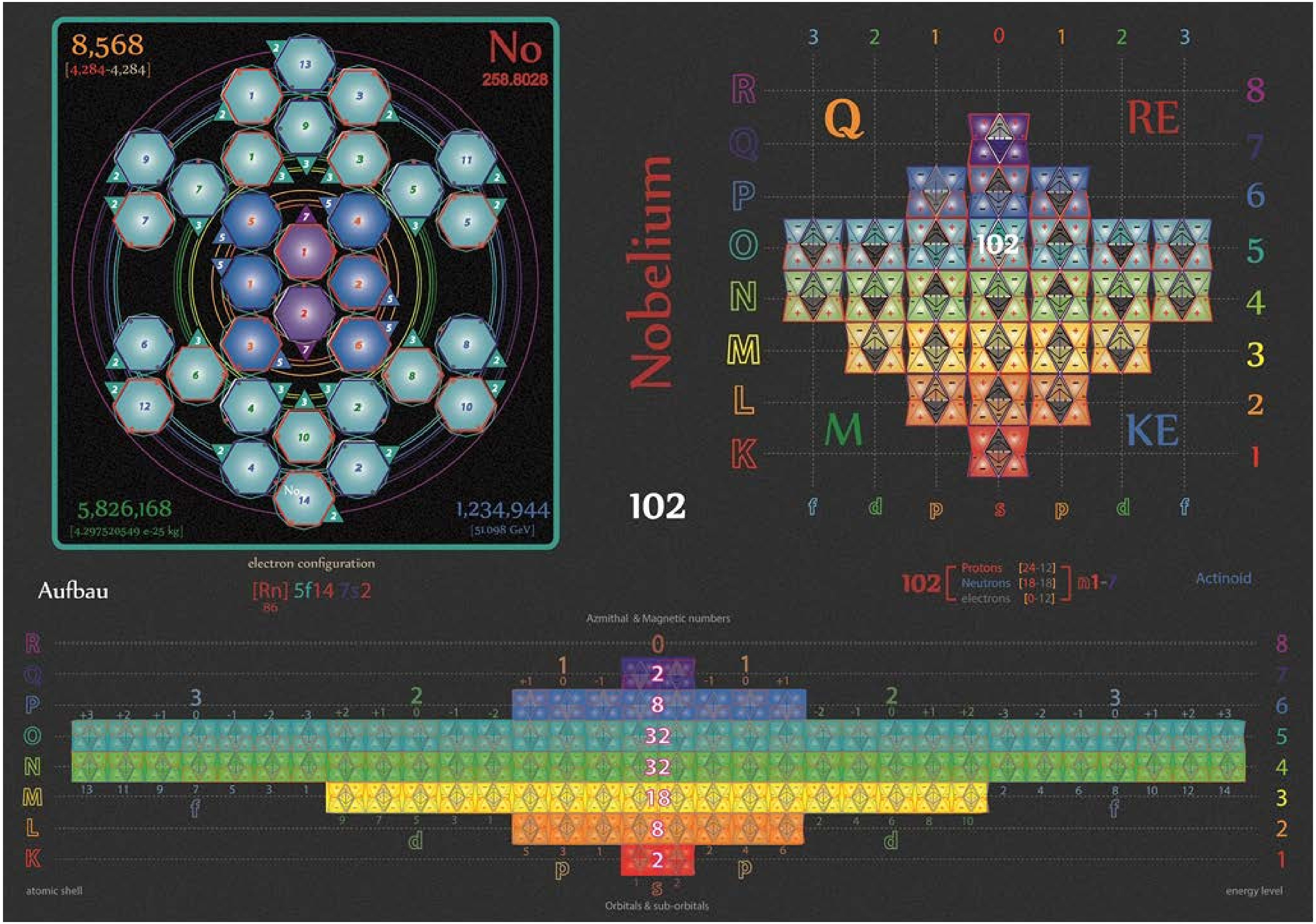


Tetryonics 51.98 - Californium atom

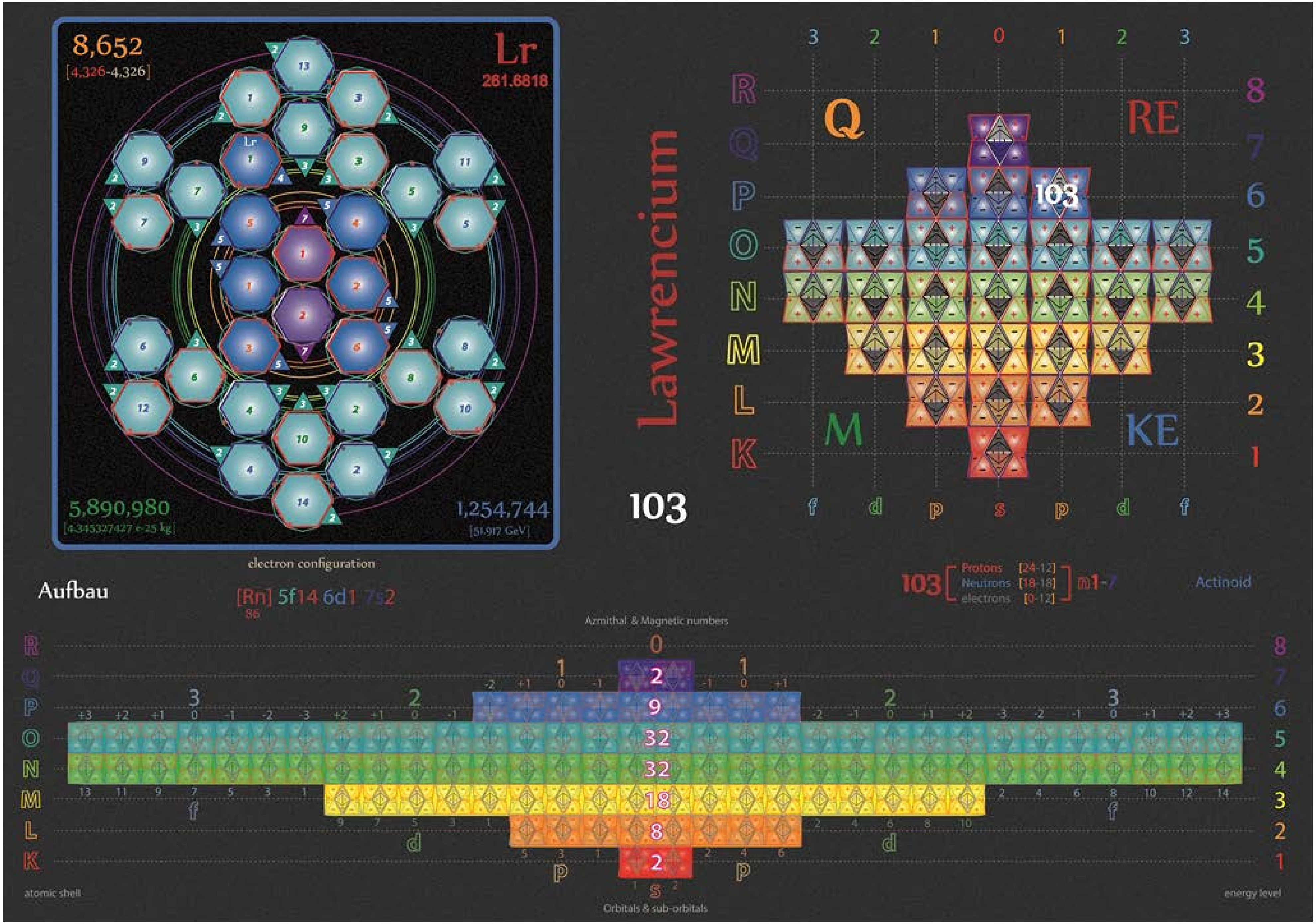

8,316
[4,158-4,158]
Es
250.7319
5,644,476
[4.163500194 e-25 kg]
1,188,288
[49.167 GeV]
Einsteinium
99
Q
RE
M
KE
electron configuration
Aufbau
[Rn] 5f11 7s2
86
99
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-7
Actinoid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

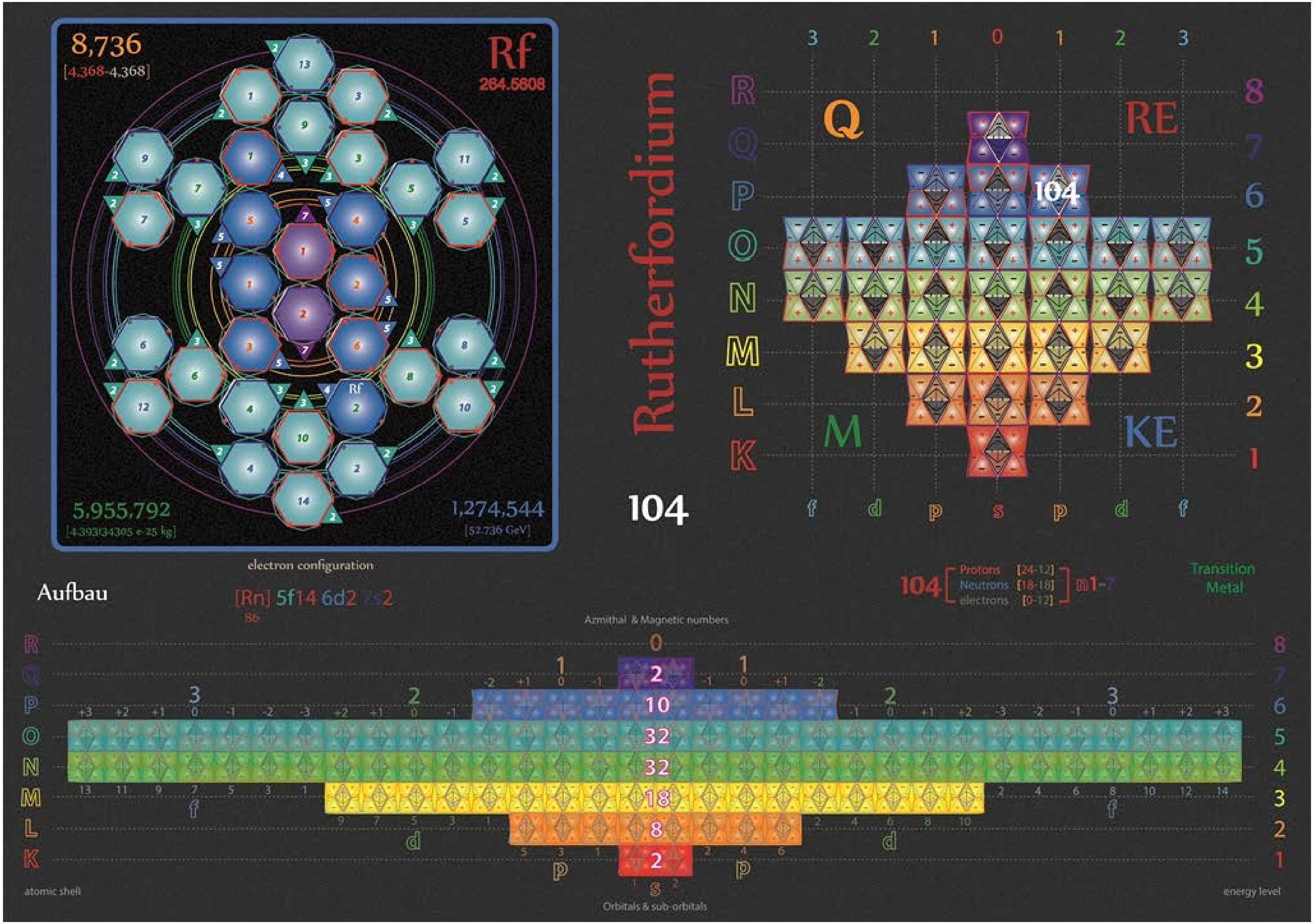

8,400
[4,200-4,200]
Fm
253.4222
5,705,040
[4.208173646 e-25 kg]
1,203,840
[49.811 GeV]
Fermium
100
Q
RE
M
KE
electron configuration
Aufbau
[Rn] 5f12 7s2
86
100
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-7
Actinoid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals


8,484
[4,242-4,242]
Md
258.1125
5,765,604
[4.252847097 e-25 kg]
1,219,392
[50.454 GeV]
Mendelevium
101
Q
RE
M
KE
electron configuration
Aufbau
[Rn] 5f13 7s2
86
101
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-7
Actinoid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

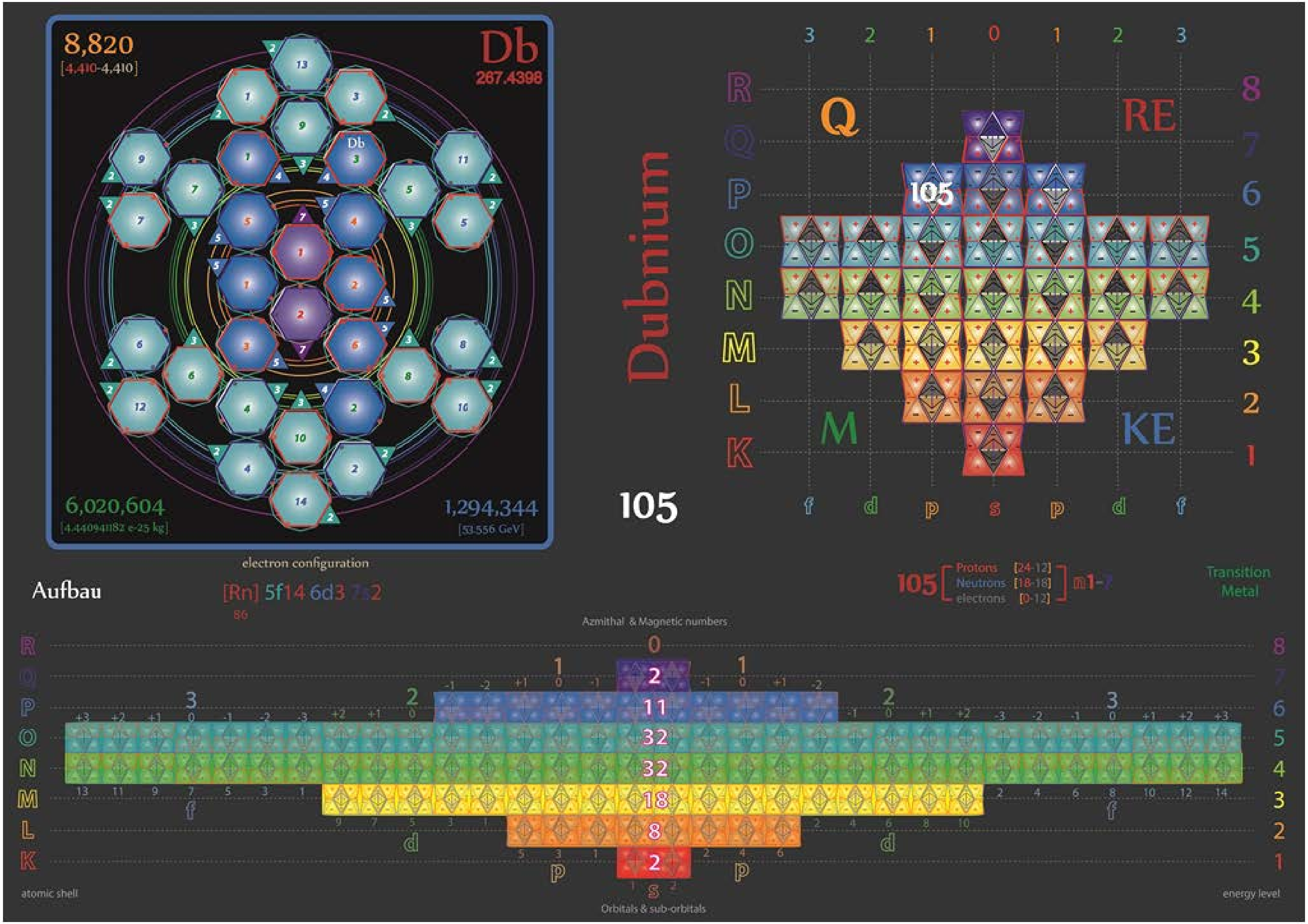


Tetryonics 51.102 - Nobelium atom

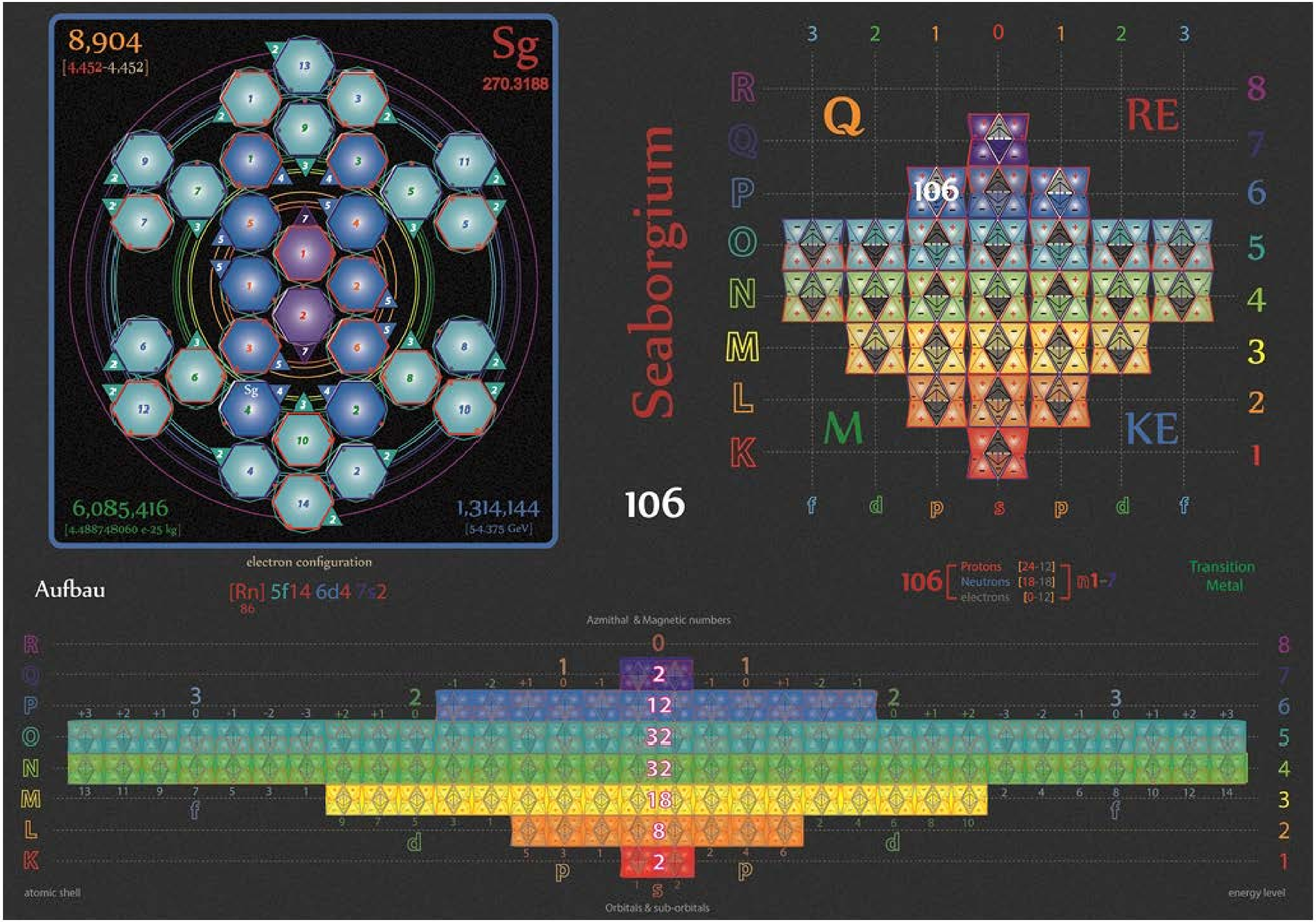

8,652
[4,326-4,326]
Lr
261.6818
5,890,980
[4.345327427 e-25 kg]
1,254,744
[51.917 GeV]
Lawrencium
103
Q
RE
M
KE
electron configuration
Aufbau
[Rn] 5f14 6d1 7s2
86
103 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-7
Actinoid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals



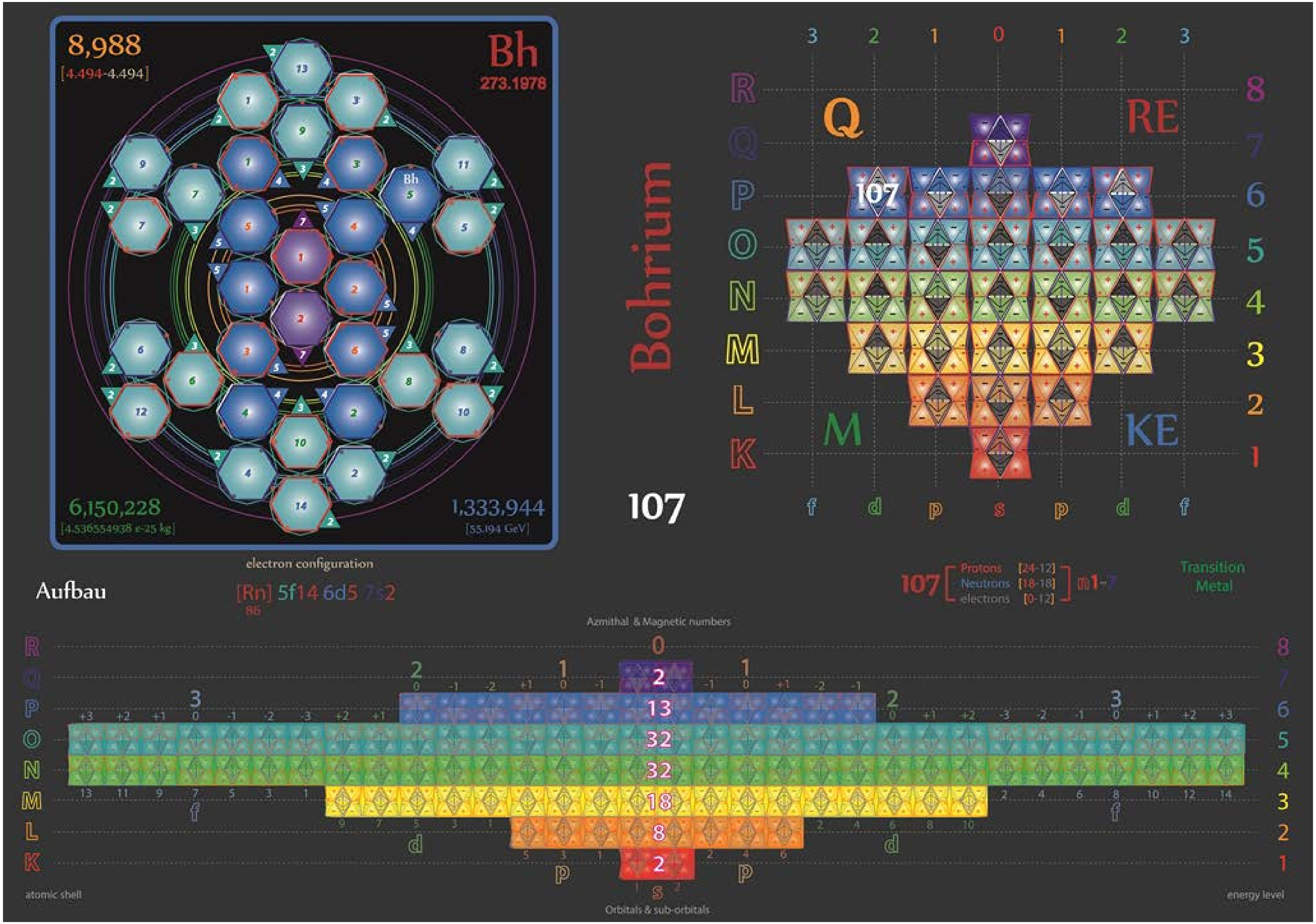
Tetryonics 51.104 - Rutherfordium atom

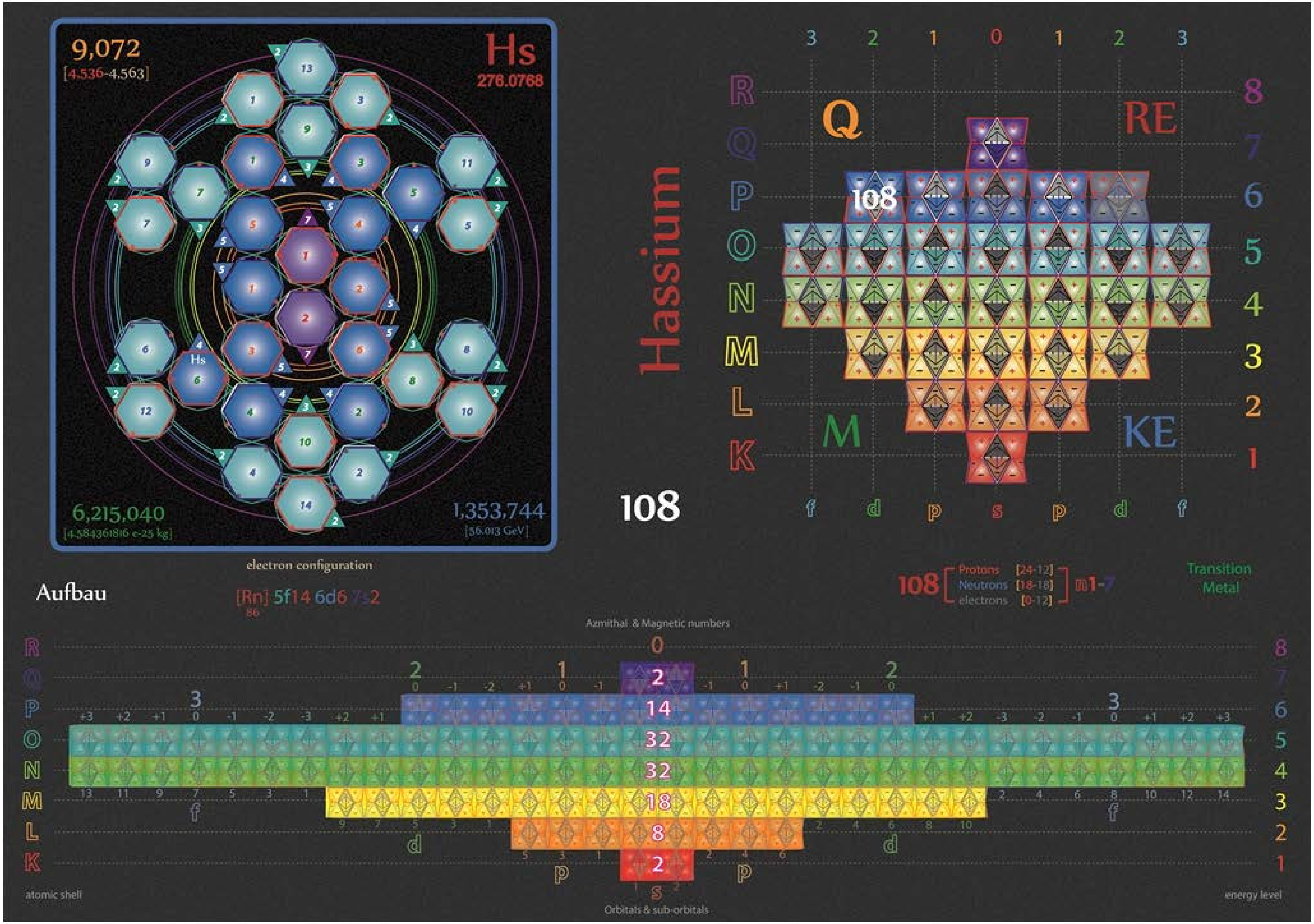


Tetryonics 51.105 - Dubnium atom

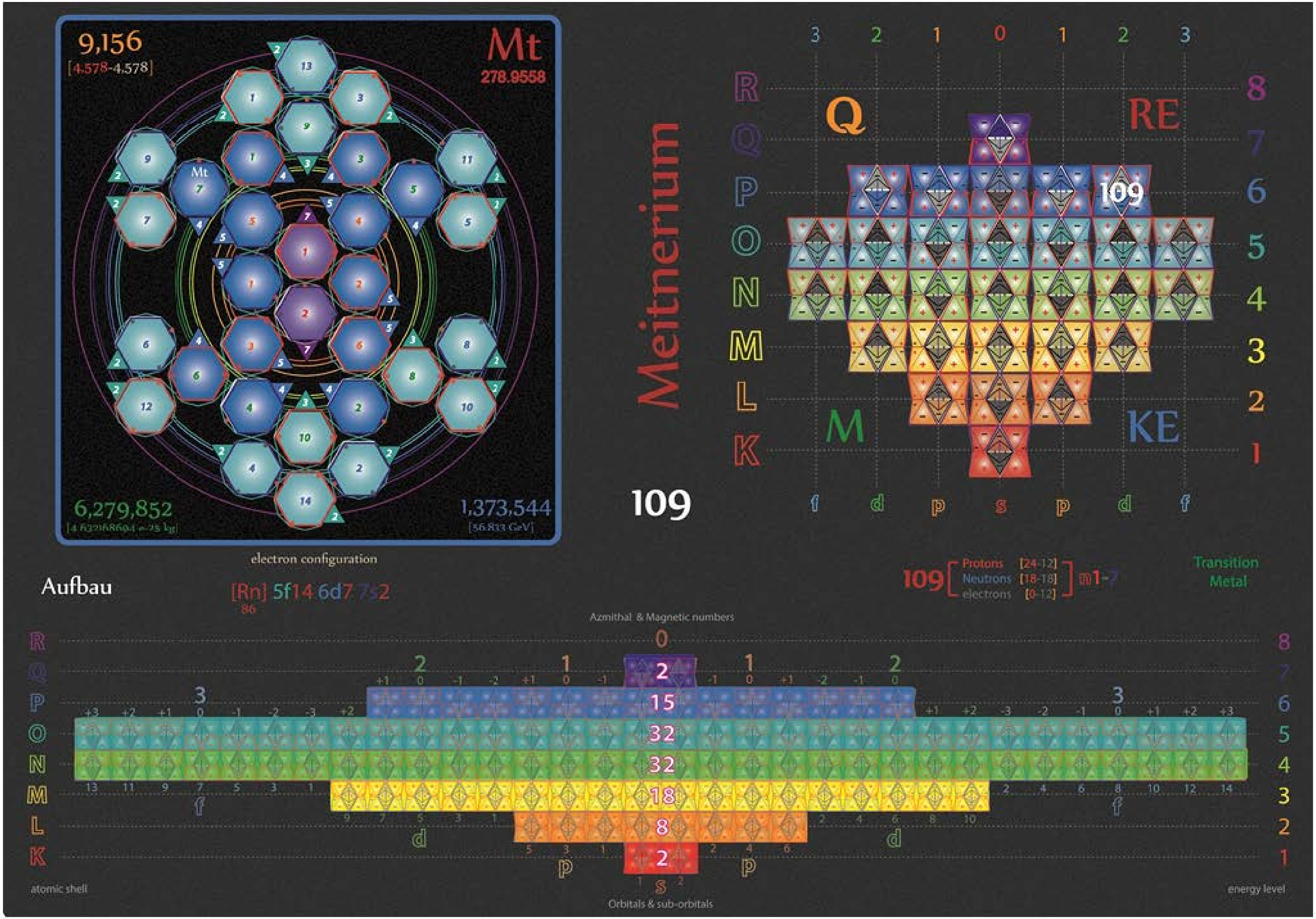


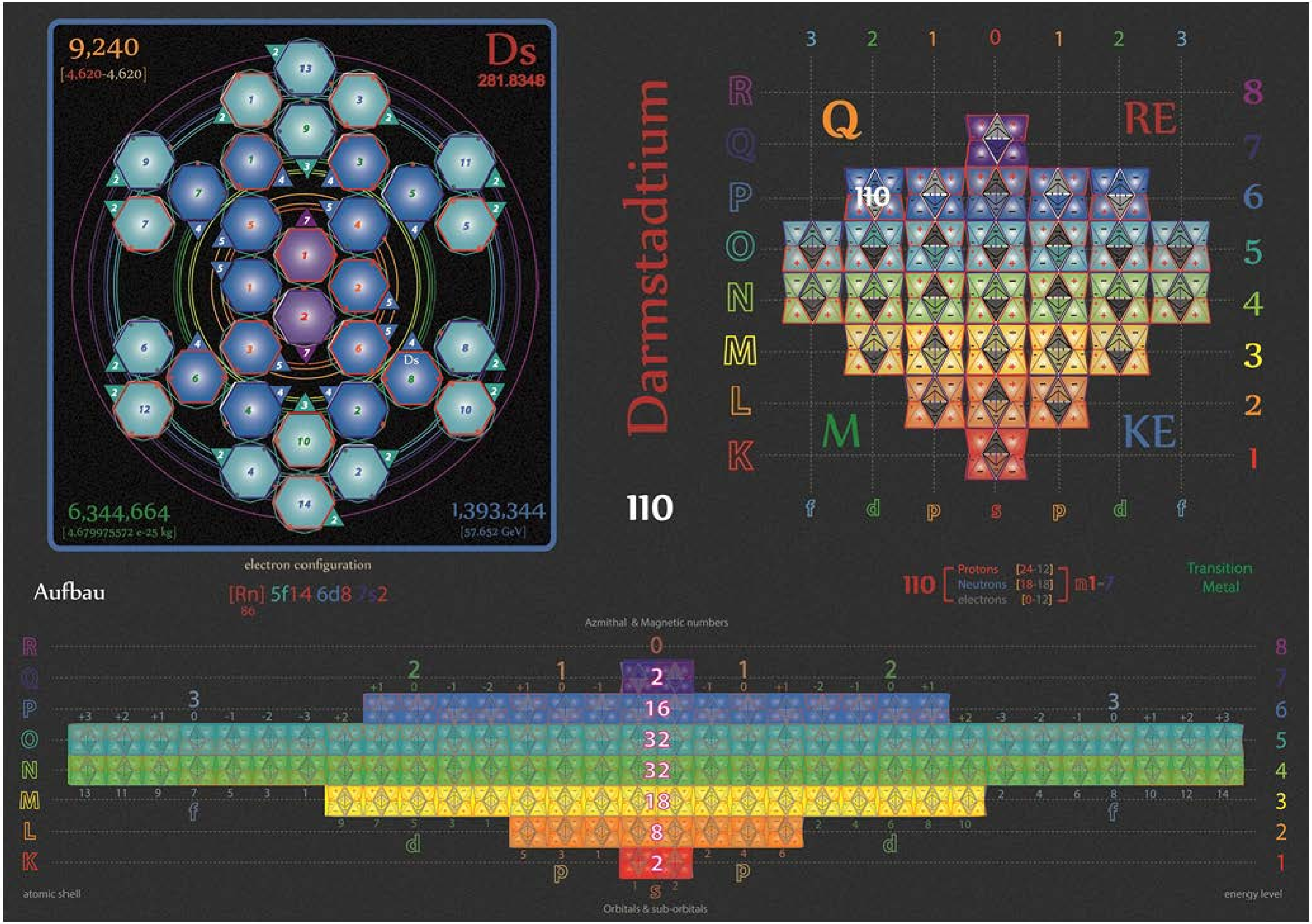
8,904
[4,452-4,452]
Sg
270.3188
6,085,416
[4.488748060 e-25 kg]
1,314,144
[54.375 GeV]
Seaborgium
106
electron configuration
Aufbau
[Rn] 5f14 6d4 7s2
86
106 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-7
Transition Metal
Q
RE
M
KE
Azmithal & Magnetic numbers
Orbitals & sub-orbitals
atomic shell
energy level


8,988
[4.494-4.494]
Bh
273.1978
6,150,228
[4.536554938 e-25 kg]
1,333,944
[55.194 GeV]
Bohrium
107
Q
RE
M
KE
electron configuration
Aufbau
[Rn] 5f14 6d5 7s2
86
107
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
m1-7
Transition Metal
Azmithal & Magnetic numbers
Orbitals & sub-orbitals
atomic shell
energy level

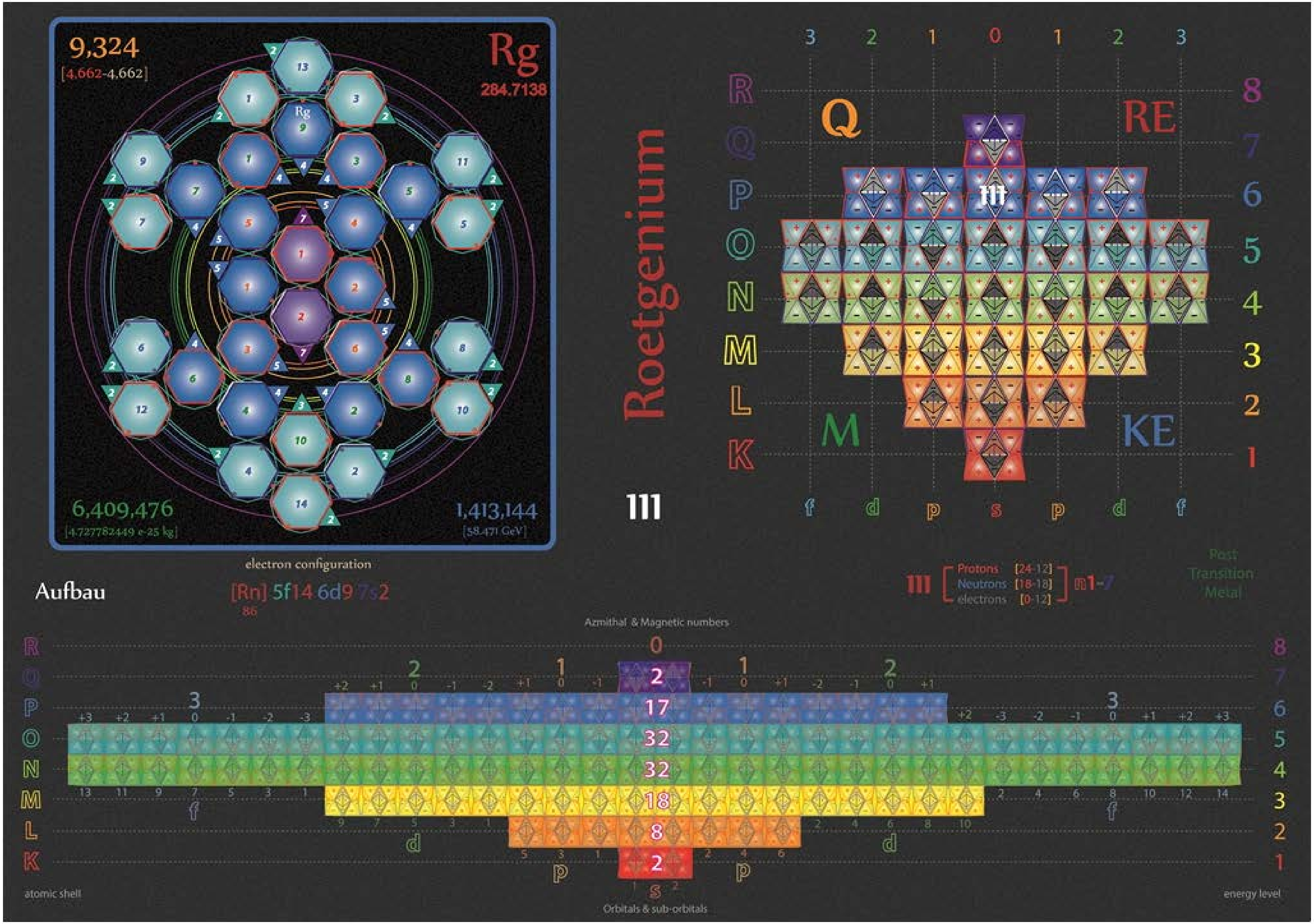


Tetryonics 51.108 - Hassium atom

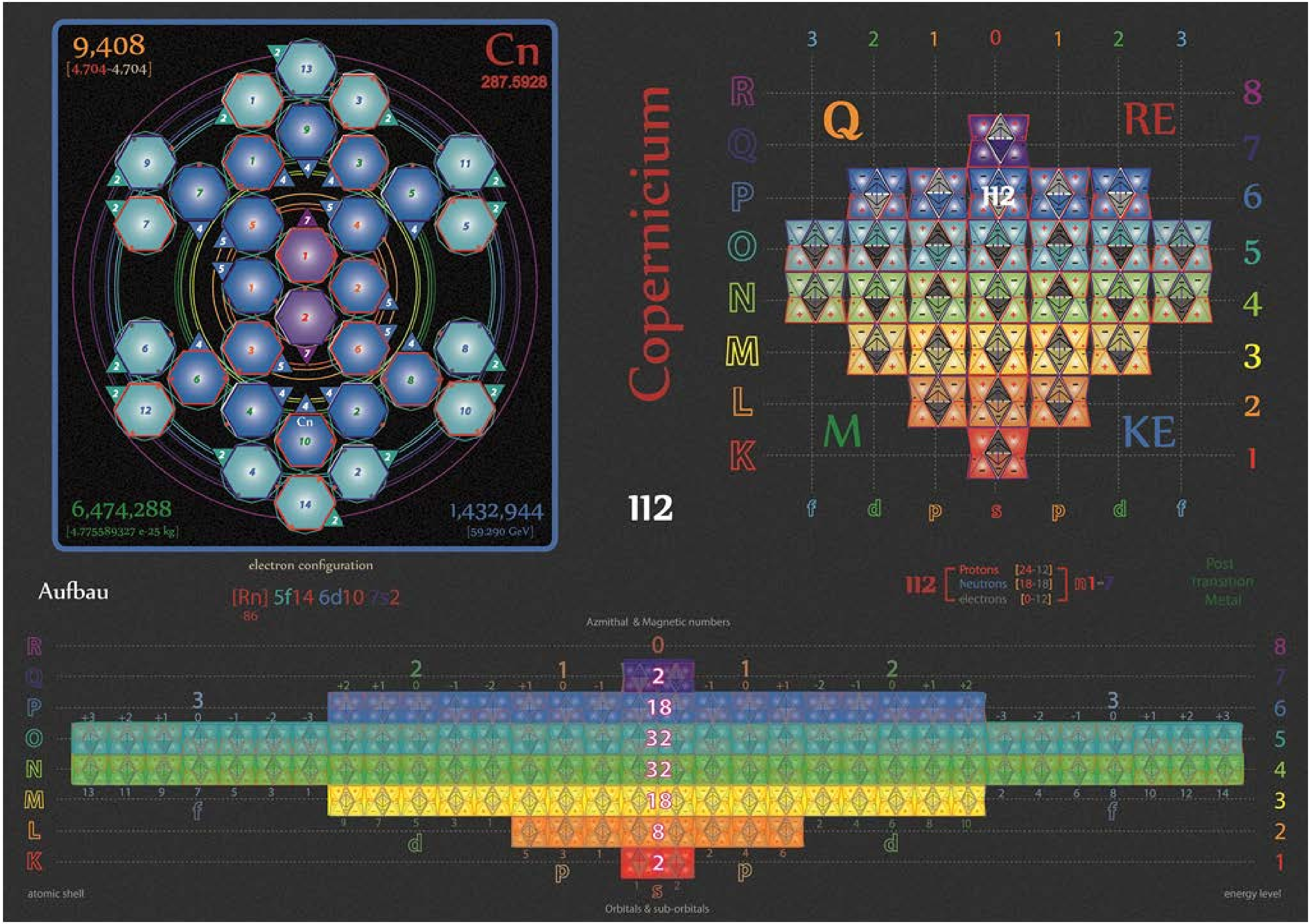

9,156
[4.578-4.578]
Mt
278.9558
6,279,852
1,373,544
[56.833 GeV]
Meitnerium
109
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
electron configuration
Aufbau
[Rn] 5f14 6d7 7s2
86
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
Transition
Metal
Azmithal & Magnetic numbers
2
15
32
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals



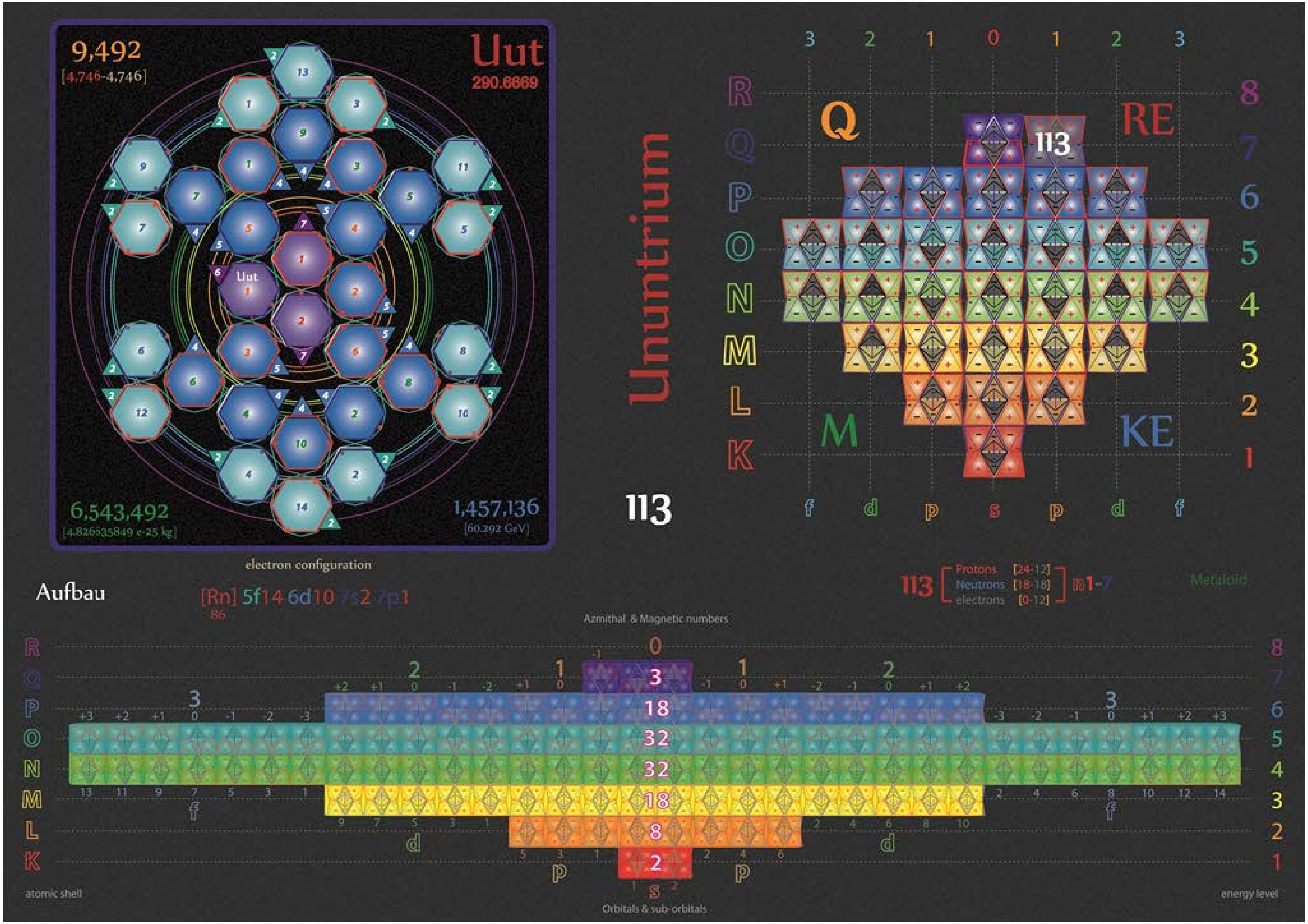
Tetryonics 51.110 - Darmstadtium atom



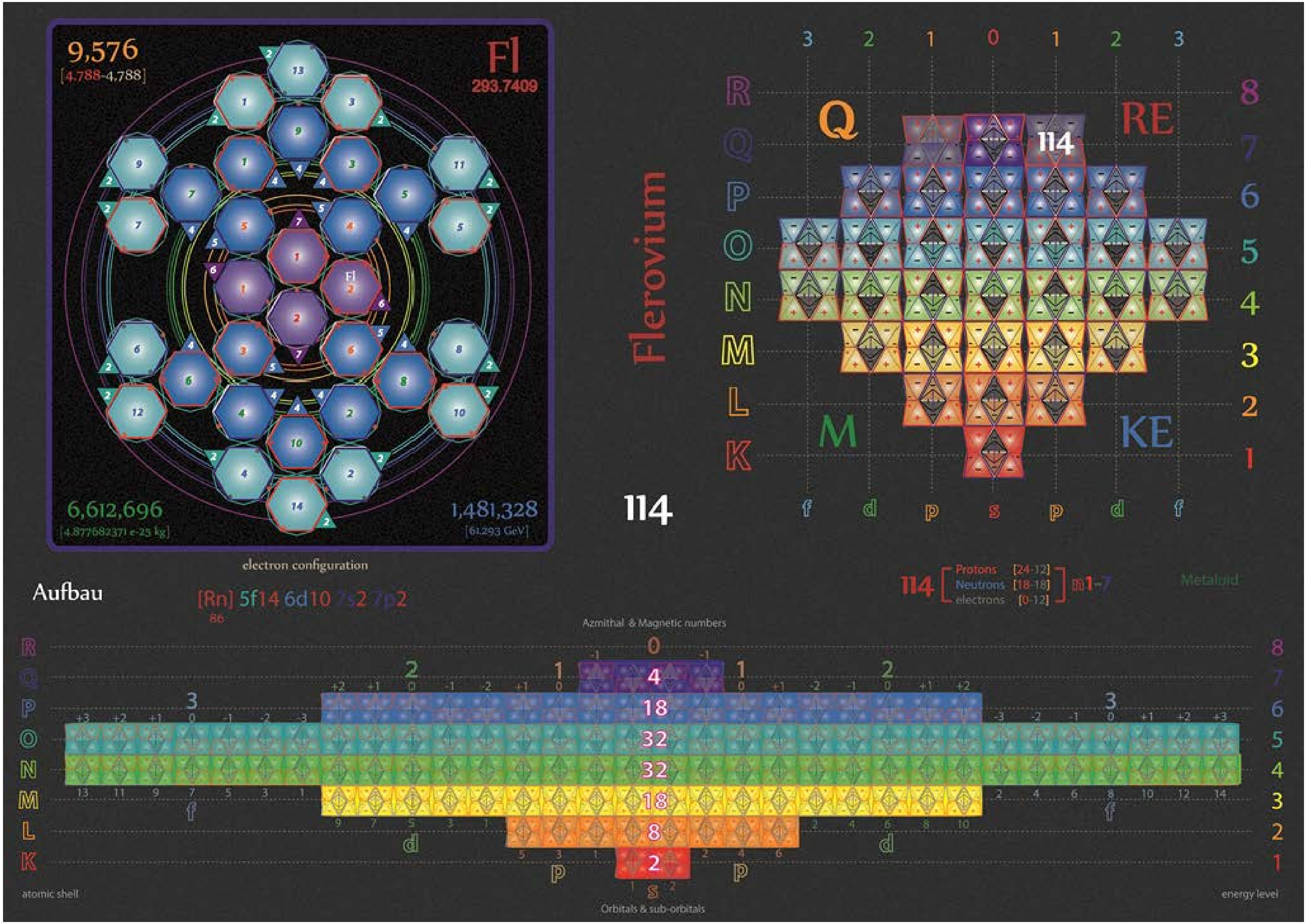
9,324
[4,662-4,662]
Rg
284.7138
6,409,476
[4.727782449 e-25 kg]
1,413,144
[58.471 GeV]
Roetgenium
111
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
electron configuration
Aufbau
[Rn] 5f14 6d9 7s2
86
111 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-7
Post Transition Metal
Azmithal & Magnetic numbers
2
17
32
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals



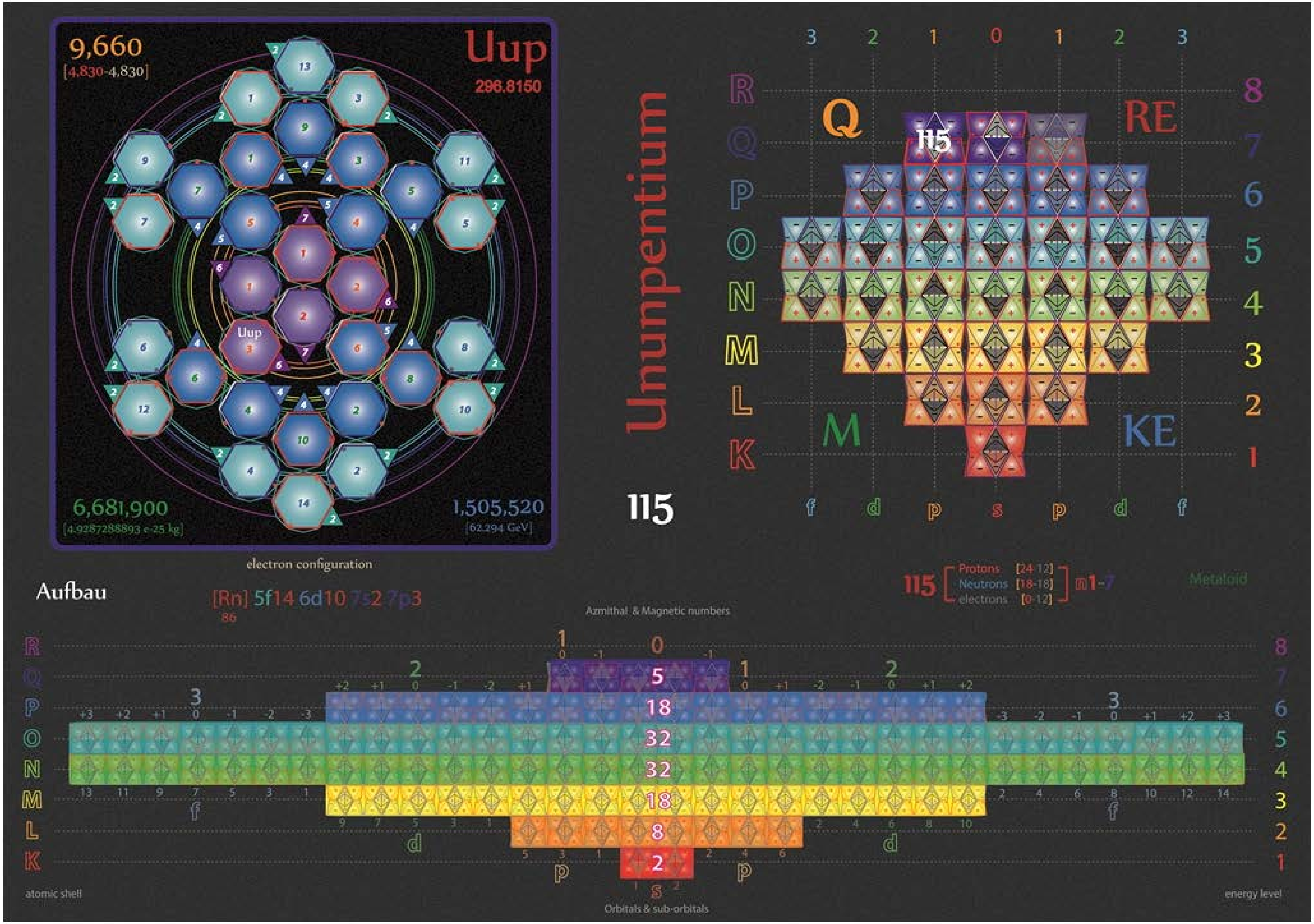
Tetryonics 51.112 - Copernicium atom

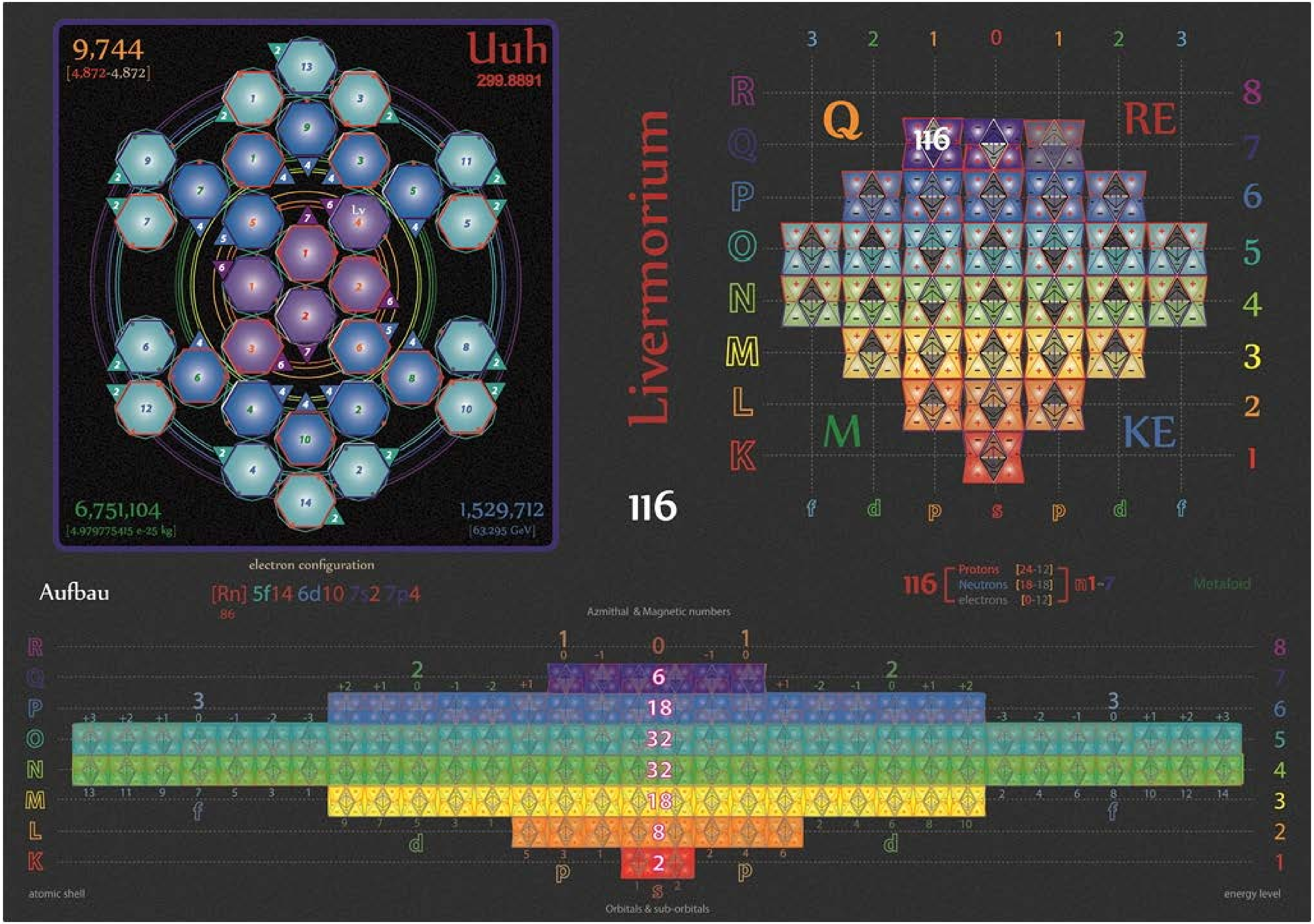


Tetryonics 51.113 - Ununtrium atom

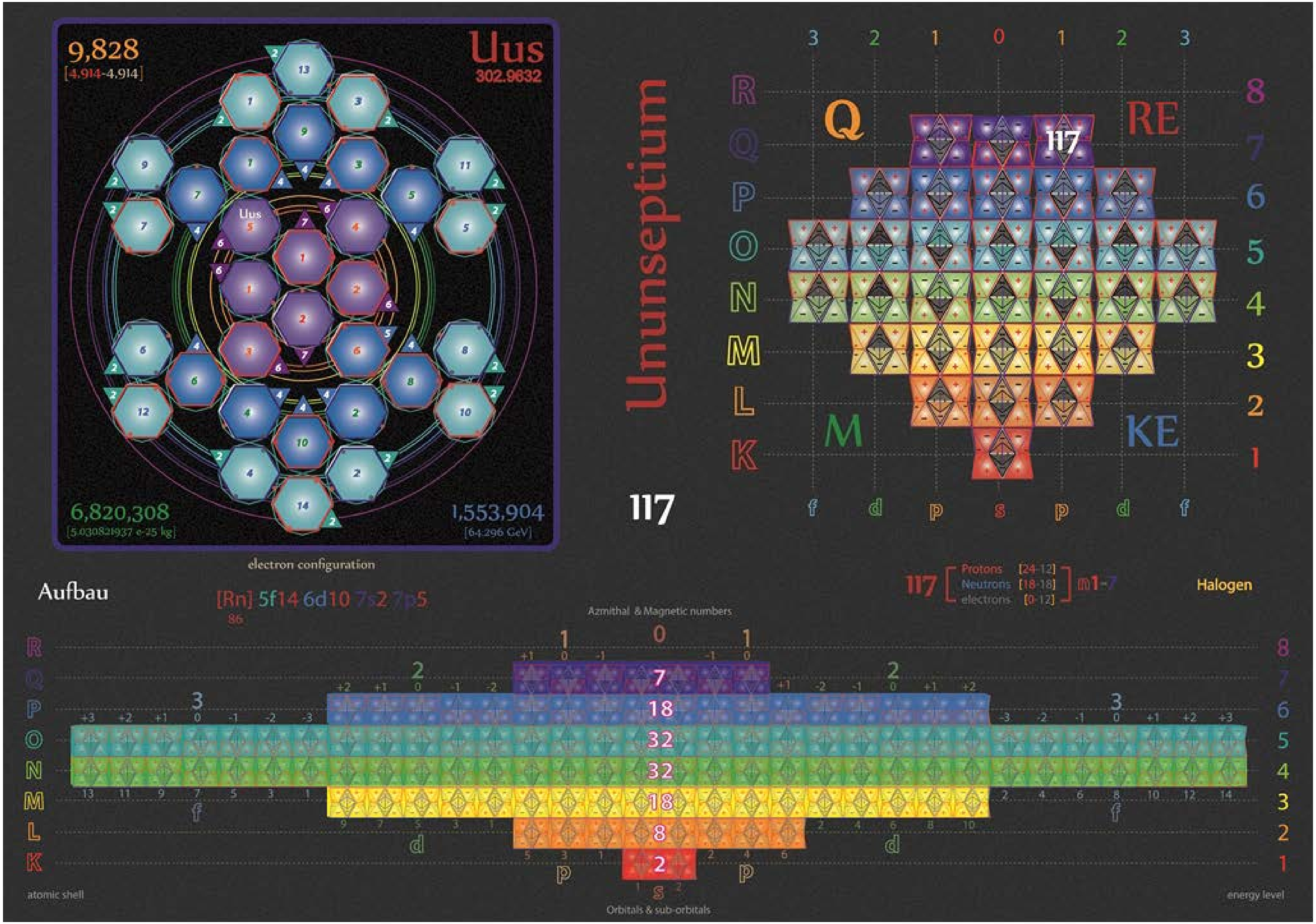


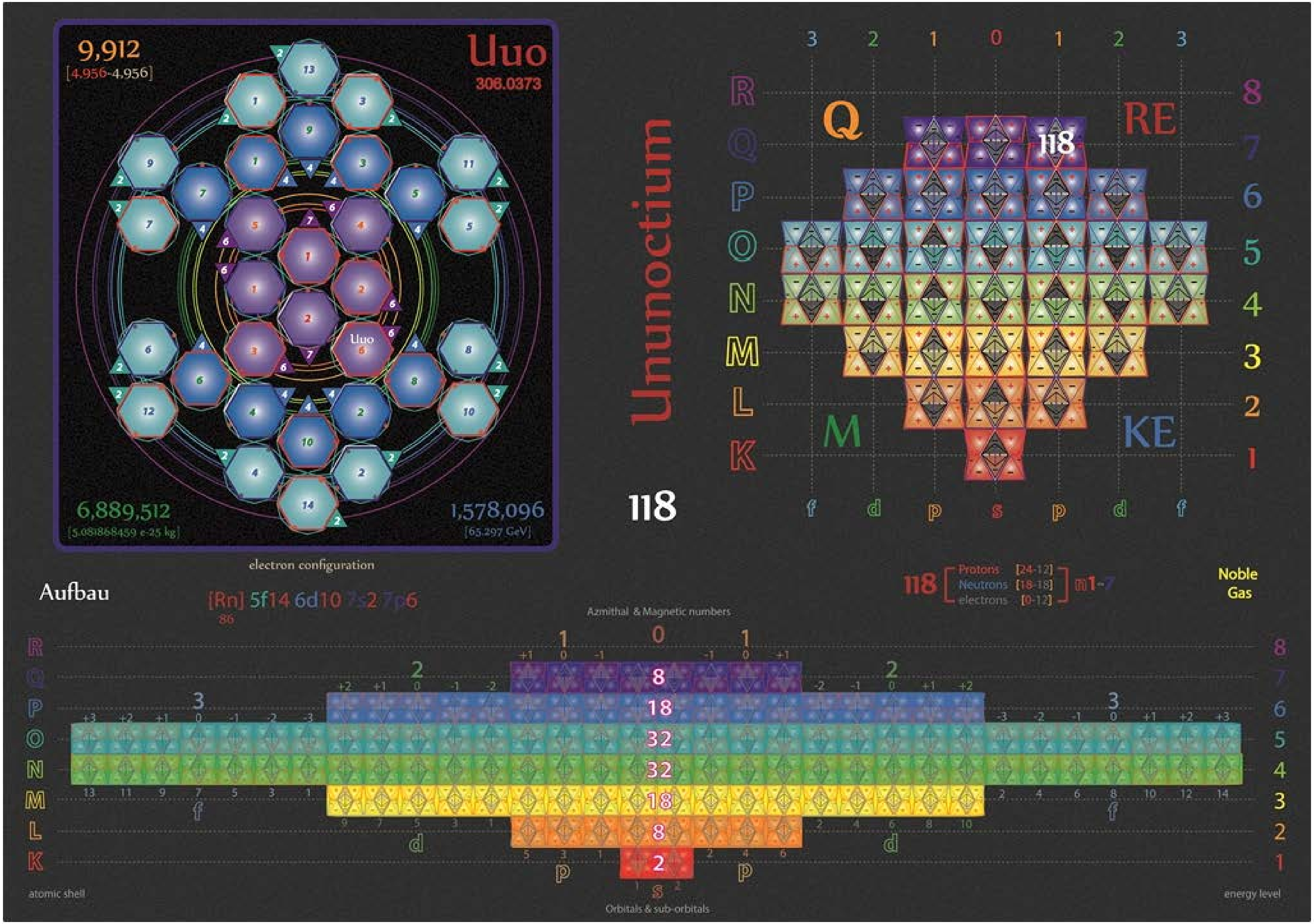
9,576
[4,788-4,788]
Fl
293.7409
6,612,696
[4.877682371 e-25 kg]
1,481,328
[61,293 GeV]
Flerovium
114
electron configuration
Aufbau
[Rn] 5f14 6d10 7s2 7p2
86
R Q P O N M L K
Q RE M KE
8 7 6 5 4 3 2 1
f d p s p d f
114 Protons [24-12] Neutrons [18-18] electrons [0-12] m1-7
Metaloid
Azmithal & Magnetic numbers
Orbitals & sub-orbitals
atomic shell
energy level


9,660
[4,830-4,830]
Uup
296.8150
6,681,900
[4.9287288893 e-25 kg]
1,505,520
[62.294 GeV]
Ununpentium
115
Q
RE
M
KE
electron configuration
Aufbau
[Rn] 5f14 6d10 7s2 7p3
86
115
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
n1-7
Metalloid
Azmithal & Magnetic numbers
atomic shell
energy level
Orbitals & sub-orbitals

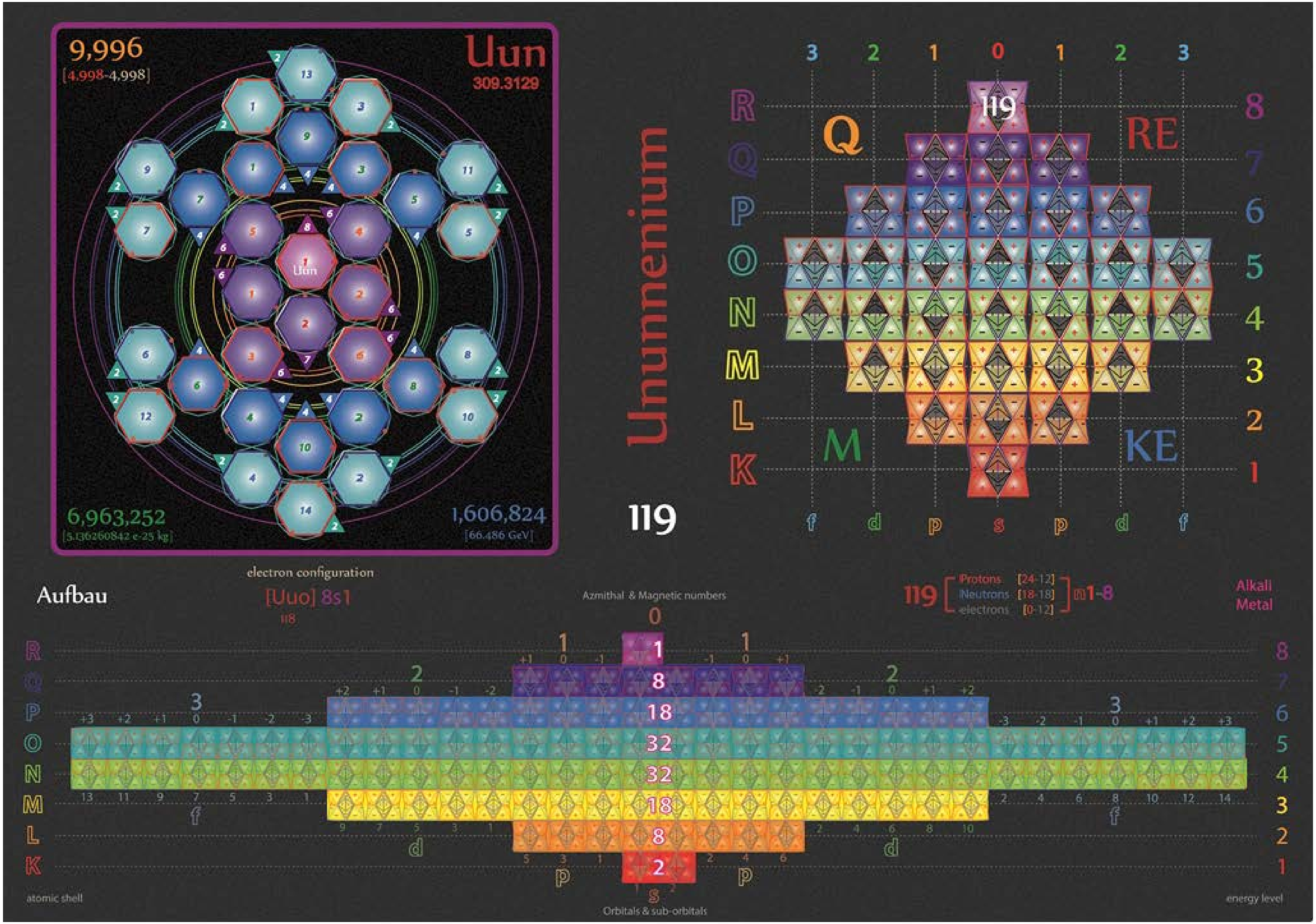


9,744
[4,872-4,872]
Uhh
299.8891
6,751,104
[4.979775415 e-25 kg]
1,529,712
[63.295 GeV]
Livermorium
116
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
electron configuration
Aufbau
[Rn] 5f14 6d10 7s2 7p4
86
116 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-7
Metaloid
Azmithal & Magnetic numbers
6
18
32
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

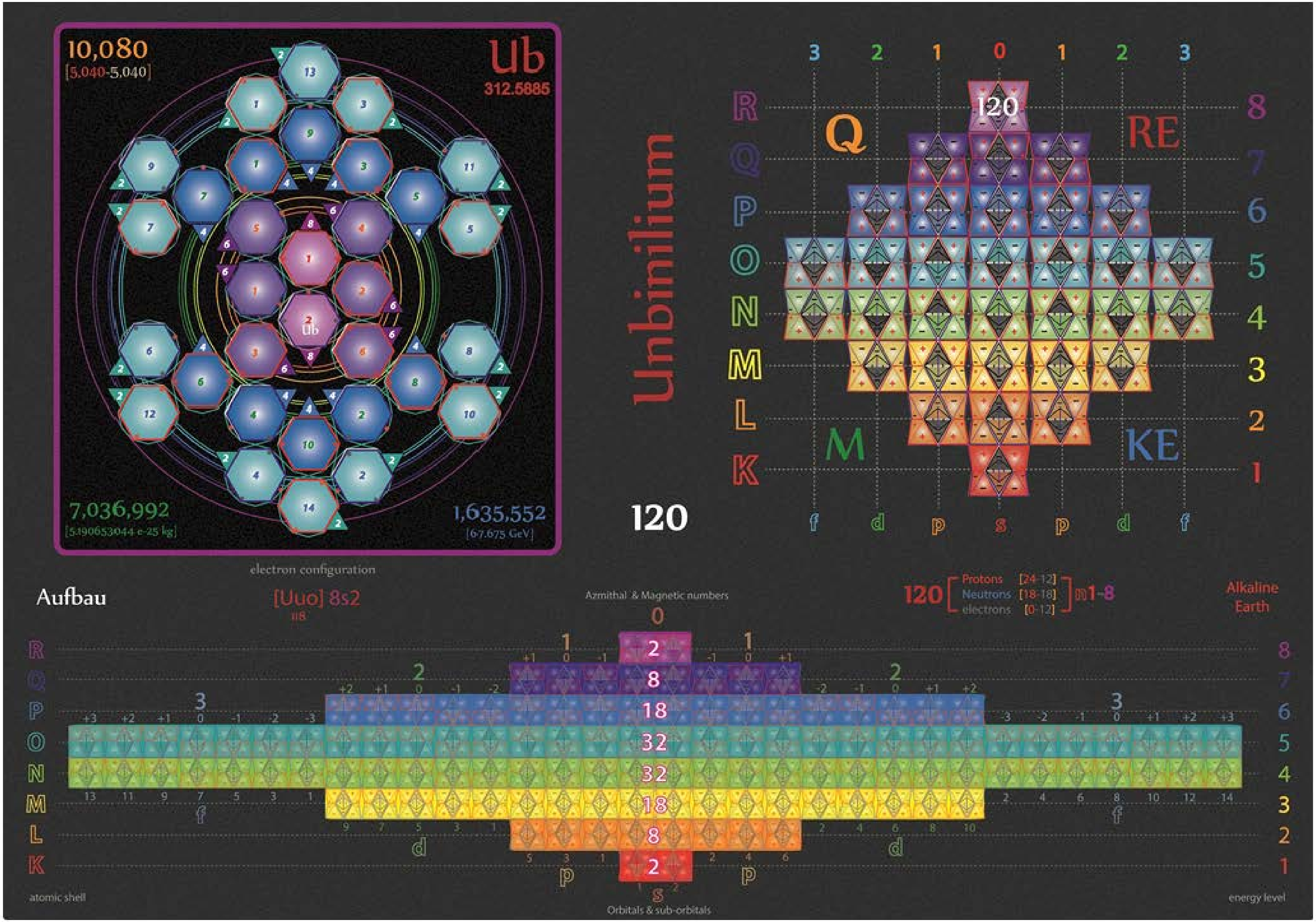

9,828
[4.914-4.914]
Uus
302.9632
6,820,308
[5.030821937 e-25 kg]
1,553,904
[64.296 GeV]
electron configuration
Ununseptium
117
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
Aufbau
[Rn] 5f14 6d10 7s2 7p5
86
Azmithal & Magnetic numbers
117 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-7
Halogen
7
18
32
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

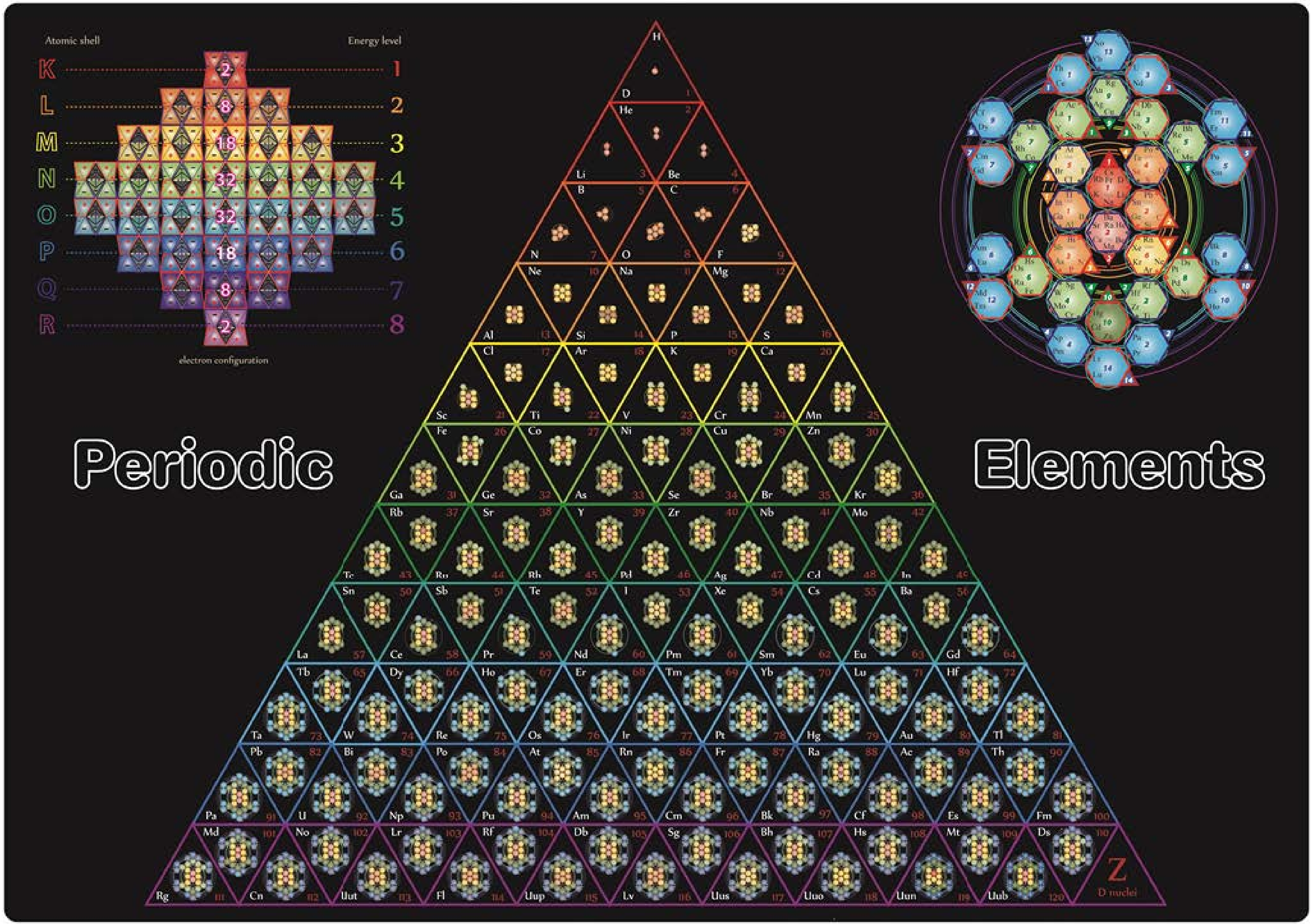


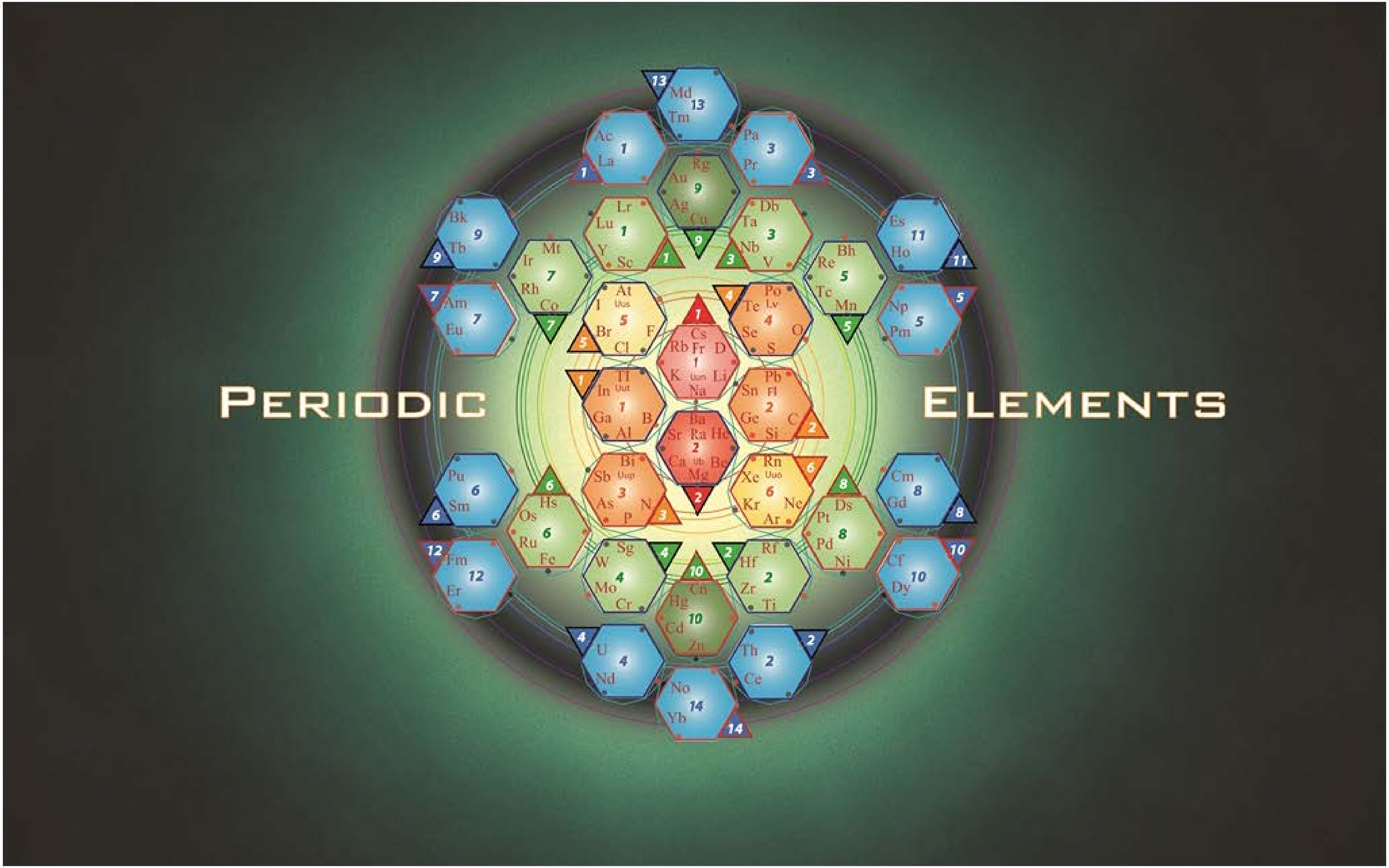
9,912
[4.956-4,956]
Uuo
308.0373
6,889,512
[5.0818684559 e-25 kg]
1,578,096
[65.297 GeV]
Ununoctium
118
Q
RE
M
KE
R Q P O N M L K
8 7 6 5 4 3 2 1
3 2 1 0 1 2 3
f d p s p d f
electron configuration
Aufbau
[Rn] 5f14 6d10 7s2 7p6
86
Protons [24-12]
Neutrons [18-18]
electrons [0-12]
Noble Gas
Azmithal & Magnetic numbers
8
18
32
32
18
8
2
atomic shell
energy level
Orbitals & sub-orbitals

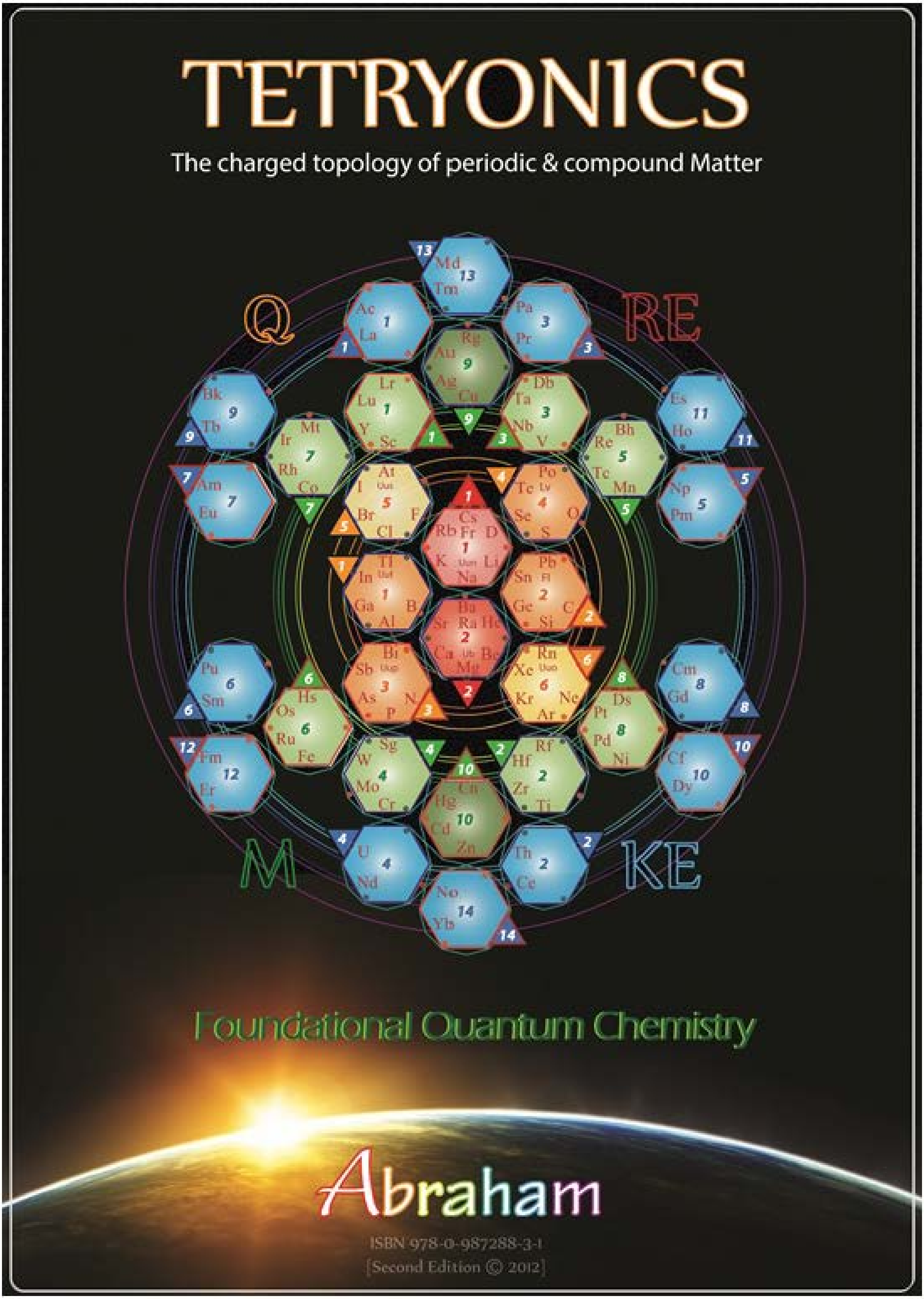


Tetryonics 51.119 - Ununnenium atom

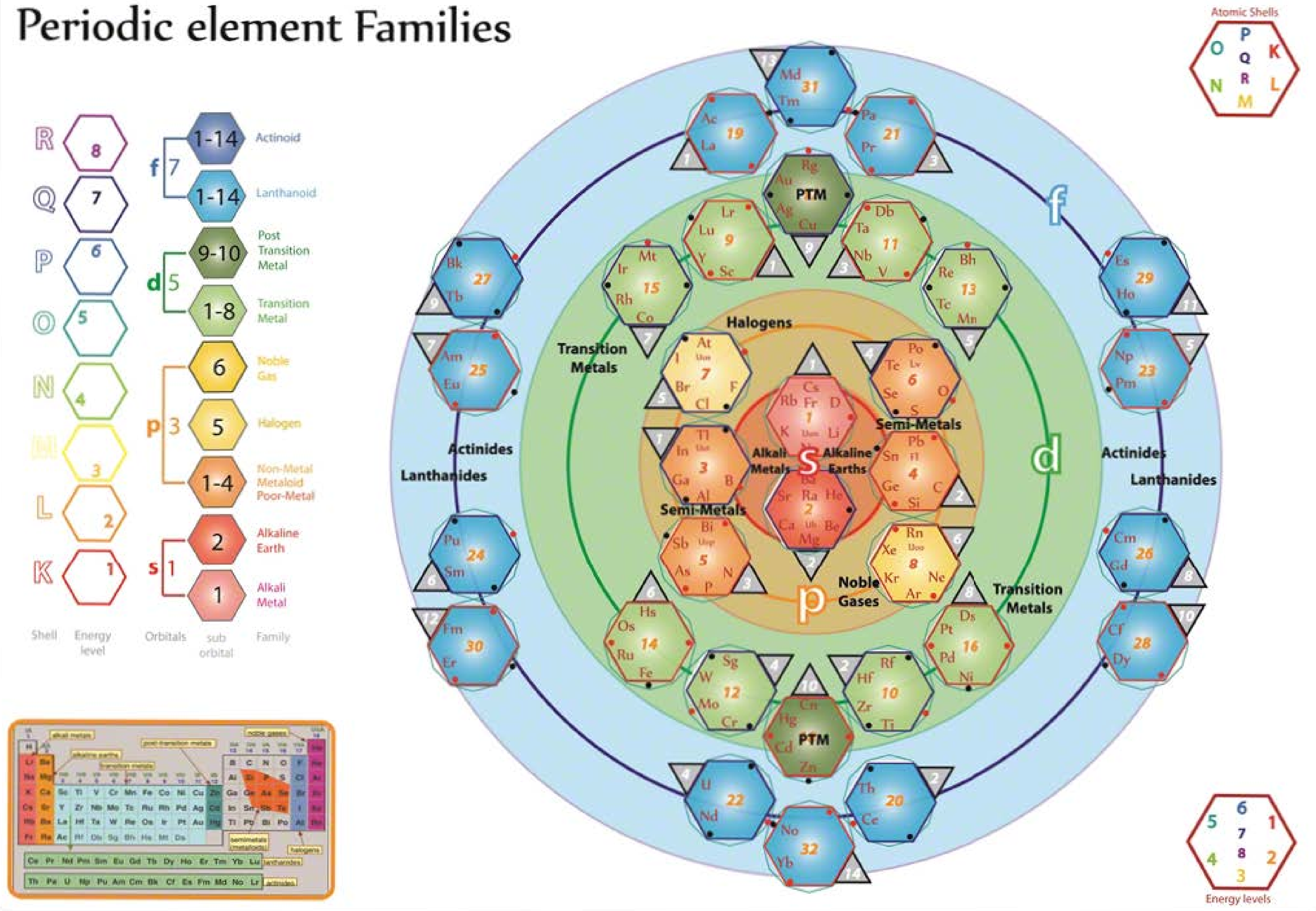

10,080
[5,040-5,040]
Ub
312.5885
7,036,992
[5.190653044 e-25 kg]
1,635,552
[67.675 GeV]
Unbinilium
120
Q
RE
M
KE
electron configuration
Aufbau
[Uuo] 8s2
Azmithal & Magnetic numbers
120 Protons [24-12] Neutrons [18-18] electrons [0-12] n1-8
Alkaline Earth
atomic shell
energy level
Orbitals & sub-orbitals


Atomic shell
Energy level
K 1
L 2
M 3
N 4
O 5
P 6
Q 7
R 8
2
8
18
32
32
18
8
2
electron configuration
Periodic
Elements
H
D 1
He 2
Li 3
Be 4
B 5
C 6
N 7
O 8
F 9
Ne 10
Na 11
Mg 12
Al 13
Si 14
P 15
S 16
Cl 17
Ar 18
K 19
Ca 20
Sc 21
Ti 22
V 23
Cr 24
Mn 25
Fe 26
Co 27
Ni 28
Cu 29
Zn 30
Ga 31
Ge 32
As 33
Se 34
Br 35
Kr 36
Rb 37
Sr 38
Y 39
Zr 40
Nb 41
Mo 42
Tc 43
Ru 44
Rh 45
Pd 46
Ag 47
Cd 48
In 49
Sn 50
Sb 51
Te 52
I 53
Xe 54
Cs 55
Ba 56
La 57
Ce 58
Pr 59
Nd 60
Pm 61
Sm 62
Eu 63
Gd 64
Tb 65
Dy 66
Ho 67
Er 68
Tm 69
Yb 70
Lu 71
Hf 72
Ta 73
W 74
Re 75
Os 76
Ir 77
Pt 78
Hg 79
Au 80
Tl 81
Pb 82
Bi 83
Po 84
At 85
Rn 86
Fr 87
Ra 88
Ac 89
Th 90
Pa 91
U 92
Np 93
Pu 94
Am 95
Cm 96
Bk 97
Cf 98
Es 99
Fm 100
Md 101
No 102
Lr 103
Rf 104
Db 105
Sg 106
Bh 107
Hs 108
Mt 109
Ds 110
Rg 111
Cn 112
Uut 113
Fl 114
Uup 115
Lv 116
Uus 117
Uuo 118
Uun 119
Uub 120
Z
D nuclei


PERIODIC
ELEMENTS
Md 13 Tm
Ac 1 La
Pa 3 Pr
Au Rg 9 Ag Cu
Lr Lu 1 Y Sc
Db Ta 3 Nb V
Bk 9 Tb
Es 11 Ho
Mt Ir 7 Rh Co
Bh Re 5 Tc Mn
Am 7 Eu
Np 5 Pm
At I Uus 5 Br F Cl
Cs Rb Fr D 1 K Uun Li Na
Po Te Lv 4 Se O S
Tl In Uut 1 Ga B Al
Pb Sn Fl 2 Ge C Si
Ba Sr Ra He 2 Ca Ub Be Mg
Bi Sb Uup 3 As N P
Rn Xe Uuo 6 Kr Ne Ar
Pu 6 Sm
Cm 8 Gd
Hs Os 6 Ru Fe
Ds Pt 8 Pd Ni
Fm 12 Er
Cf 10 Dy
Sg W 4 Mo Cr
Cn Hg 10 Cd Zn
Rf Hf 2 Zr Ti
U 4 Nd
Th 2 Ce
No 14 Yb


TETRYONICS
The charged topology of periodic & compound Matter
Q
RE
M
KE
Foundational Quantum Chemistry
Abraham
ISBN 978-0-987288-3-1
[Second Edition © 2012]

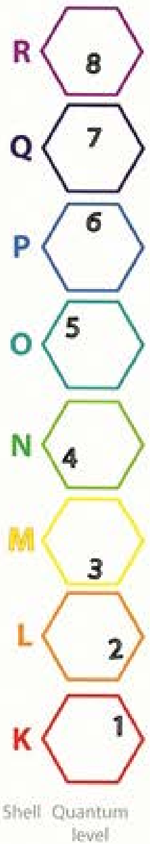
Periodic element Families



Alkali Metals

The alkali metals are silver-colored (caesium has a golden tinge), soft, low-density metals, which react readily with halogens to form ionic salts, and with water to form strongly alkaline (basic) hydroxides.

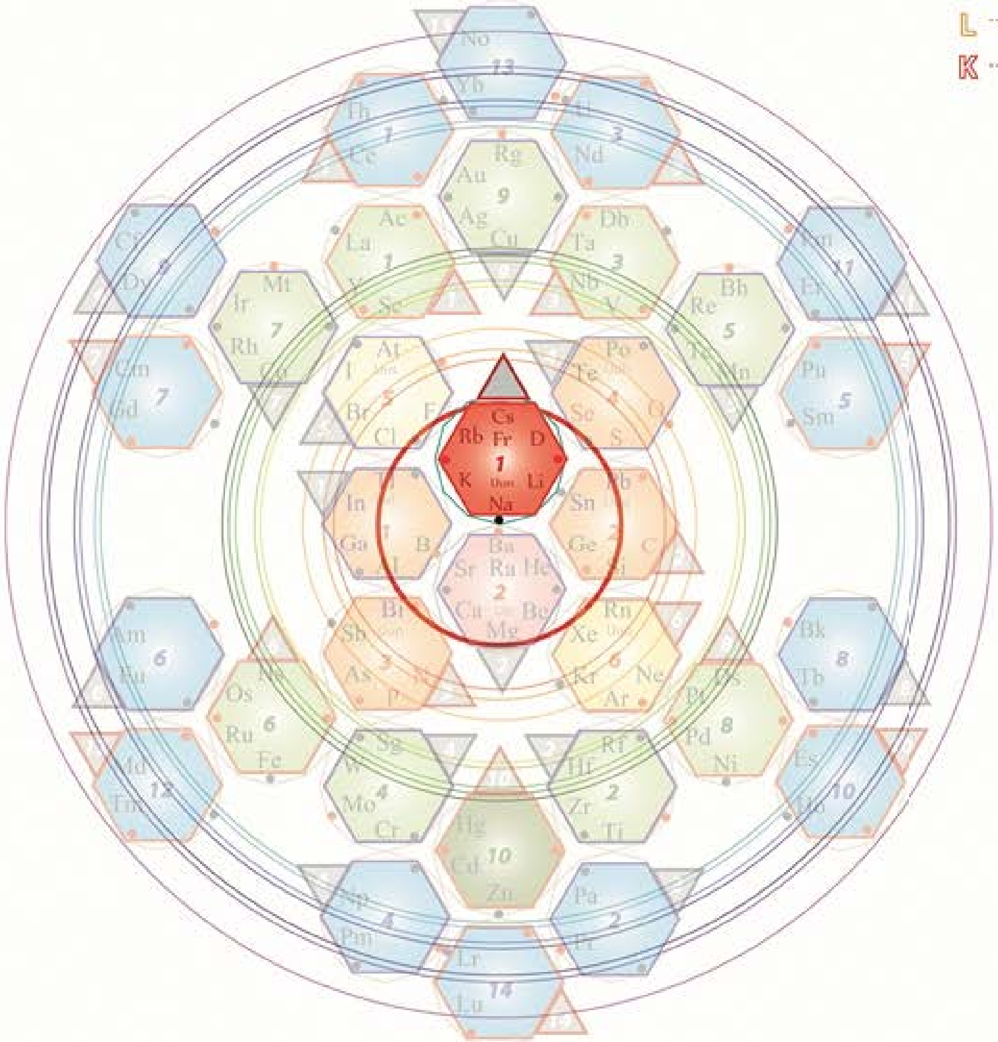
These elements all have one electron in their outermost shell, so the energetically preferred state of achieving a filled electron shell is to lose one electron to form a singly charged positive ion.



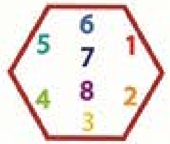
s Orbital

n1-8

s1 sub-orbital



8 Alkaline Metals



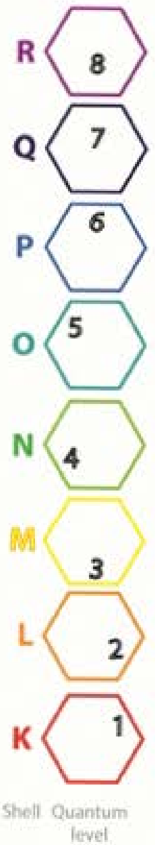
Quantum level

The alkali metals are all highly reactive and are never found in elemental form in nature.

As a result, in the laboratory they are stored under mineral oil. They also tarnish easily and have low melting points and densities. Potassium and rubidium possess a weak radioactive characteristic (harmless) due to the presence of long duration radioactive isotopes.

Alkaline Earths

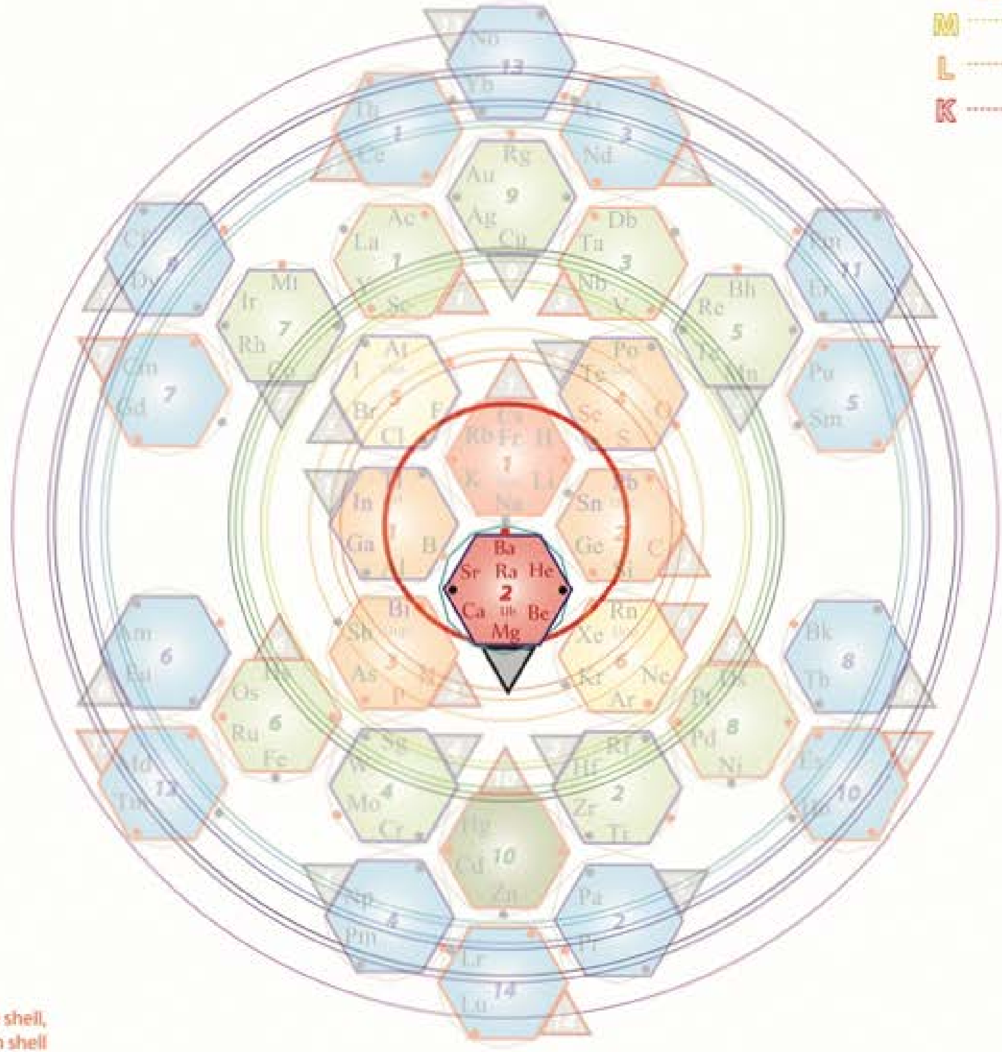
The alkaline earth metals are silver colored, soft metals, which react readily with halogens to form ionic salts, and with water, though not as rapidly as the alkali metals, to form strong alkaline (basic) hydroxides.

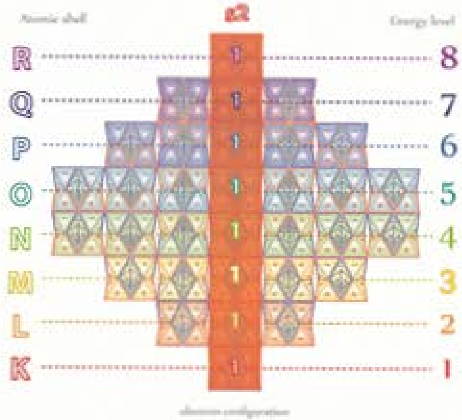


s Orbital

n1-8

s2 sub-orbital





8 Alkaline Earths

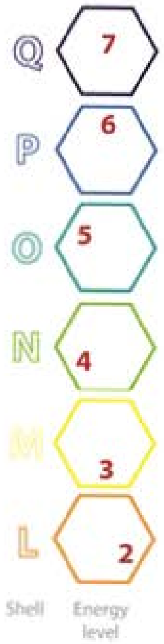
All the alkaline earth metals have two electrons in their valence shell, so the energetically preferred state of achieving a filled electron shell is to lose two electrons to form doubly charged positive ions.

Metalloids

A metaloid is a material with a small overlap in the energy of the conduction band and valence bands.

Unlike a regular metal, metaloids have been described electrically as charge carriers of both types (holes and elecrons), so it could be argue that they should be called 'double-metals' rather than metaloids.

As metaloids have fewer charge carriers than metals, they typically have lower electrical and thermal conductivities.

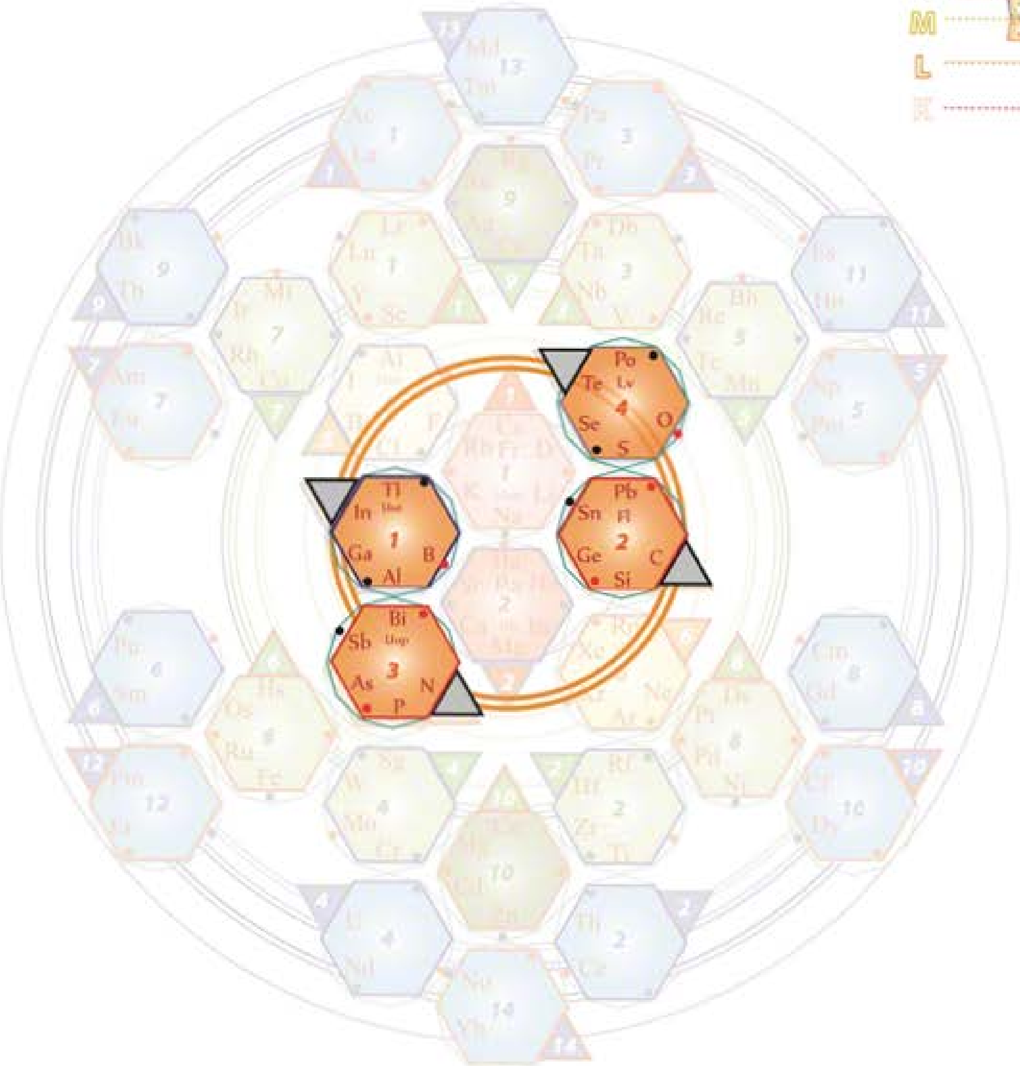


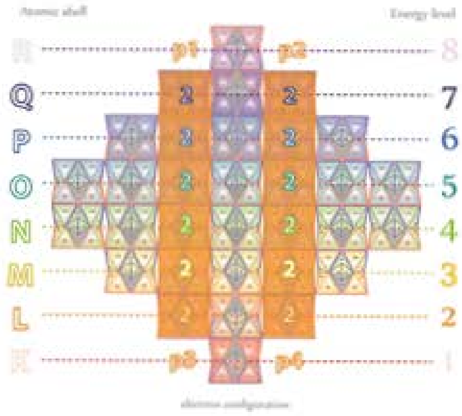
p 1-4 Non-Metal Metaloid Poor-Metal

2 p-Orbitals

n2-7

p1-4 sub-orbitals





24 Semi-Metals

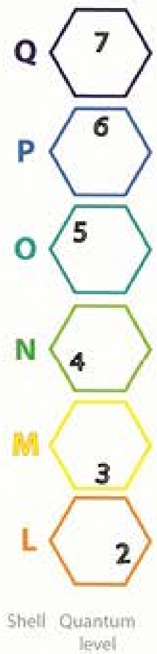
Charge carriers typically occur in much smaller numbers than in a real metal. In this respect they resemble degenerate semiconductors more closely.
This explains why the electrical properties of metaloids are partway between those of metals and semiconductors.

Halogens

Owing to their high reactivity, the halogens are found in the environment only in compounds or as ions.

Halide ions and oxoanions such as iodate (IO3−) can be found in many minerals and in seawater.

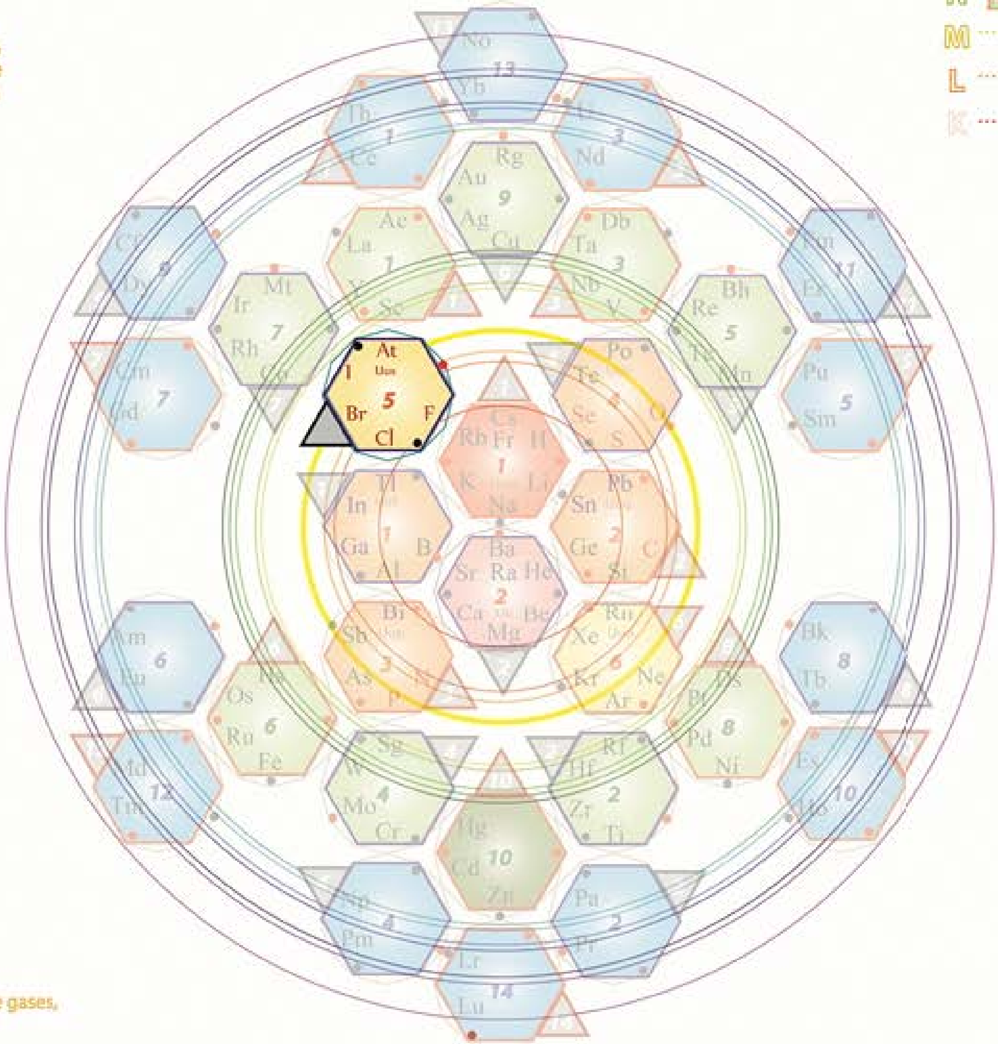
Halogenated organic compounds can also be found as natural products in living organisms. In their elemental forms, the halogens exist as diatomic molecules, but these only have a fleeting existence in nature and are much more common in the laboratory and in industry.



p3 Orbital

n2-7

p5 sub-orbital



6 Halogens

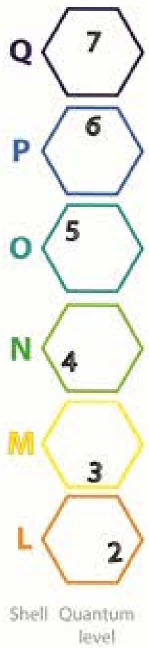
At room temperature and pressure, fluorine and chlorine are gases, bromine is a liquid and iodine and astatine are solids.

Group 17 is therefore the only periodic table group exhibiting all three states of matter at room temperature

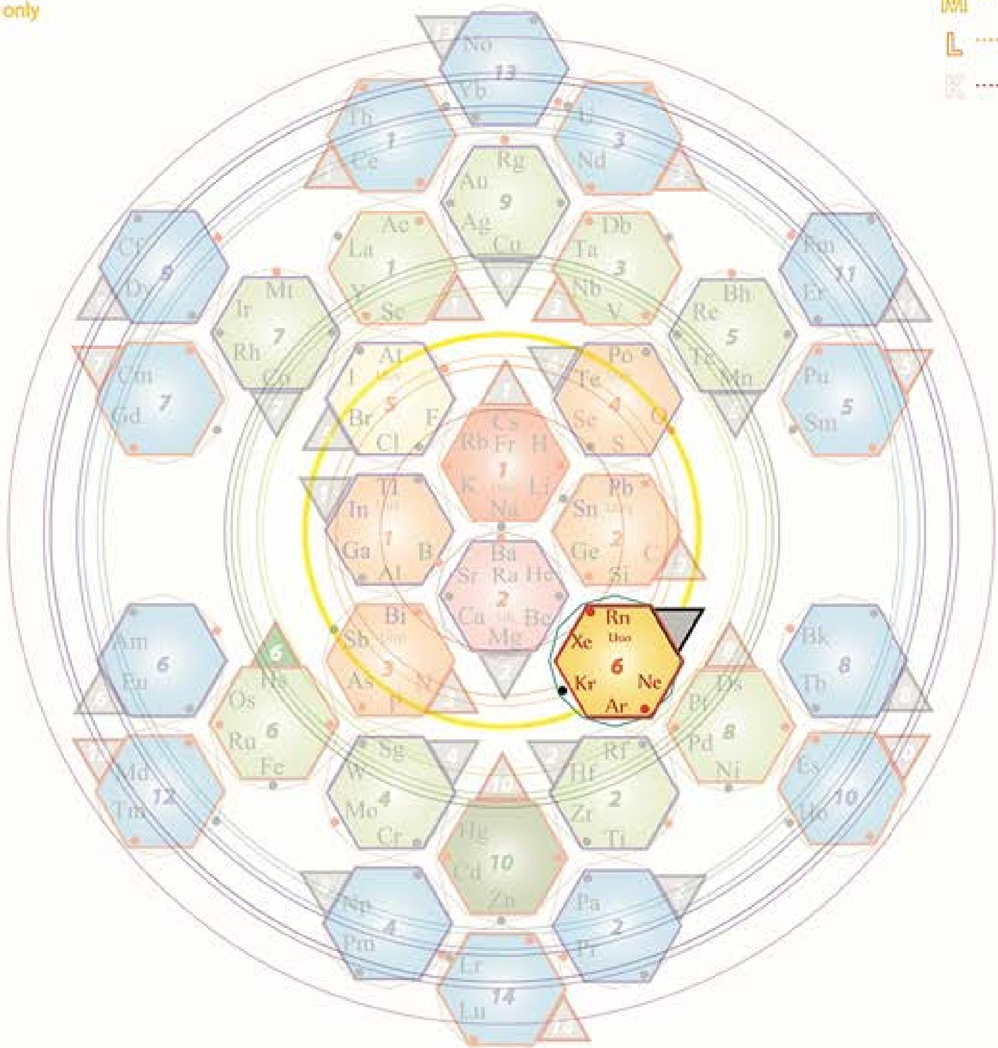
Nobel Gases

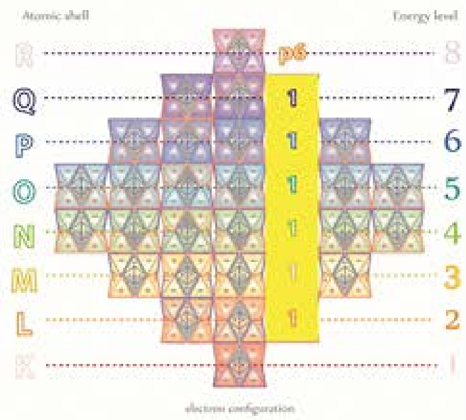
The properties of the noble gases can be well explained by modern theories of atomic structure: their outer shell of valence electrons is considered to be "full", giving them little tendency to participate in chemical reactions, and only a few hundred noble gas compounds have been prepared.

The melting and boiling points for each noble gas are close together, differing by less than 10 °C (18 °F); consequently, they are liquids only over a small temperature range.



completed
p3 Orbital
n2-7
p6 sub-orbital





6
Nobel Gases

Neon, argon, krypton, and xenon are obtained from air using the methods of liquefaction of gases and fractional distillation.

Helium is typically separated from natural gas, and radon is usually isolated from the radioactive decay of dissolved radium compounds.

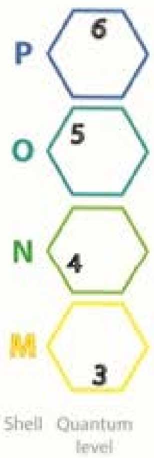
Transitional Metals

In chemistry, the term transition metal commonly refers to any element in the d-block of the periodic table, including the group 12 elements zinc, cadmium and mercury.

This corresponds to groups 3 to 12 on the periodic table, which are all metals.

More strictly, IUPAC defines a transition metal as "an element whose atom has an incomplete d sub-shell, or which can give rise to cations with an incomplete d sub-shell."

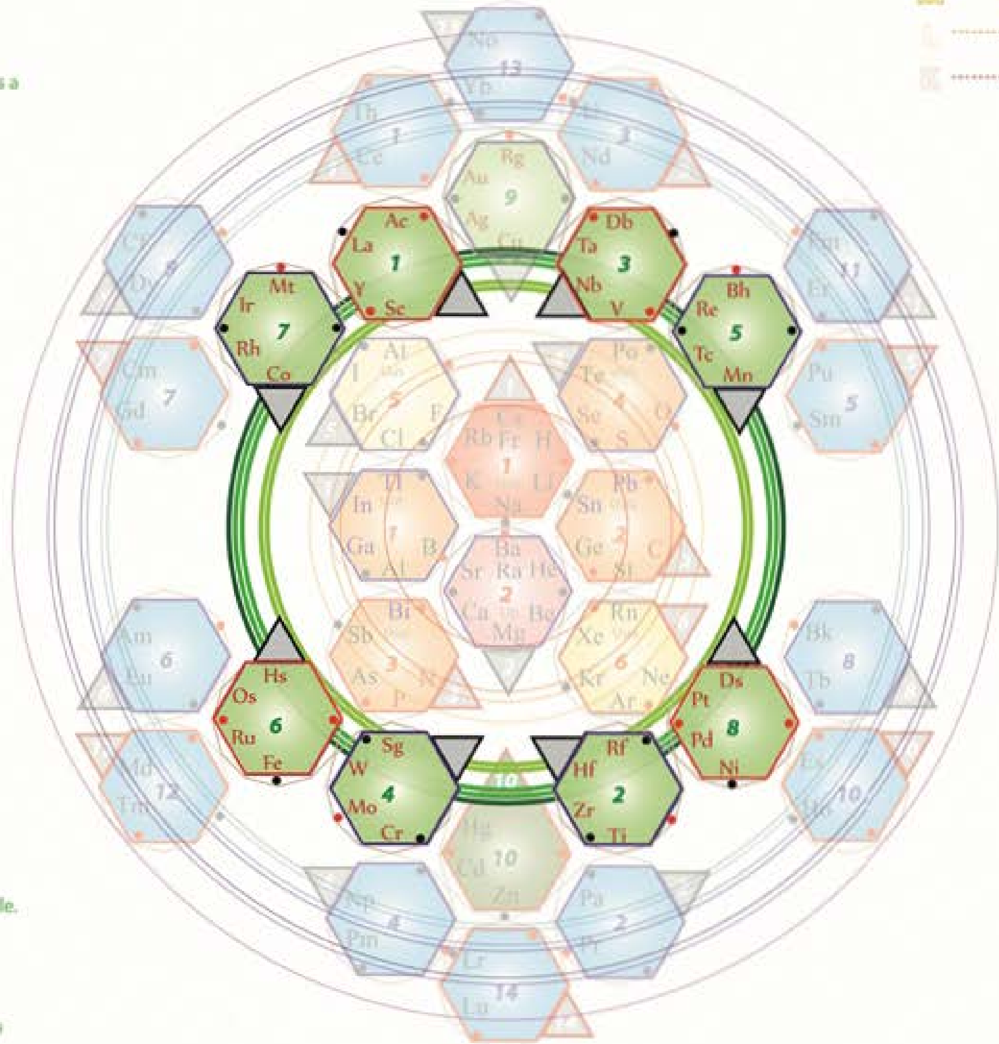
The first definition is simple and has traditionally been used. However, many interesting properties of the transition elements as a group are the result of their partly filled d subshells.

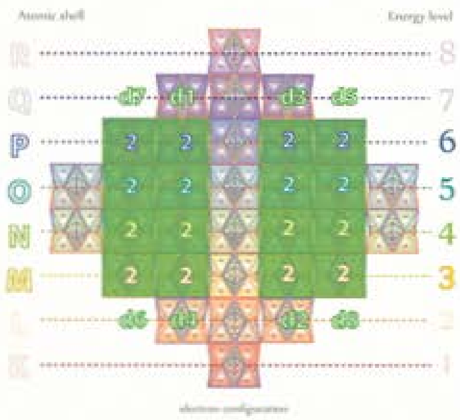


4 d-Orbitals

n3-6

d1-8 sub-orbitals





32 Transition Metals

The name transition comes from their position in the periodic table. In each of the four periods in which they occur, these elements represent the successive addition of electrons to the d atomic orbitals of the atoms.

In this way, the transition metals represent the transition between group 2 elements and group 13 elements.

Post-Transition Metals

In chemistry, the term post-transition metal is used to describe the category of metallic elements to the right of the transition elements on the periodic table.

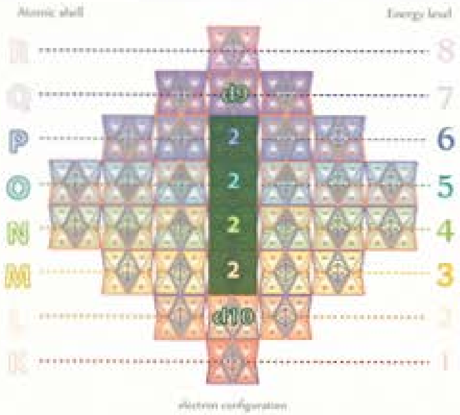
There are two IUPAC definitions of "transition element" that have been in apparent conflict with one another since September 2007.

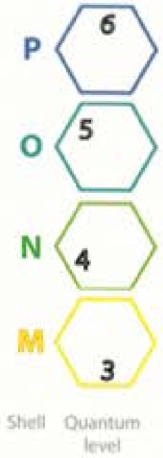
According to the first definition, transition metals are elements in group 3 through group 11.
In this case, post-transition metals include all of group 12—zinc, cadmium, mercury, and ununbium

According to the second definition, transition elements either have an incomplete d-subshell or have the ability to form an incomplete d-subshell.

Post Transitional metals are normally defined as completed d orbitals

Tetryonics suggests it may be appropriate to include all the d5 orbital elements in this grouping



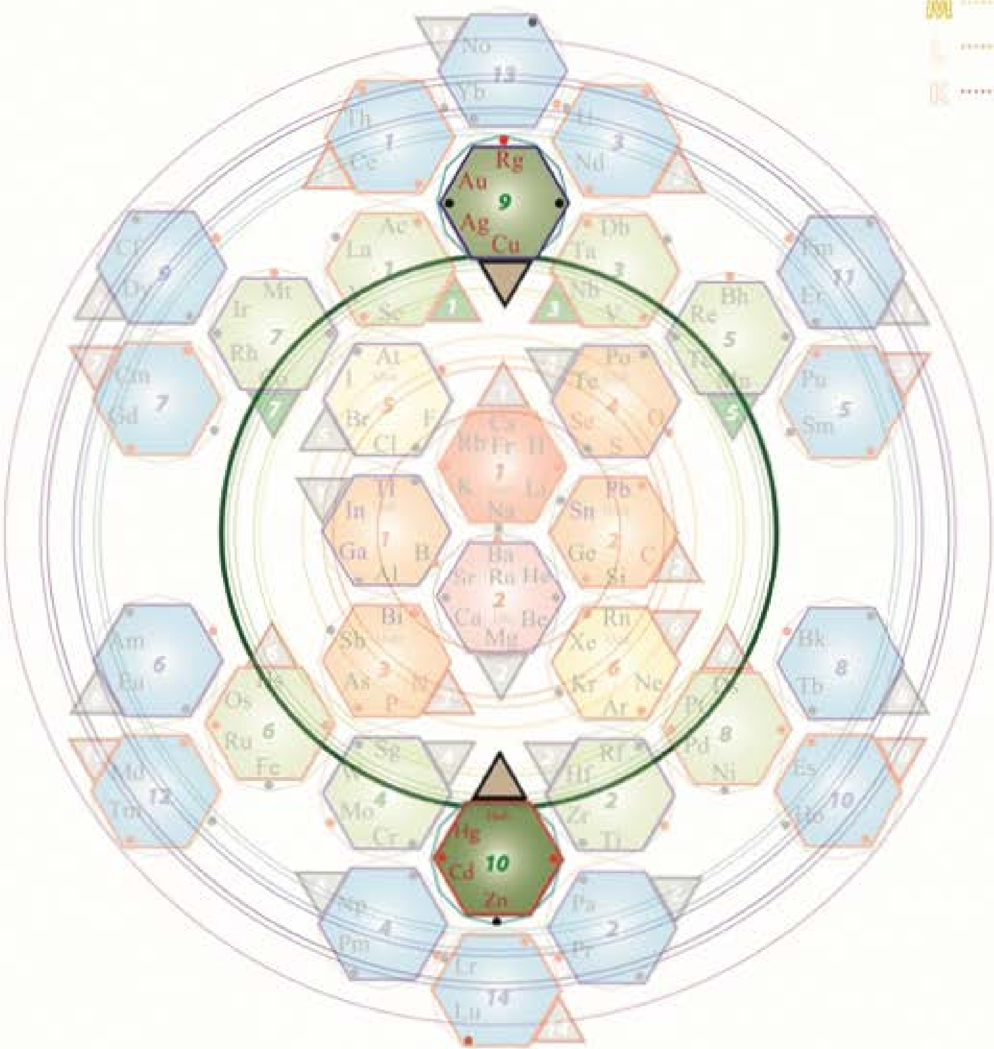


d 9-10 Post Transition Metal

d5 Orbital

n3-6

d9-10 sub-orbitals



8
Post-transitional Metals

In 2007, mercury(IV) fluoride was synthesized.[2][3] This compound contains a mercury atom with an incomplete d-subshell, and ununbium is predicted to have the capacity to form a similar electronic configuration.

In this case, post-transition metals include only zinc and cadmium within group 12.

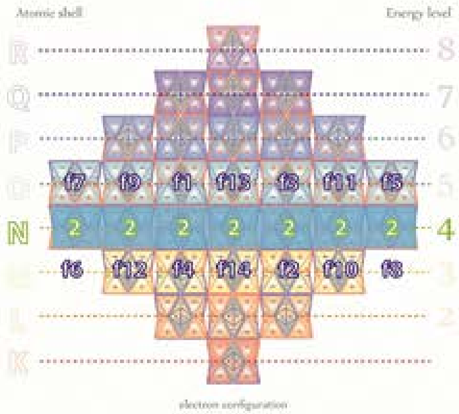
Lanthanoids

All lanthanoids are f-block elements, corresponding to the filling of the 4f electron shell

The lanthanoid series (Ln) is named after Lanthanum.

The trivial name "rare earths" is sometimes used to describe all the lanthanoids together with scandium and yttrium.

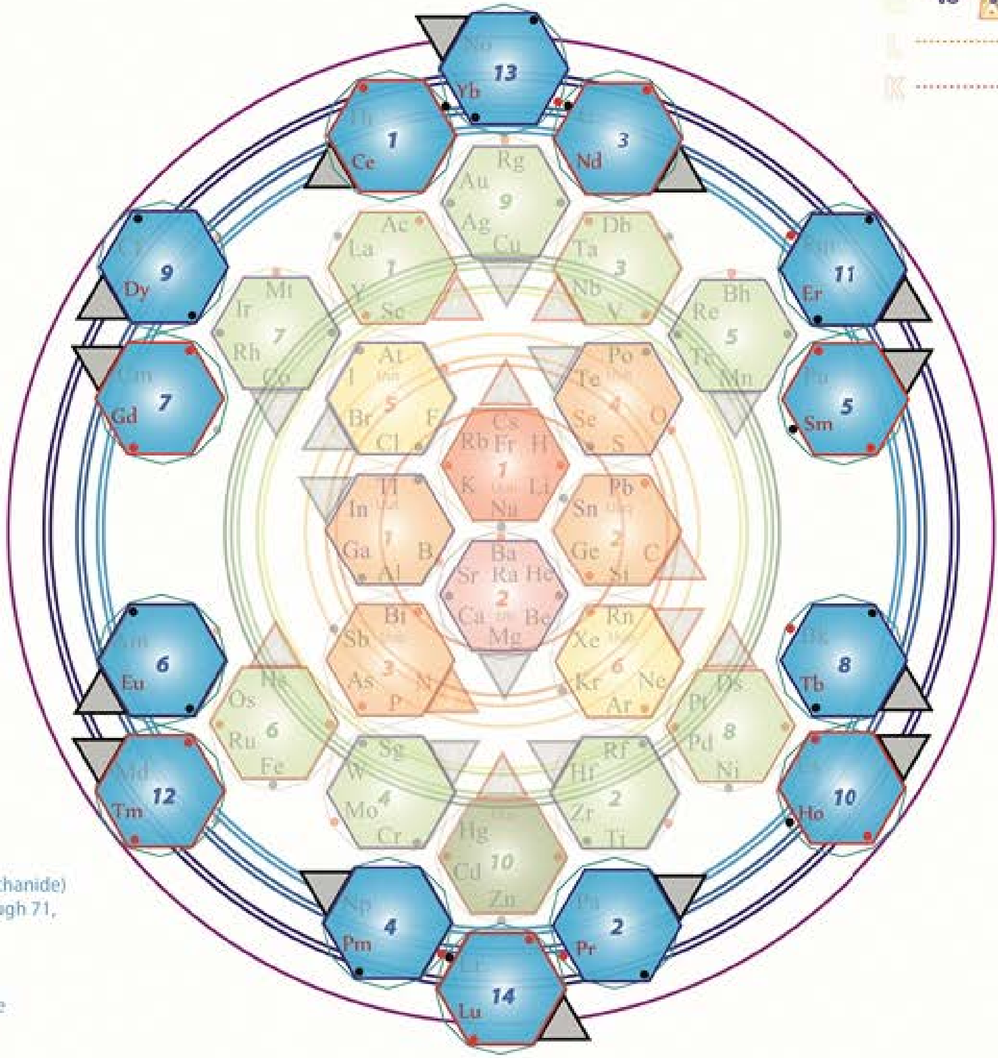
These elements are in fact fairly abundant in nature, although rare as compared to the "common" earths such as lime or magnesia. Cerium is the 26th most abundant element in the Earth's crust, neodymium is more abundant than gold and even thulium (the least common naturally-occurring lanthanoid) is more abundant than iodine.



7 f-Orbitals

n4

f1-14 sub-orbitals



14 Lanthanoids

The term "rare earths" arises from the minerals from which they were isolated, which were uncommon oxide-type minerals.

According to the IUPAC terminology, the lanthanoid (previously lanthanide) series comprises the fifteen elements with atomic numbers 57 through 71, from Lanthanum to Lutetium.

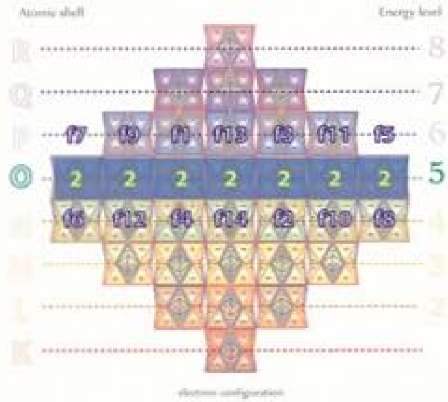
The use of this name is deprecated by IUPAC, as they are neither rare in abundance nor "earths" (an obsolete term for water-insoluble strongly basic oxides of electropositive metals incapable of being smelted into metal using late 18th century technology).

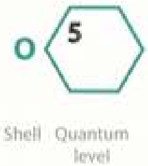
Actinoids

According to IUPAC nomenclature, the actinoid (previously actinide) series encompasses the 15 chemical elements that lie between actinium and lawrencium included on the periodic table, with atomic numbers 89 - 103.

The actinoid series derives its name from the first element in the series, actinium, and ultimately from the Greek ακτις (aktis), "ray," reflecting the elements' radioactivity.

The actinoids display less similarity in their chemical properties than the lanthanoid series (Ln), exhibiting a wider range of oxidation states, which initially led to confusion as to whether actinium, thorium, and uranium should be considered d-block elements. All actinoids are radioactive.

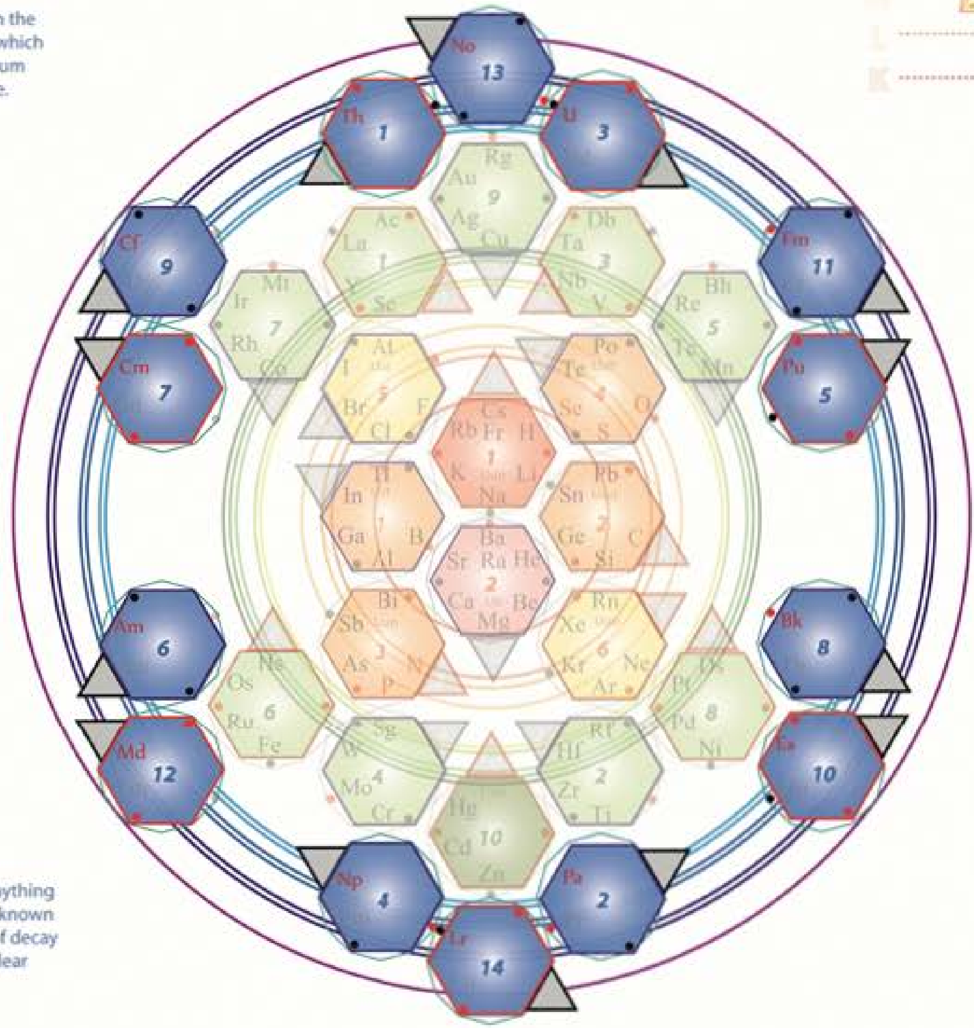




7 f-Orbitals

n5

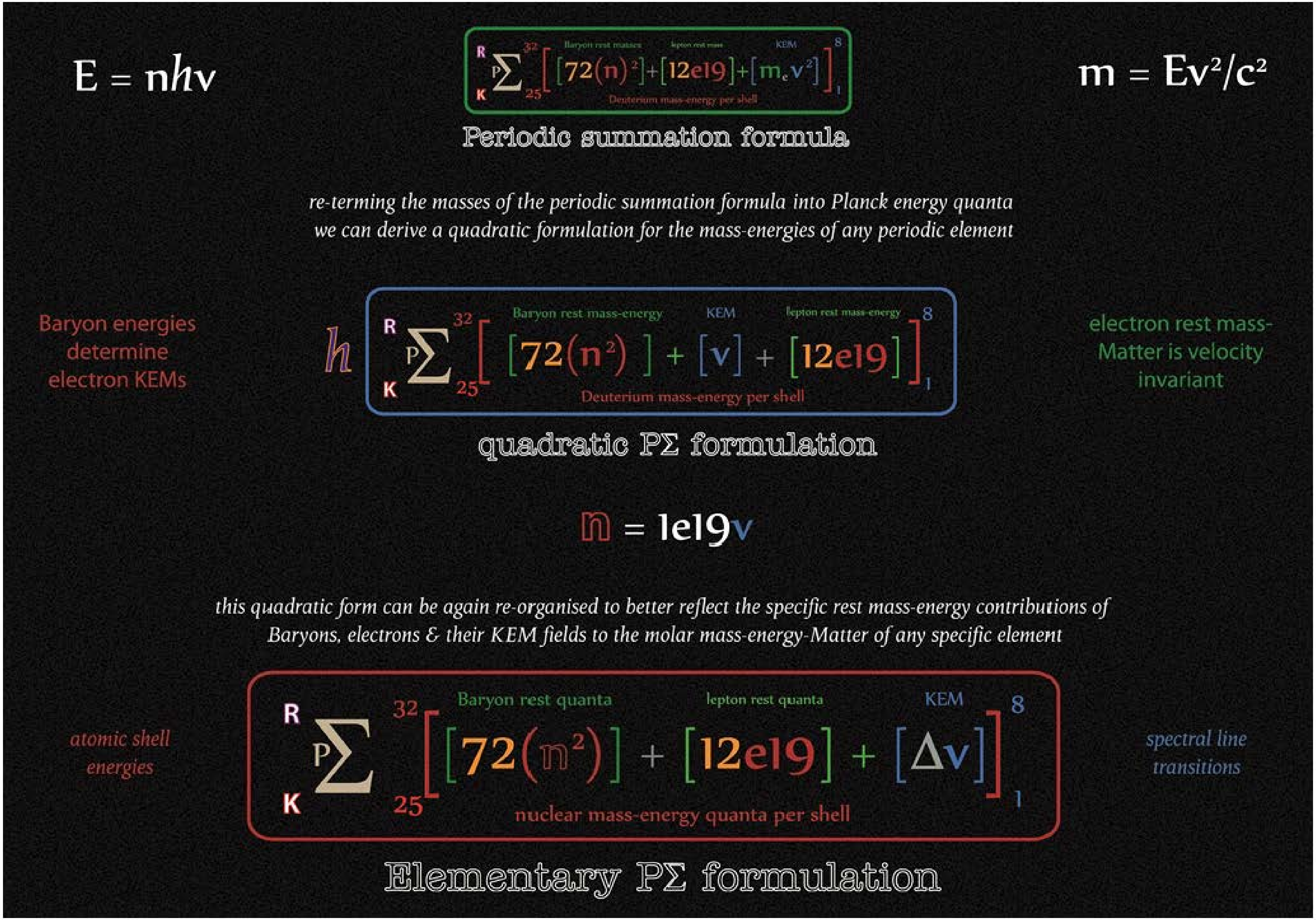
f1-14 sub-orbitals



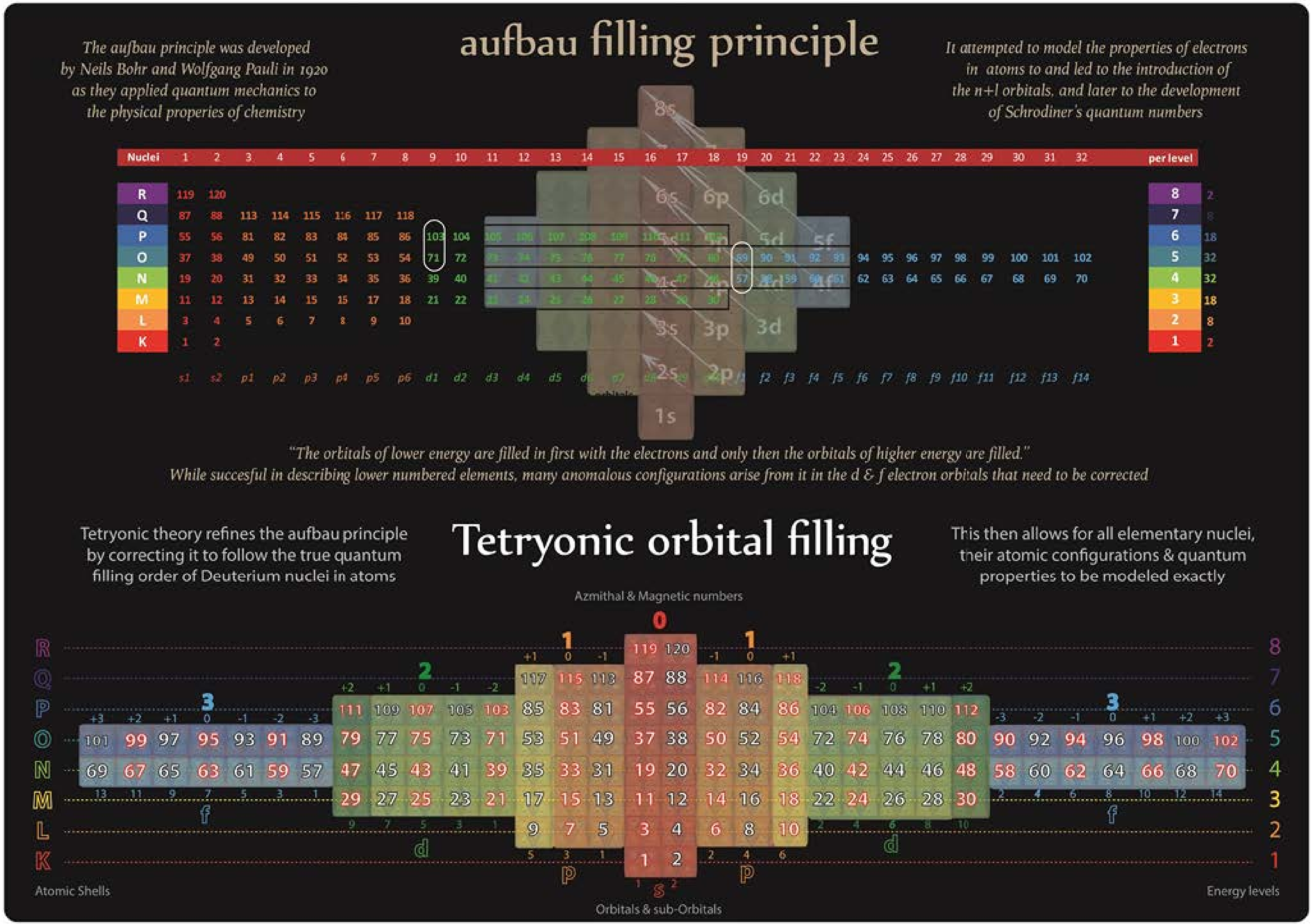
14 Actinoids

Only thorium and uranium occur naturally in the earth's crust in anything more than trace quantities. Neptunium and plutonium have been known to show up naturally in trace amounts in uranium ores as a result of decay or bombardment. The remaining actinoids were discovered in nuclear fallout, or were synthesized in particle colliders.

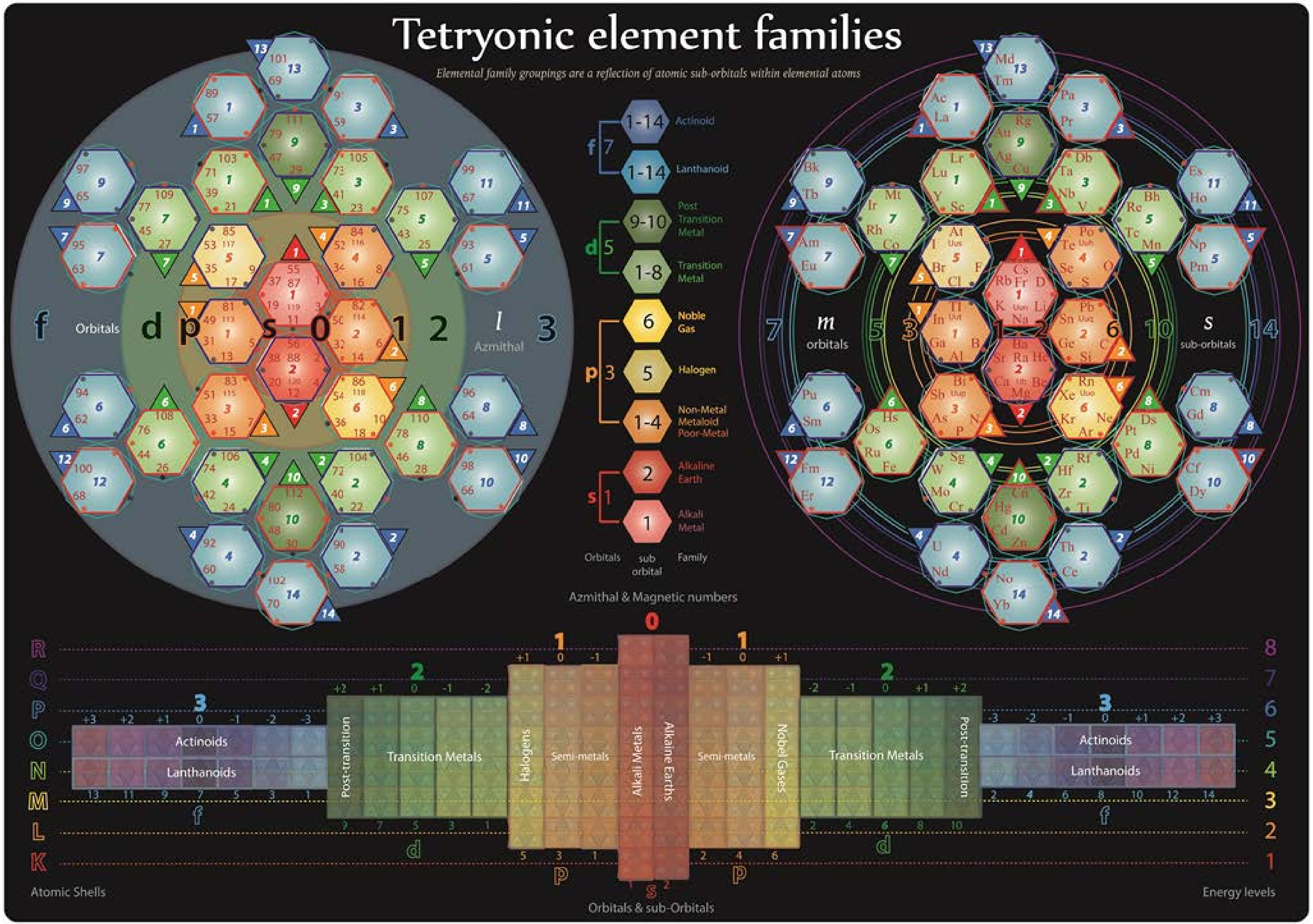
The latter half of the series possess exceedingly short half-lives.

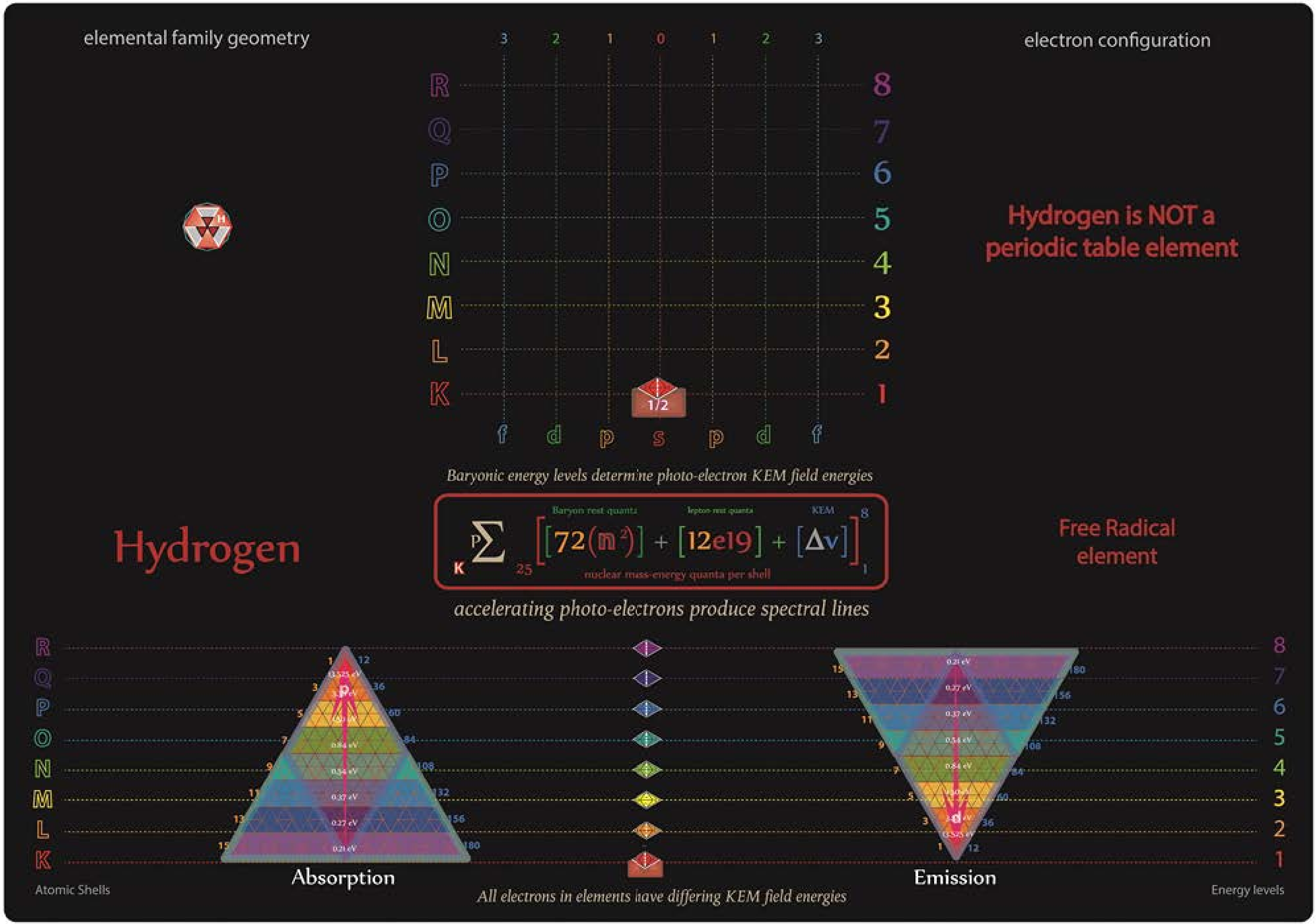


E = nhv
Baryon rest masses
lepton rest mass
KEM
$^{R}_{K}{}^{P}\sum_{25}^{32}[[72(n)^2]+[12e19]+[m_e v^2]]_1^8$
Deuterium mass-energy per shell
m = Ev²/c²
Periodic summation formula
re-terming the masses of the periodic summation formula into Planck energy quanta
we can derive a quadratic formulation for the mass-energies of any periodic element
Baryon energies
determine
electron KEMs
Baryon rest mass-energy
KEM
lepton rest mass-energy
$h\ ^{R}_{K}{}^{P}\sum_{25}^{32}[[72(n^2)]+[v]+[12e19]]_1^8$
Deuterium mass-energy per shell
electron rest mass-
Matter is velocity
invariant
quadratic PΣ formulation
n = 1e19v
this quadratic form can be again re-organised to better reflect the specific rest mass-energy contributions of
Baryons, electrons & their KEM fields to the molar mass-energy-Matter of any specific element
atomic shell
energies
Baryon rest quanta
lepton rest quanta
KEM
$^{R}_{K}{}^{P}\sum_{25}^{32}[[72(n^2)]+[12e19]+[\Delta v]]_1^8$
nuclear mass-energy quanta per shell
spectral line
transitions
Elementary PΣ formulation

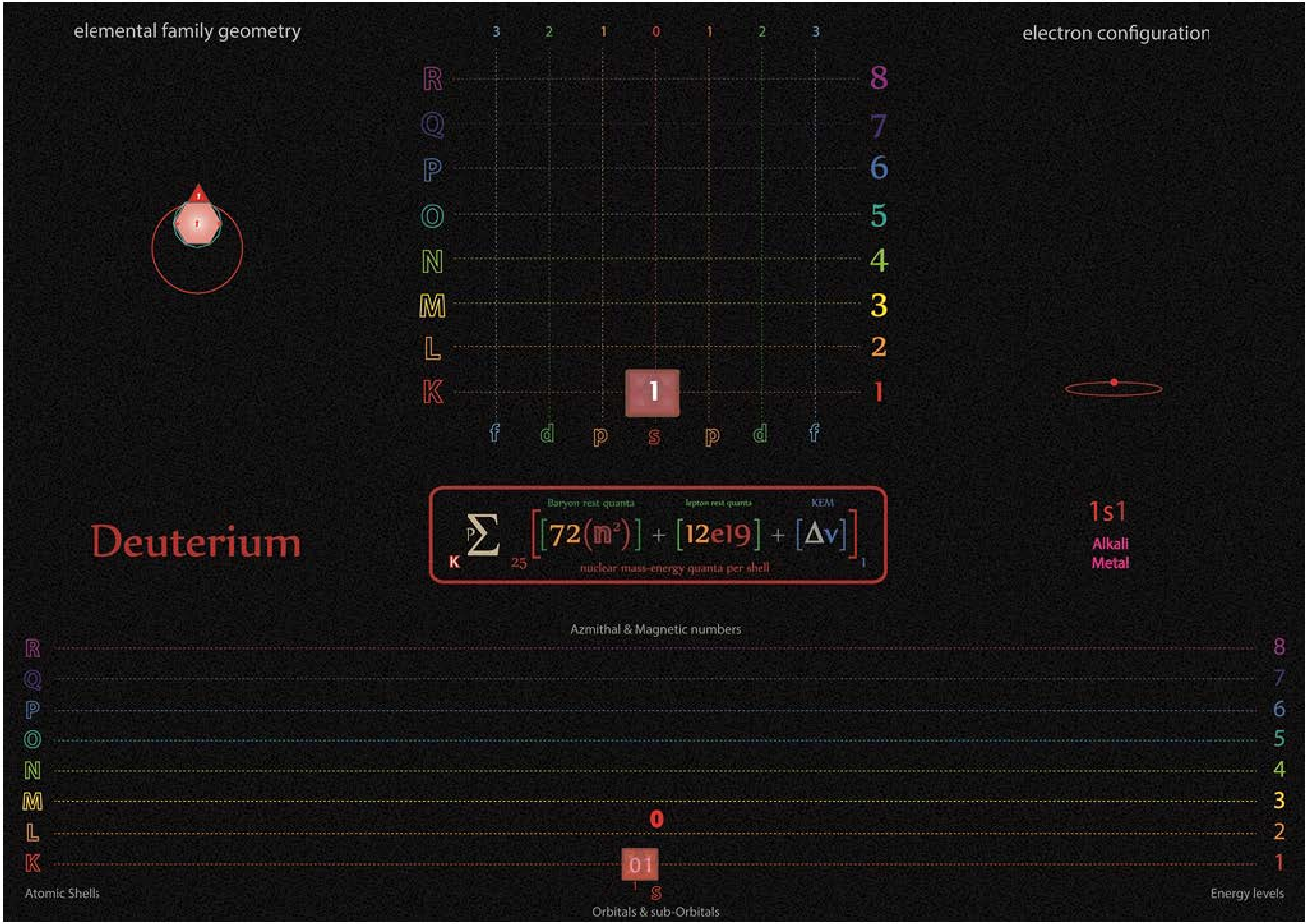


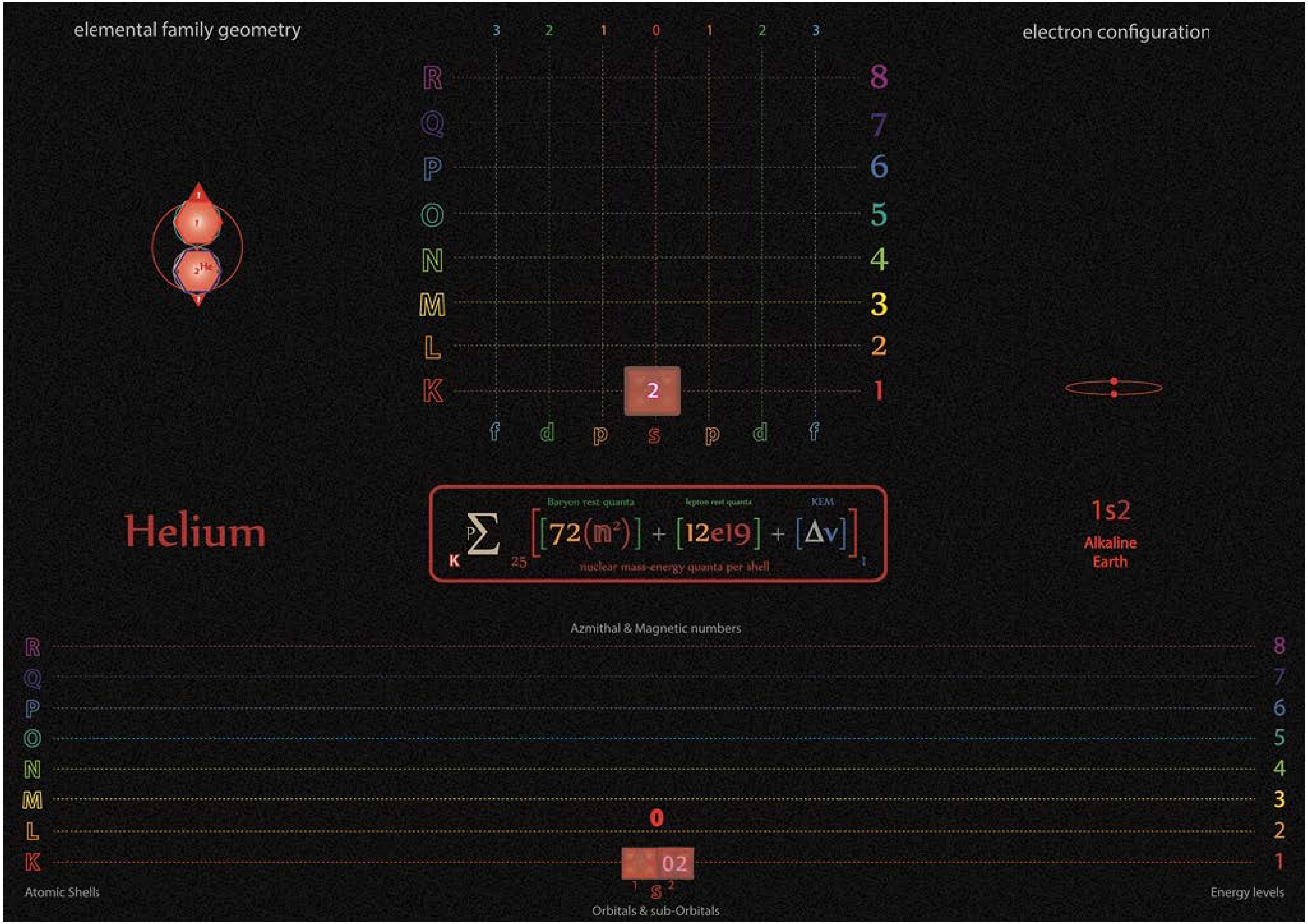
Tetryonics 52.14 - Tetryonic aufbau orbital filling


Tetryonic element families
Elemental family groupings are a reflection of atomic sub-orbitals within elemental atoms
f 7
1-14 Actinoid
1-14 Lanthanoid
d 5
9-10 Post Transition Metal
1-8 Transition Metal
p 3
6 Noble Gas
5 Halogen
1-4 Non-Metal Metaloid Poor-Metal
s 1
2 Alkaline Earth
1 Alkali Metal
Orbitals
sub orbital
Family
f Orbitals d p s 0 1 2 l 3 Azmithal
m orbitals
s sub-orbitals
Azmithal & Magnetic numbers
R Q P O N M L K
Atomic Shells
8 7 6 5 4 3 2 1
Energy levels
Actinoids
Lanthanoids
Post-transition
Transition Metals
Halogens
Semi-metals
Alkali Metals
Alkaine Earths
Nobel Gases
Orbitals & sub-Orbitals

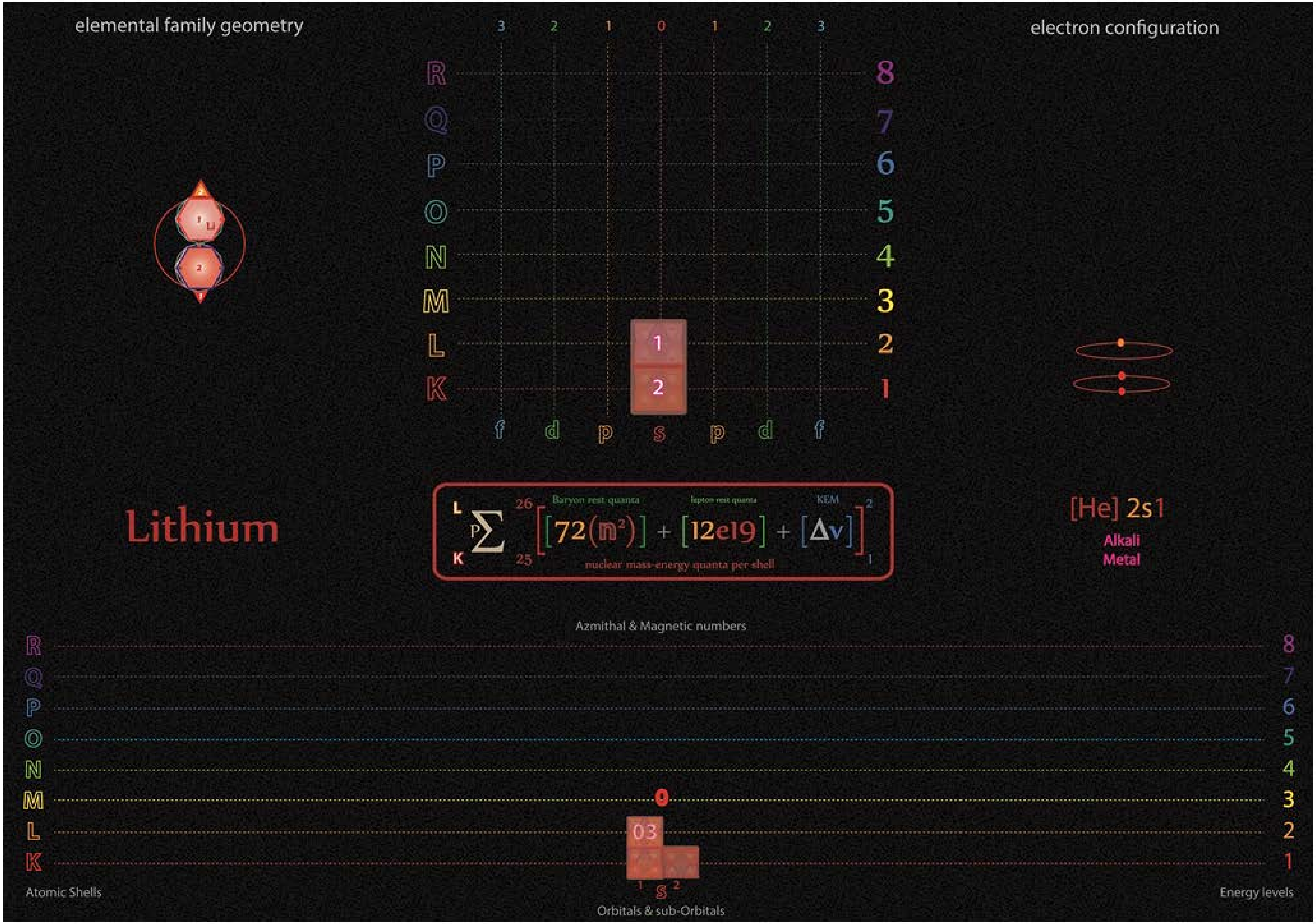


Tetryonics 53.00 - Hydrogen atomic config

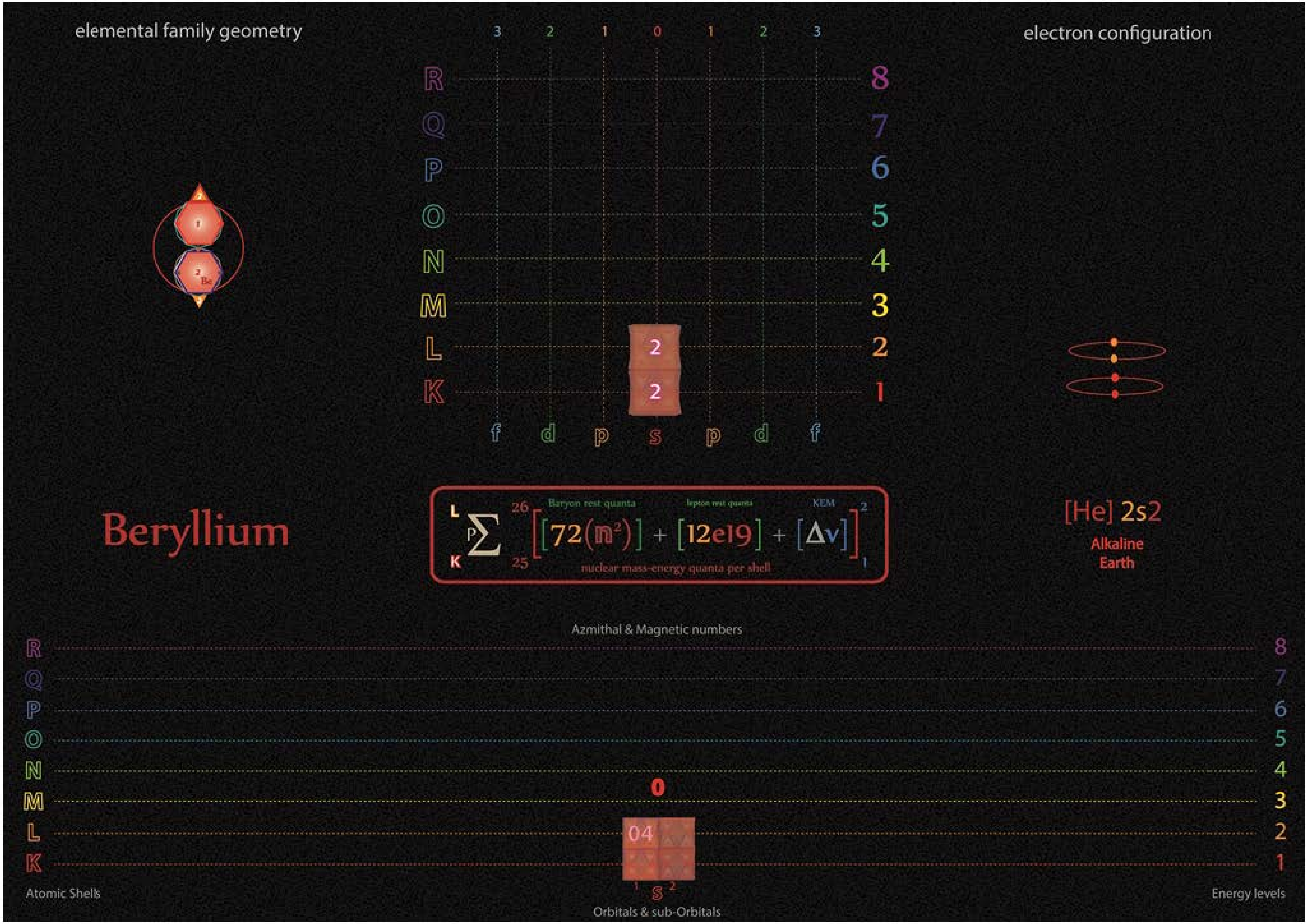

elemental family geometry
electron configuration
3 2 1 0 1 2 3
R Q P O N M L K
8 7 6 5 4 3 2 1
1
f d p s p d f
Deuterium
Baryon rest quanta
lepton rest quanta
KEM
K P Σ 25 [72(m²)] + [12e19] + [Δv] 1
nuclear mass-energy quanta per shell
1s1
Alkali
Metal
Azmithal & Magnetic numbers
0
01
s
Atomic Shells
Energy levels
Orbitals & sub-Orbitals



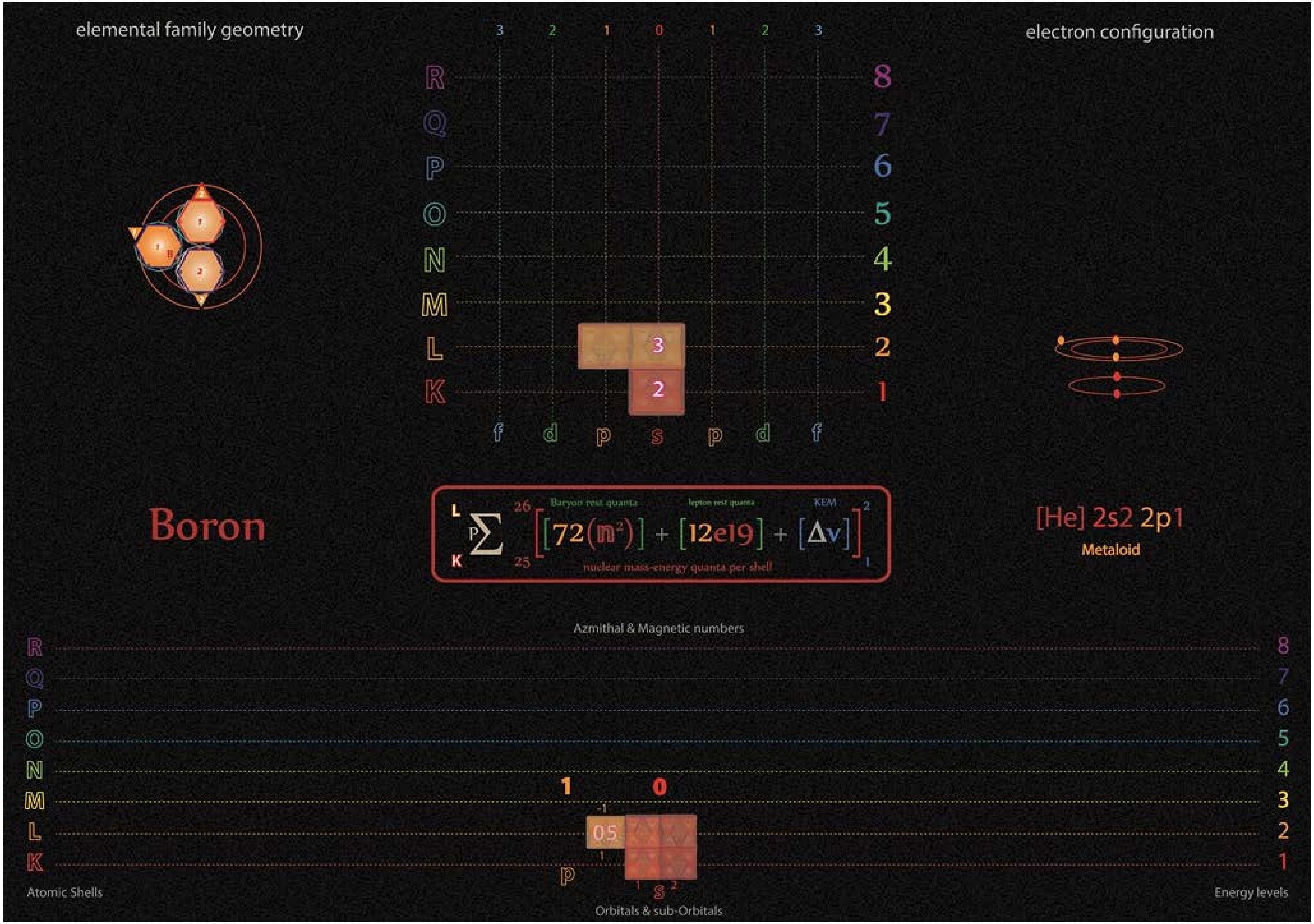
Tetryonics 53.02 - Helium atomic config



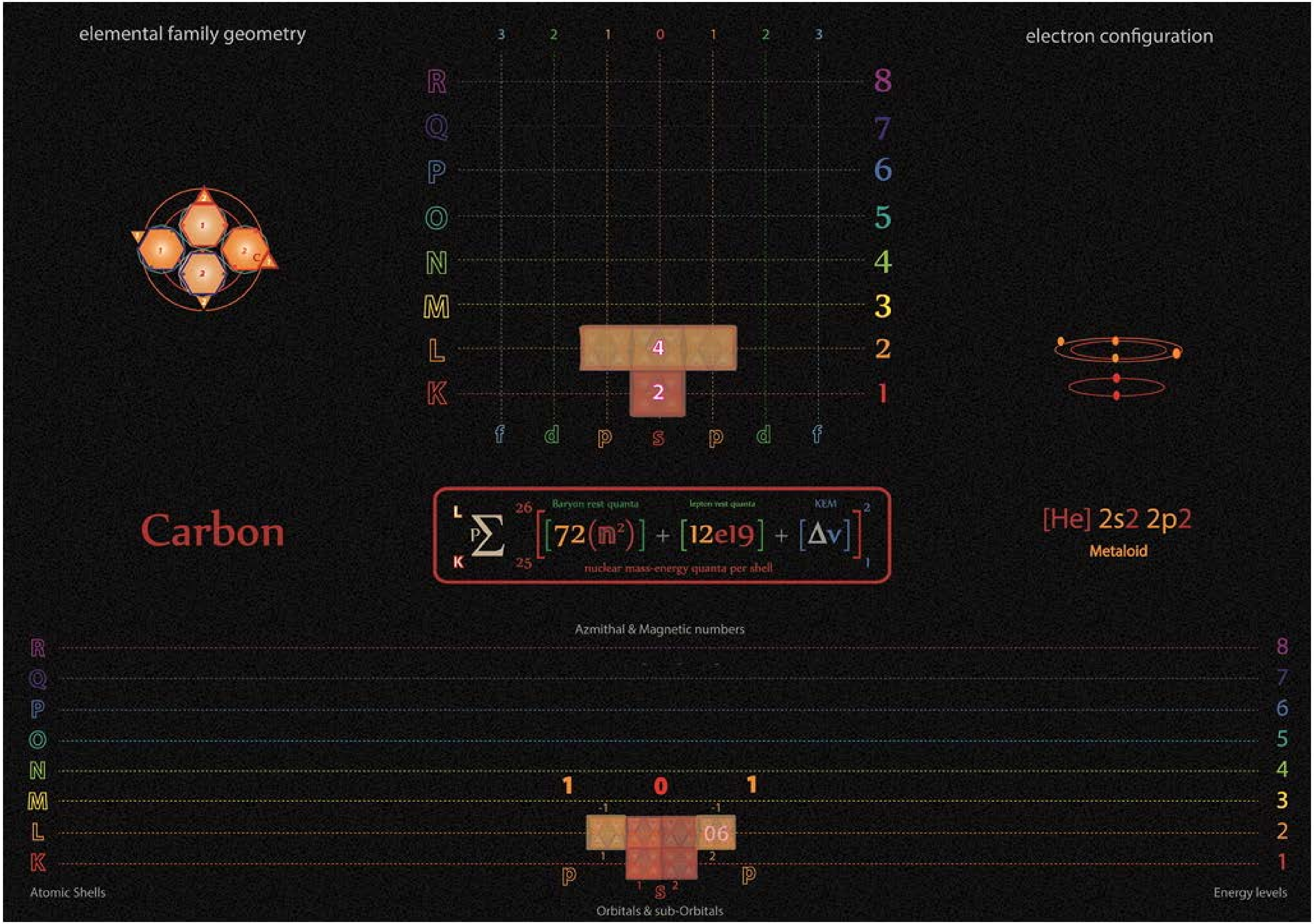
Tetryonics 53.03 - Lithium atomic config



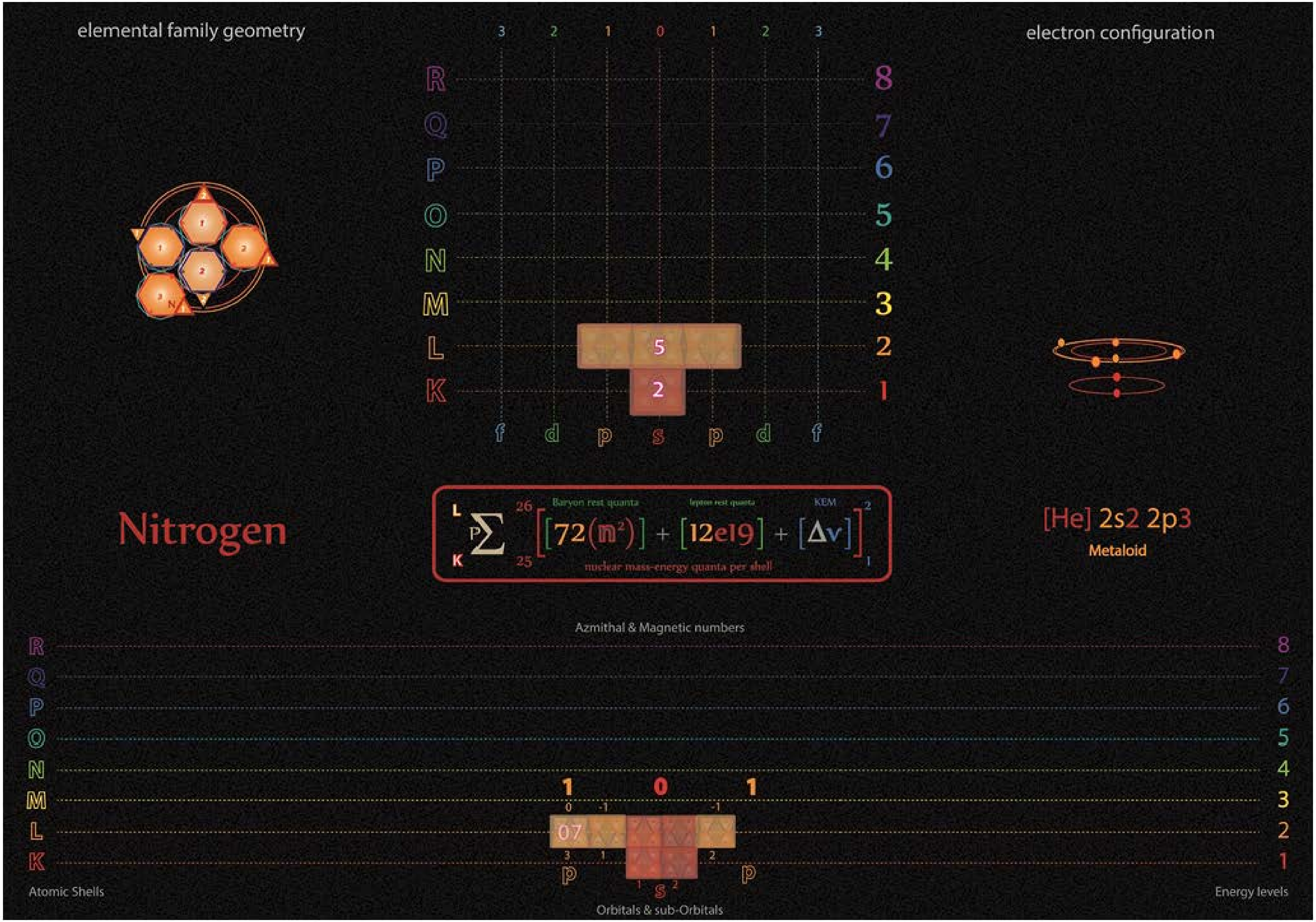
Tetryonics 53.04 - Beryllium atomic config



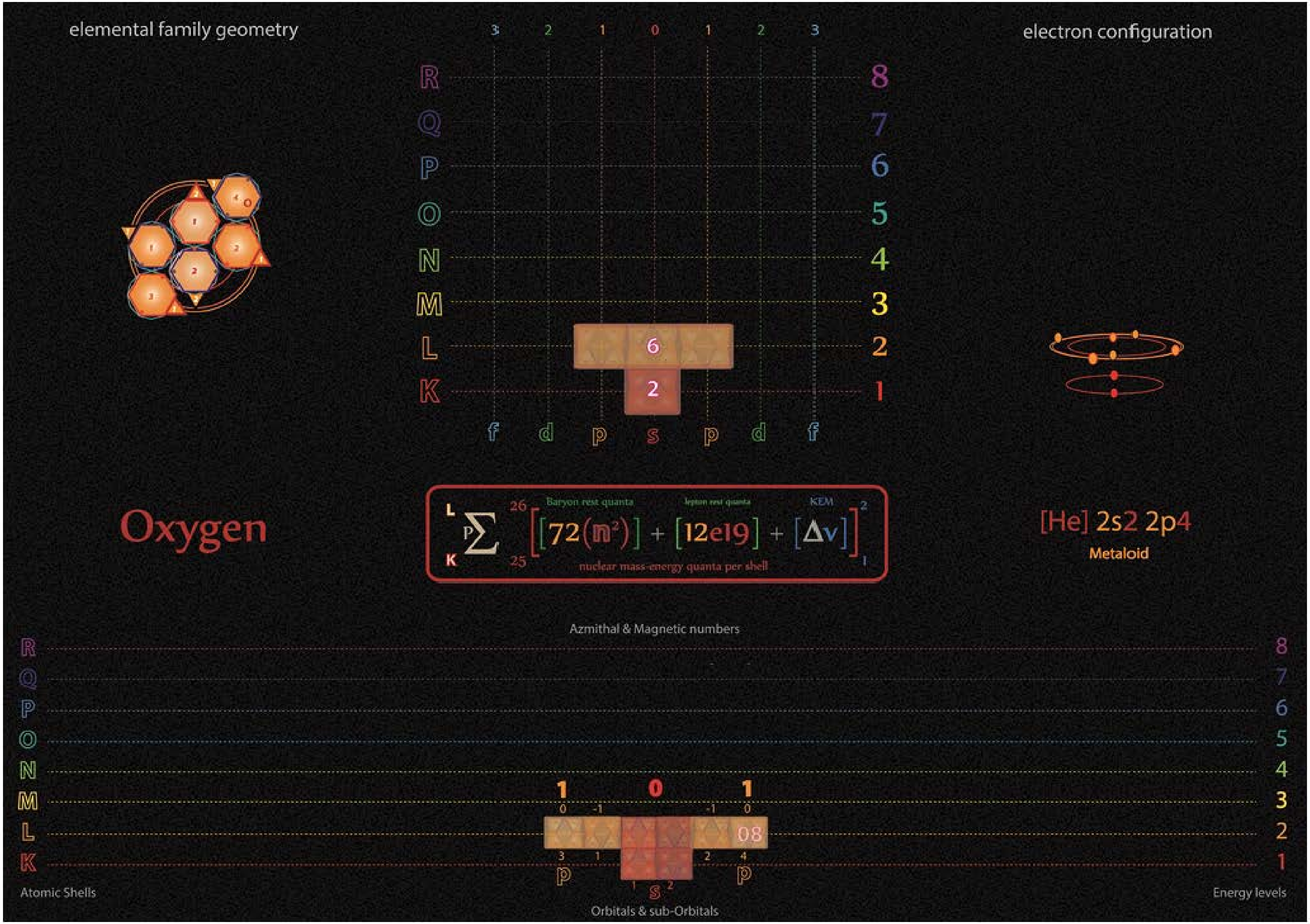
Tetryonics 53.05 - Boron atomic config



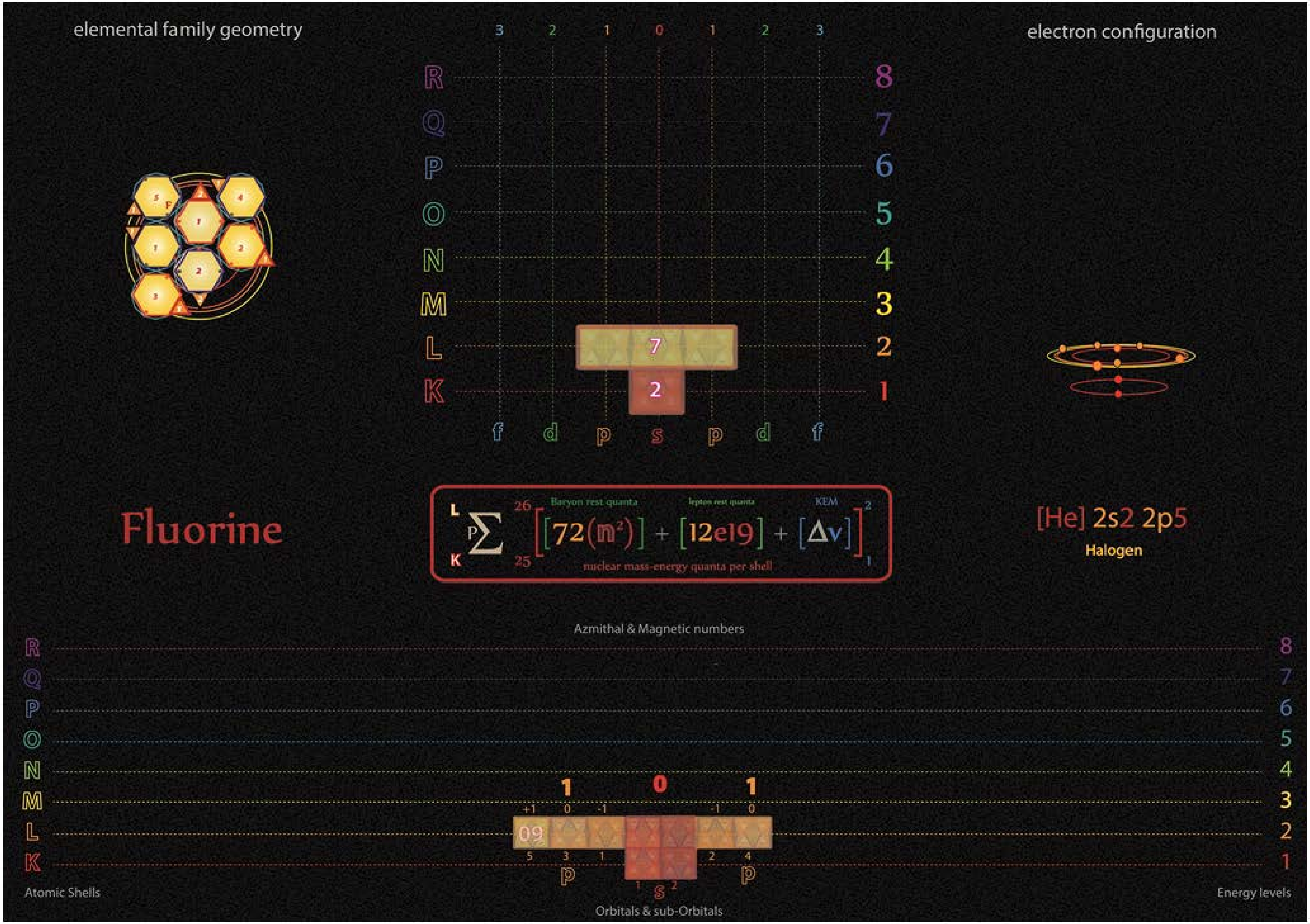
Tetryonics 53.06 - Carbon atomic config



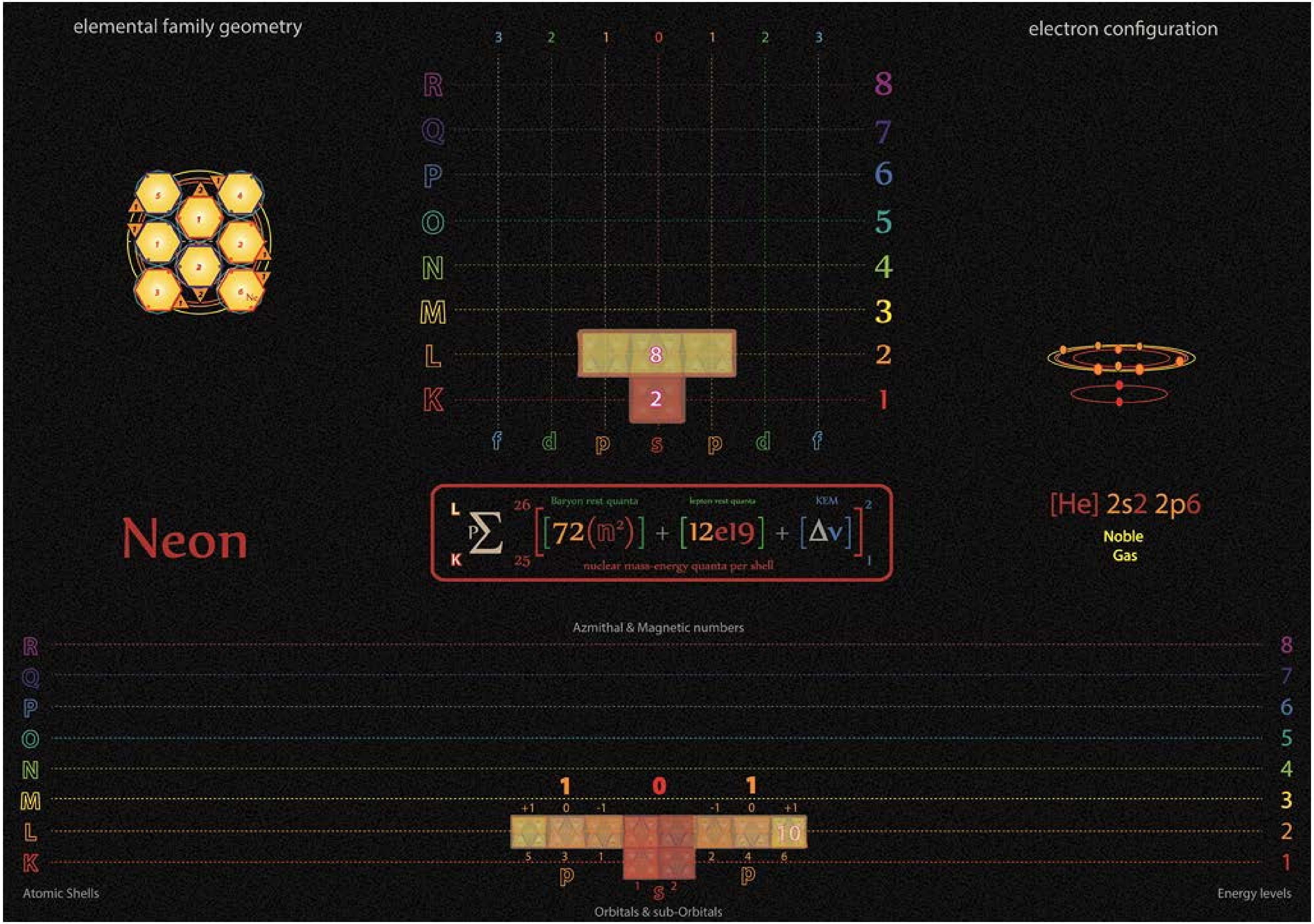
Tetryonics 53.07 - Nitrogen atomic config



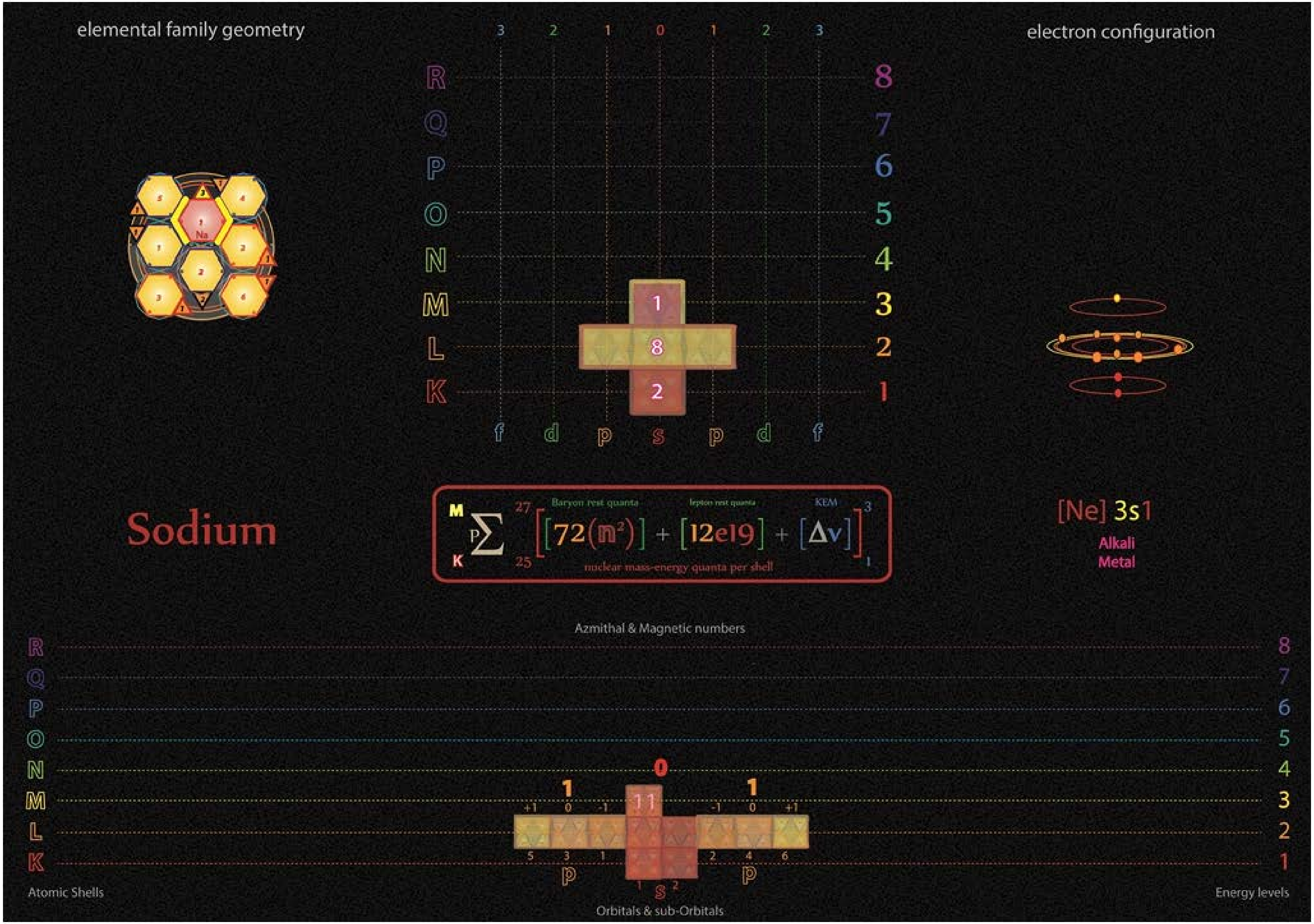
Tetryonics 53.08 - Oxygen atomic config



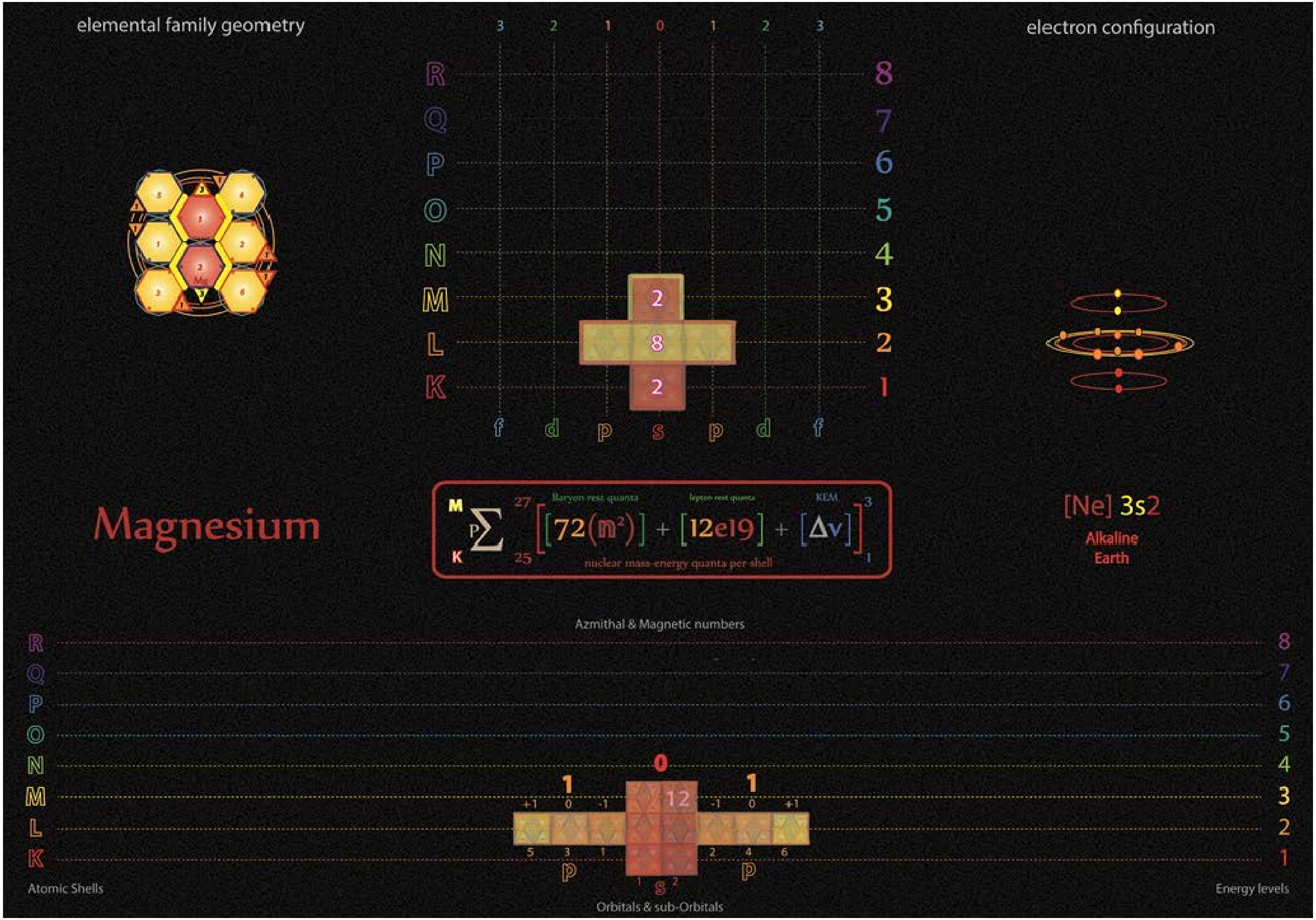
Tetryonics 53.09 - Fluorine atomic config



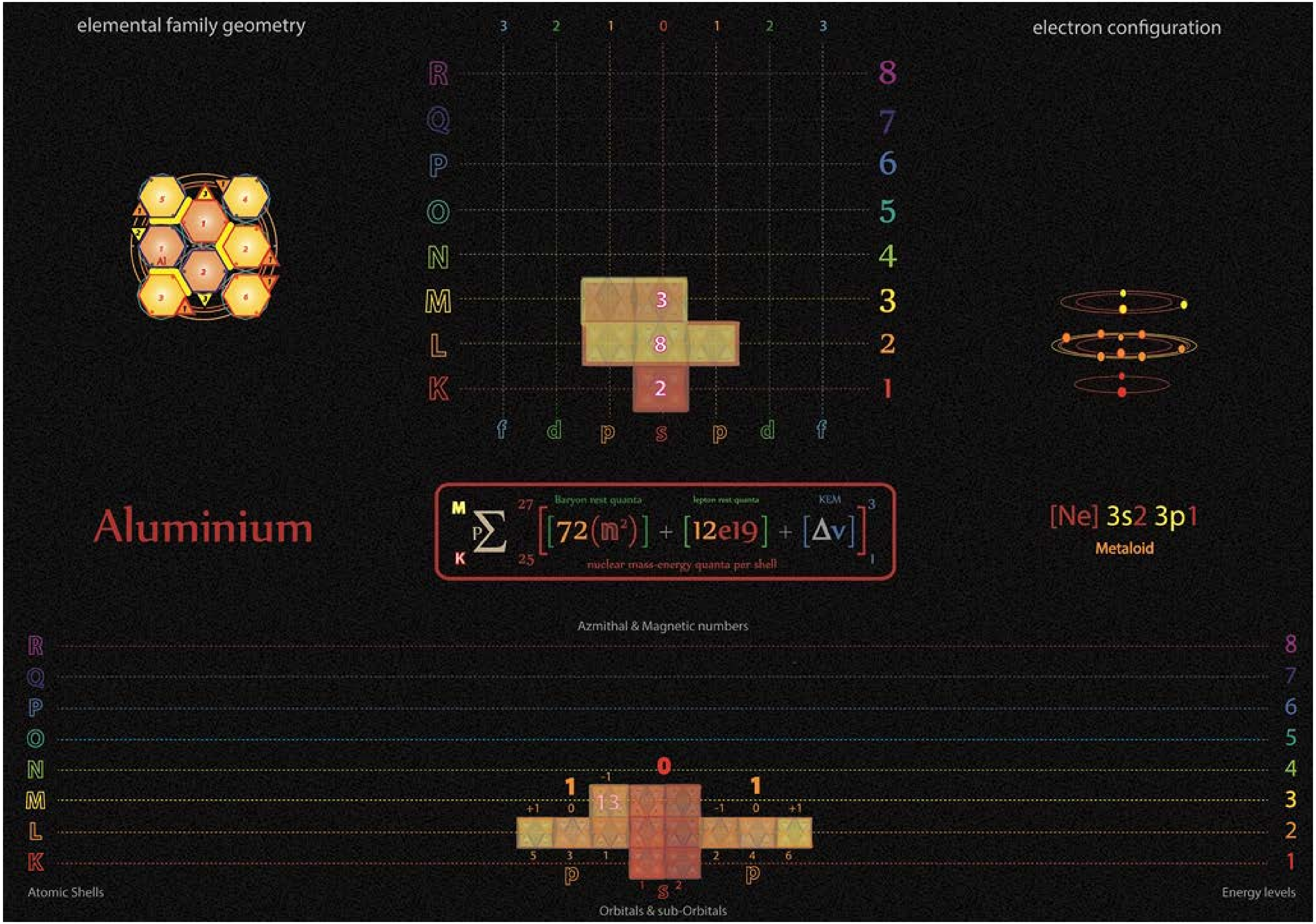
Tetryonics 53.10 - Neon atomic config



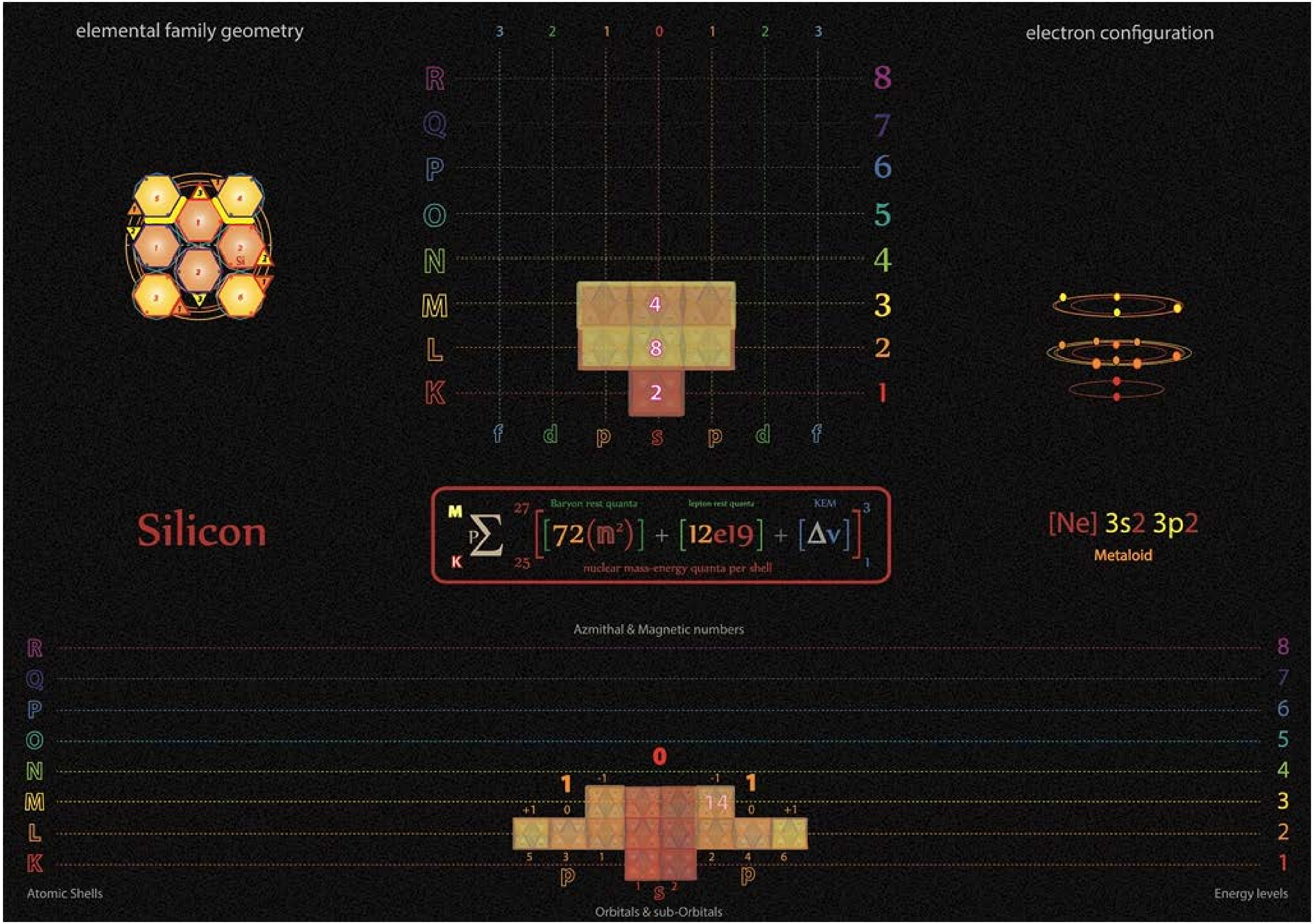
Tetryonics 53.11 - Sodium atomic config



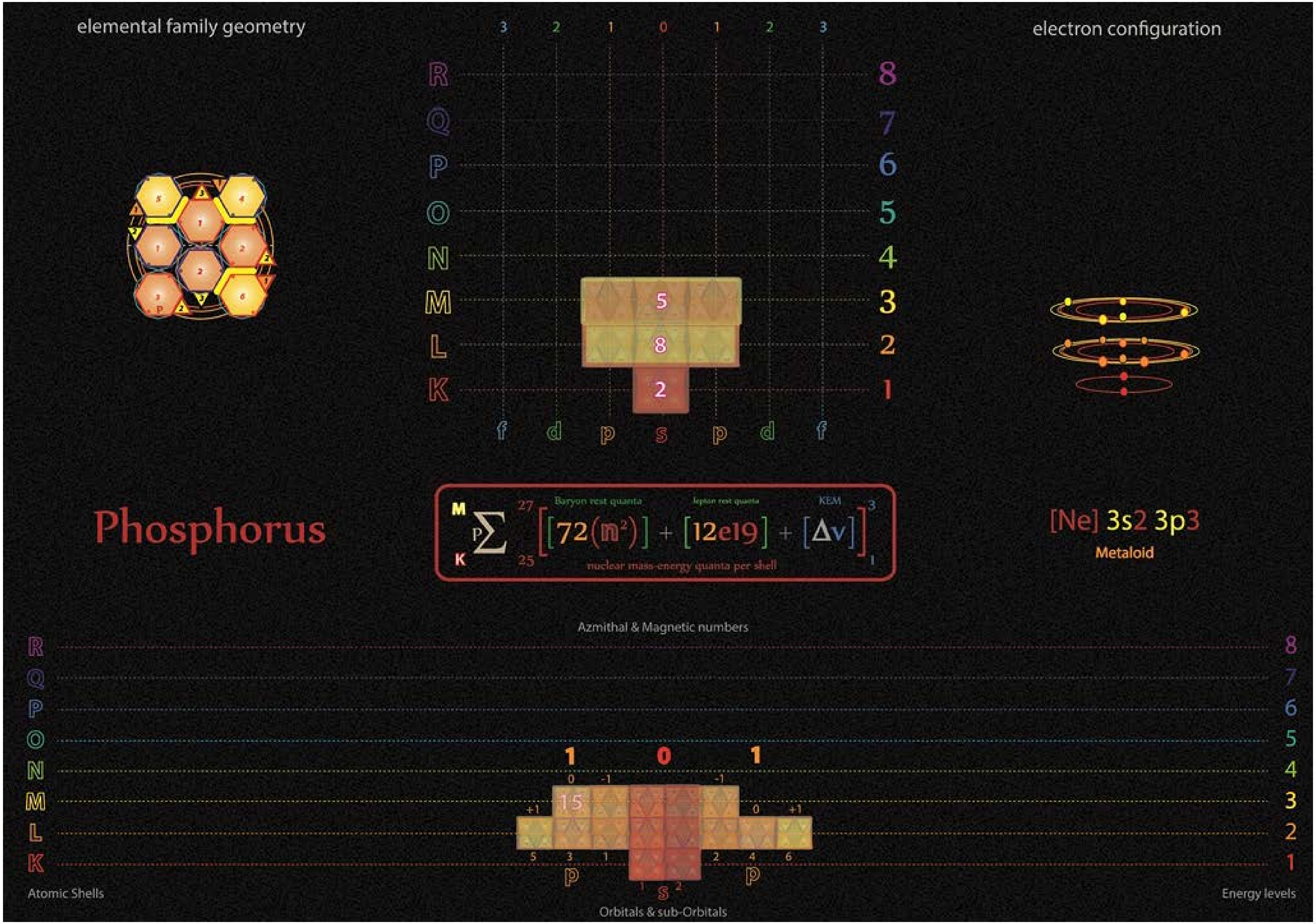
Tetryonics 53.12 - Magnesium atomic config



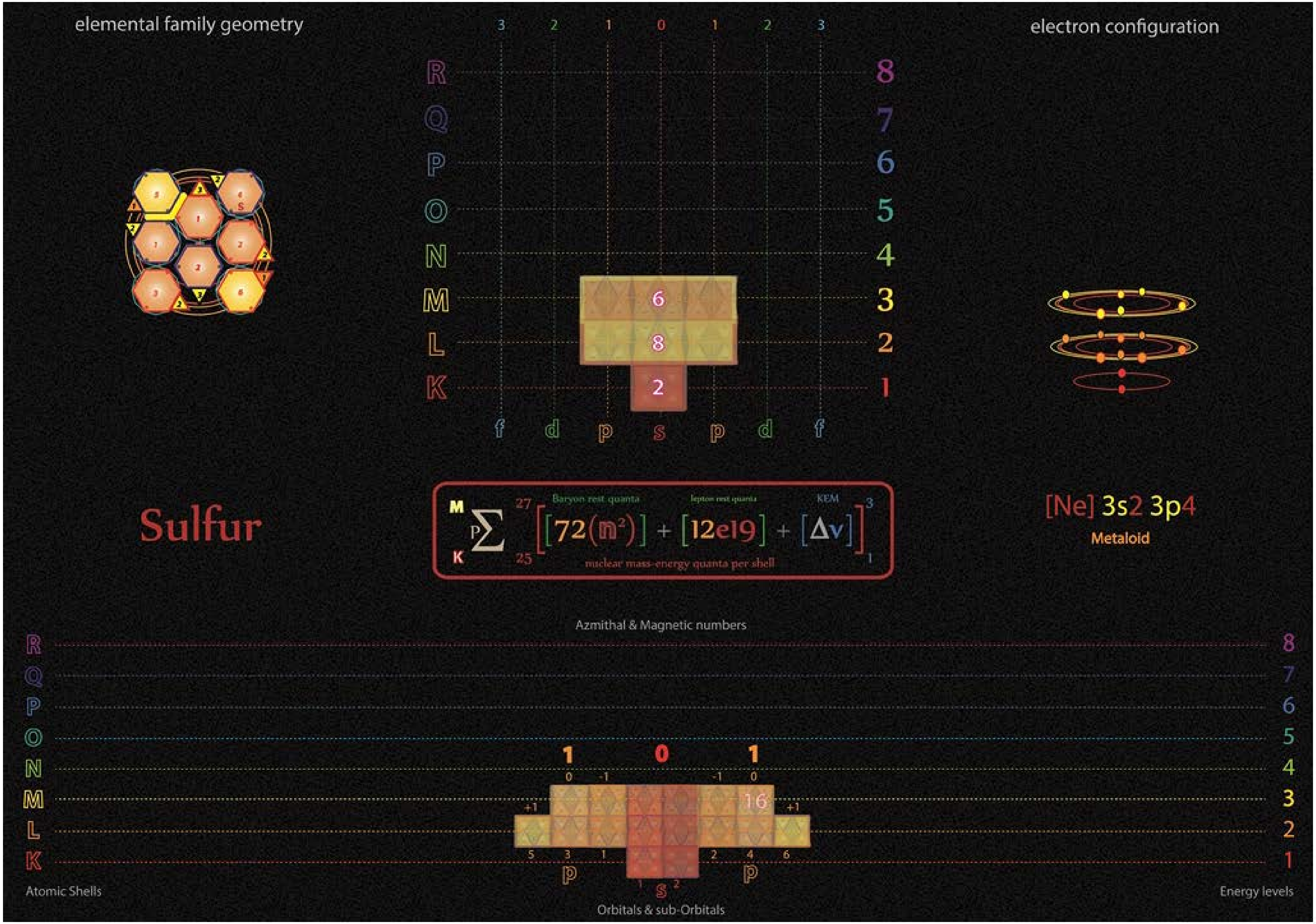
Tetryonics 53.13 - Aluminium atomic config



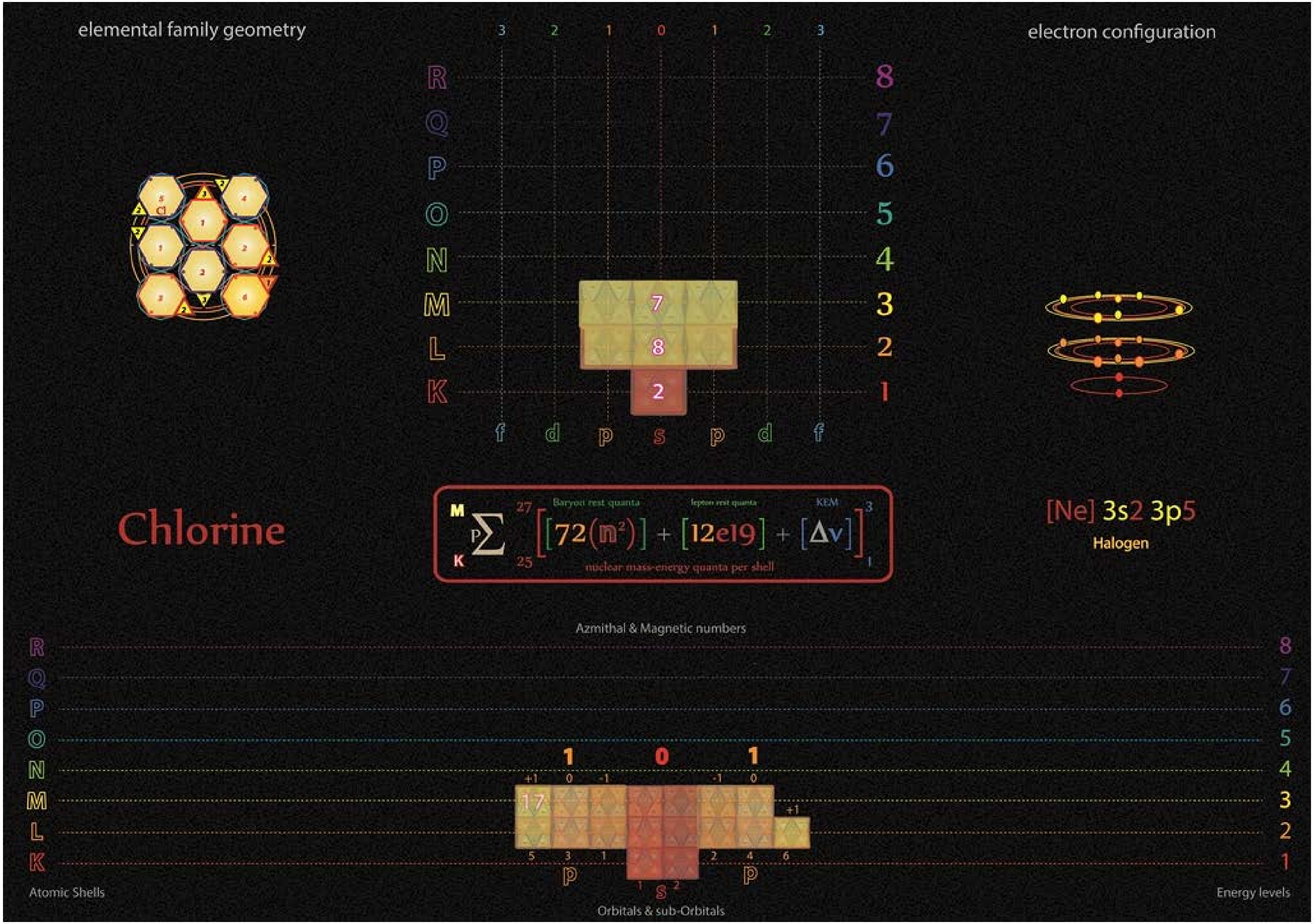
Tetryonics 53.14 - Silicon atomic config



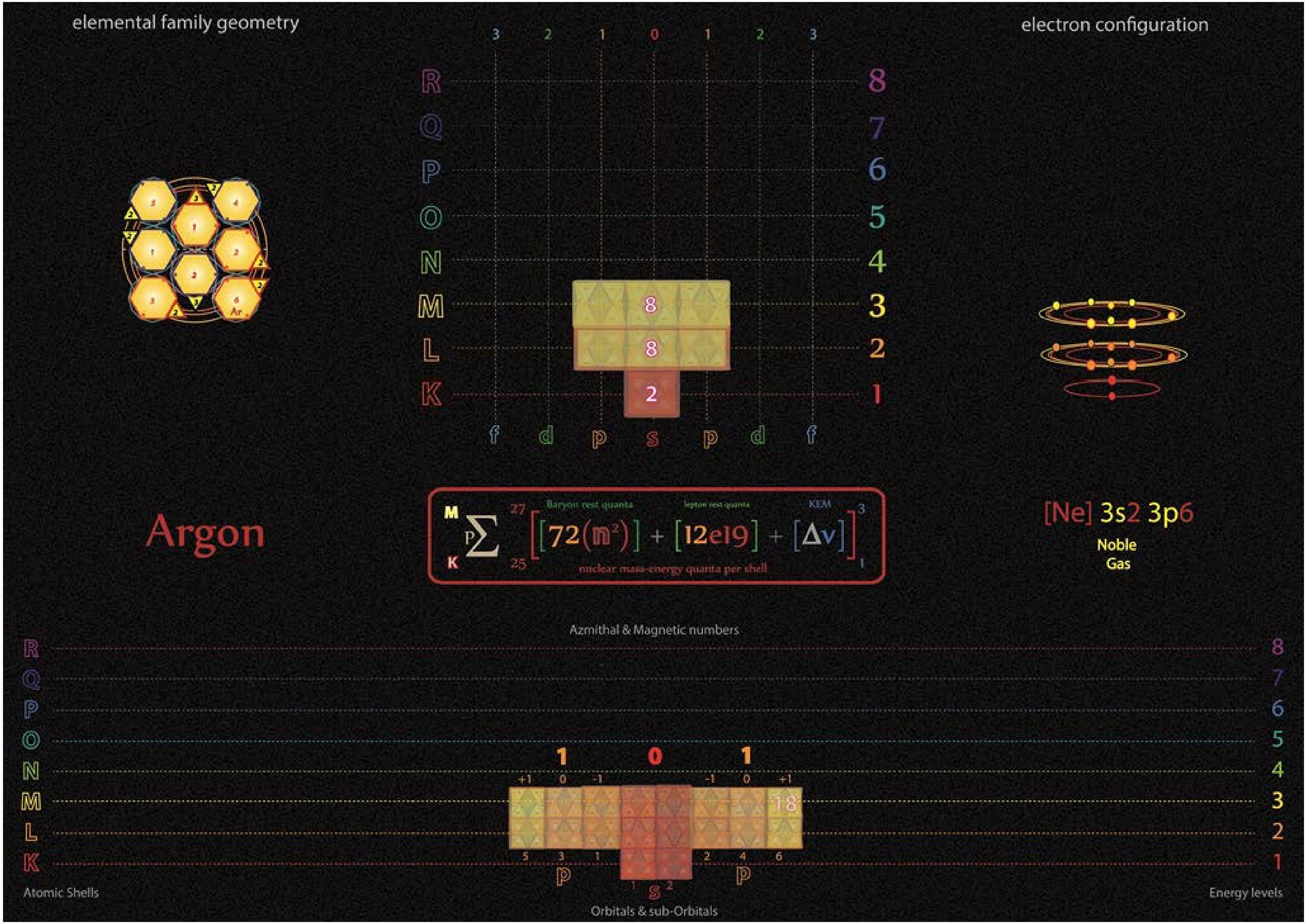
Tetryonics 53.15 - Phosphorus atomic config



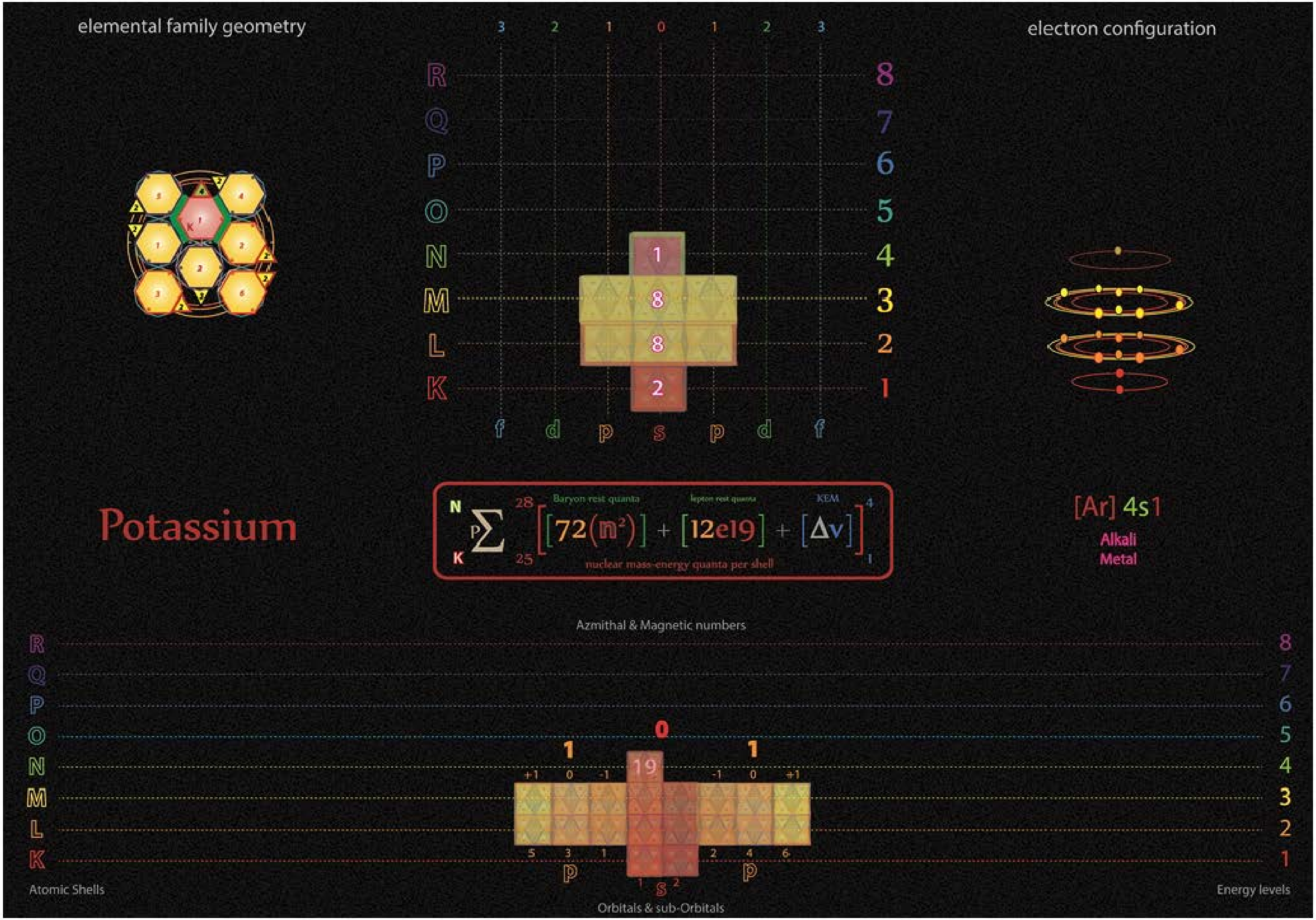
Tetryonics 53.16 - Sulfur atomic config



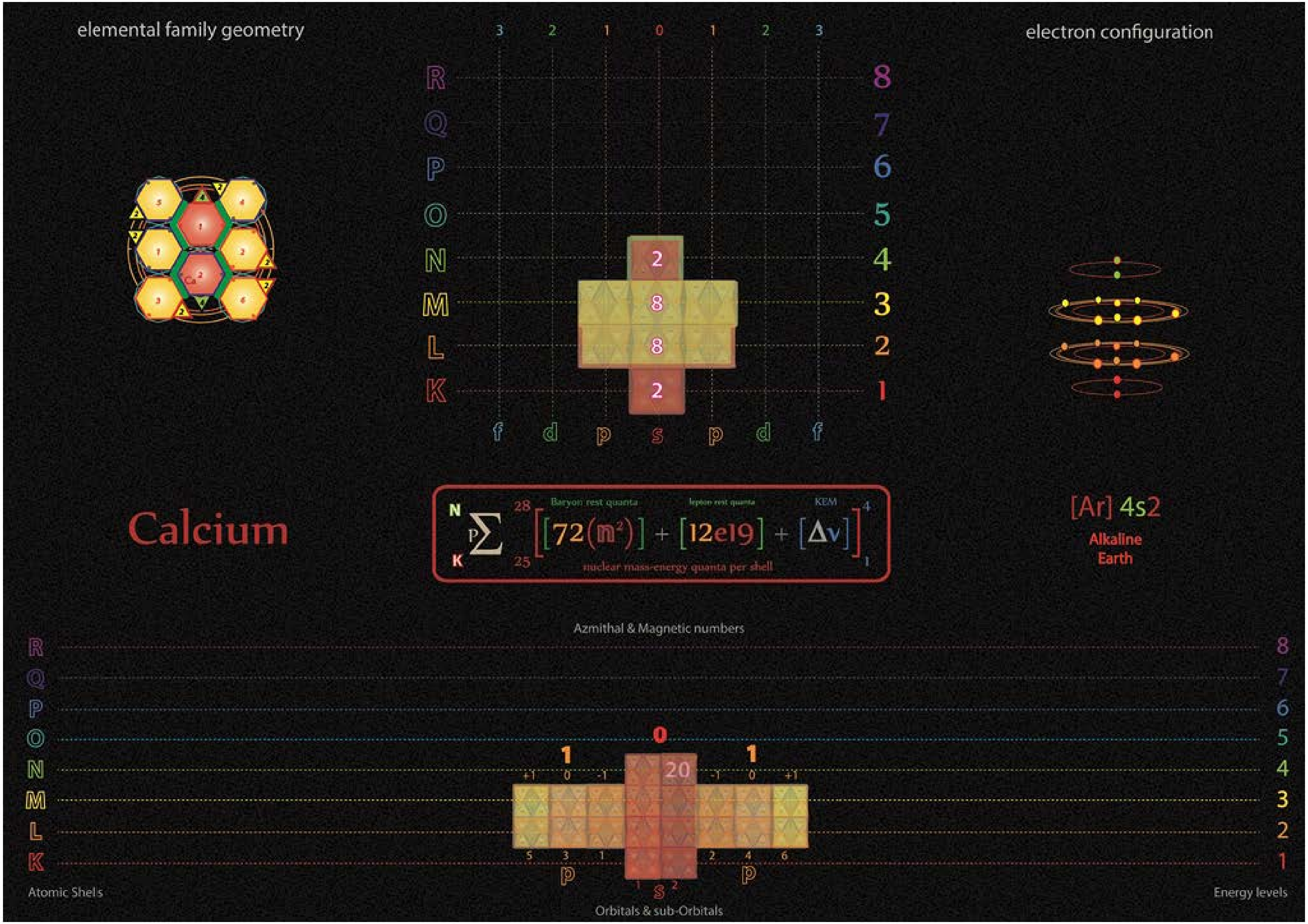
Tetryonics 53.17 - Chlorine atomic config



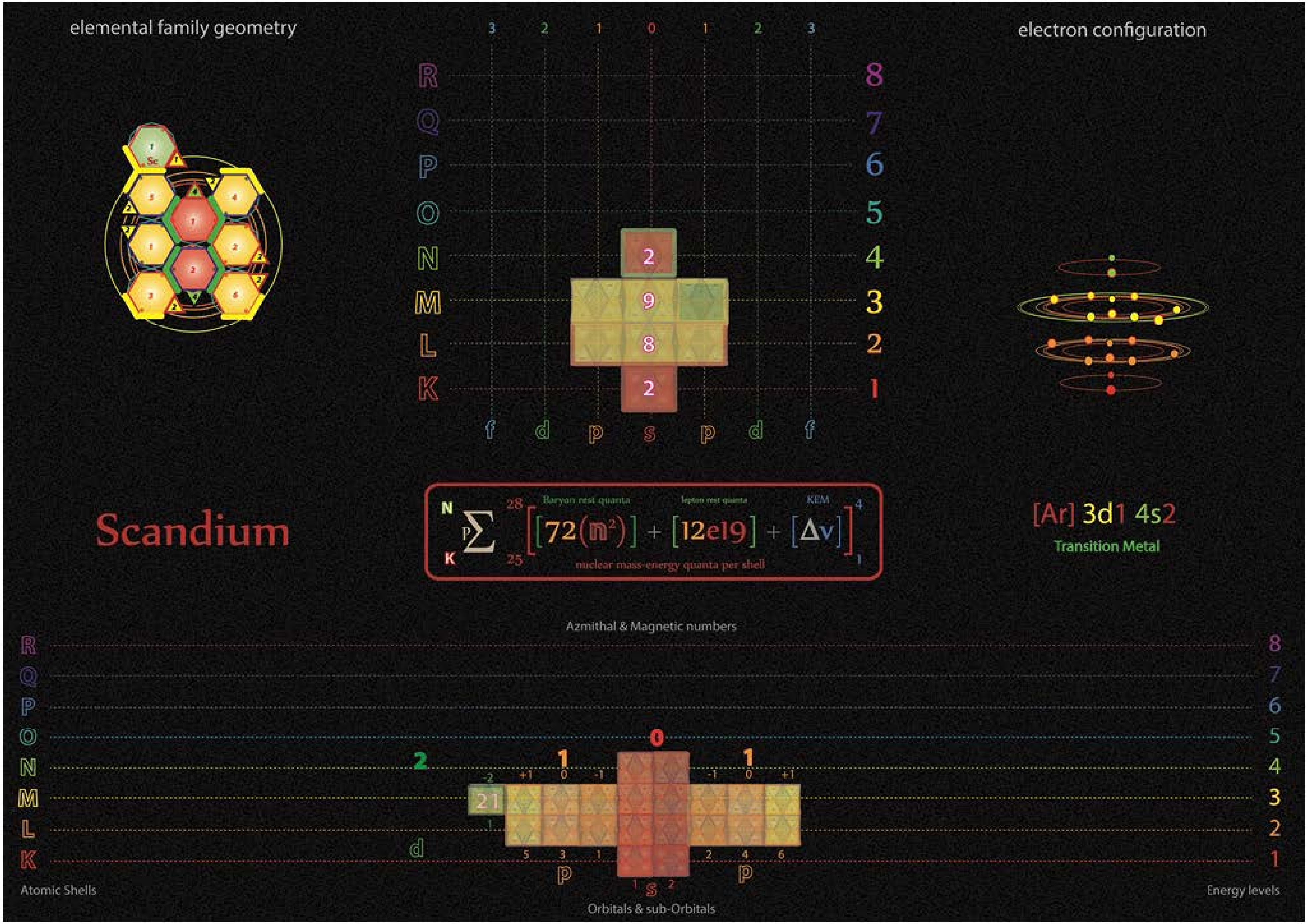
Tetryonics 53.18 - Argon atomic config



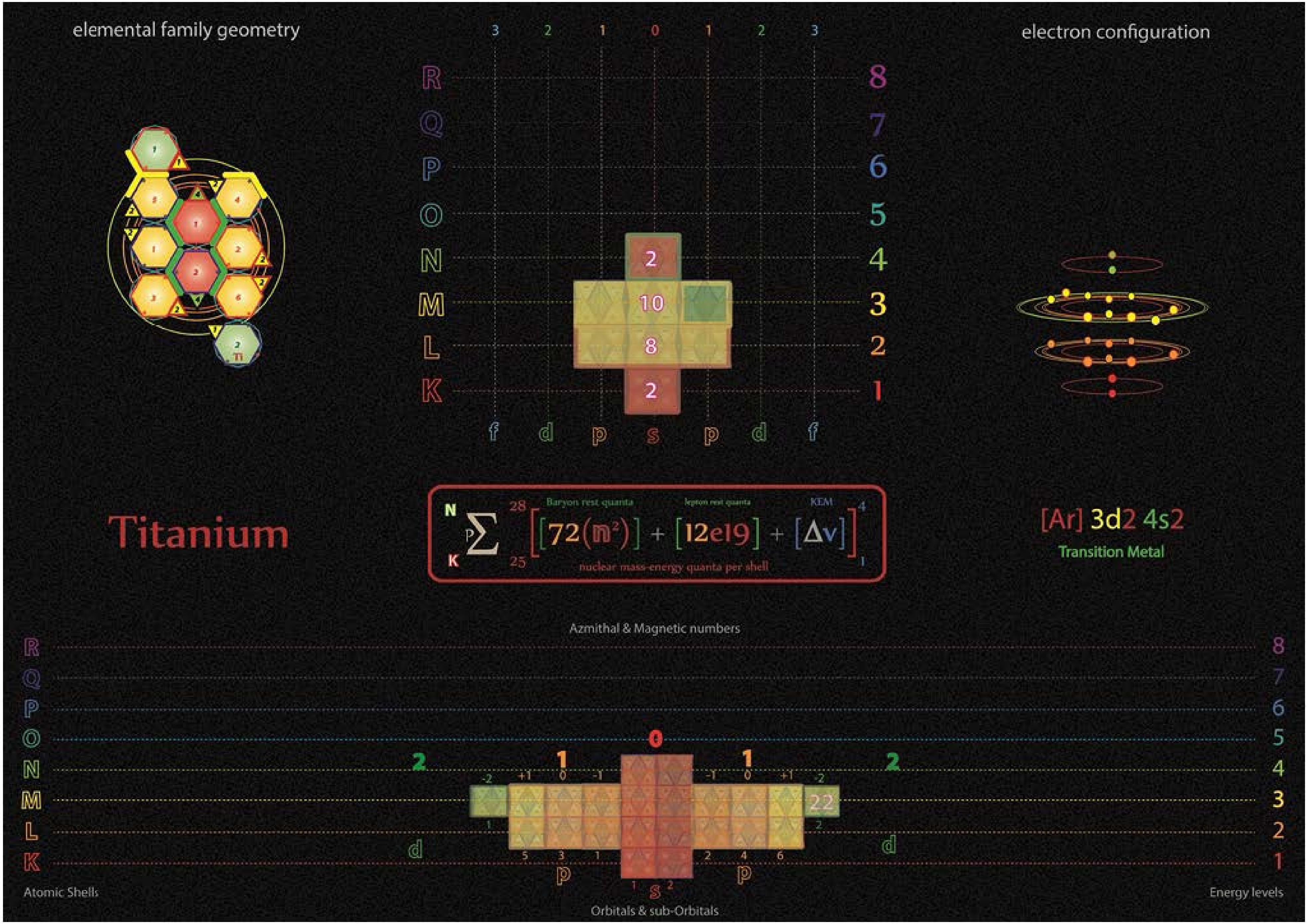
Tetryonics 53.19 - Potassium atomic config



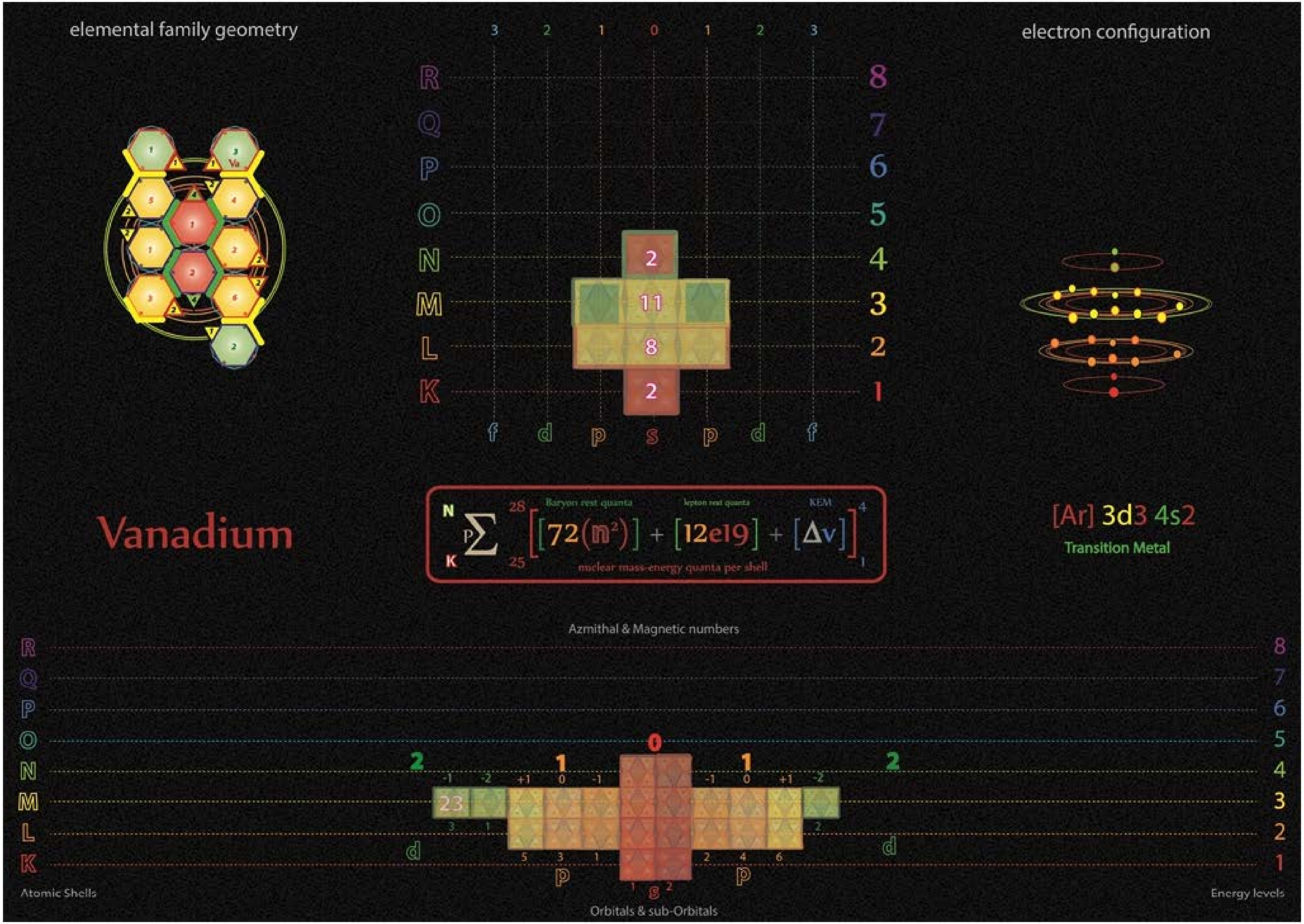
Tetryonics 53.20 - Calcium atomic config



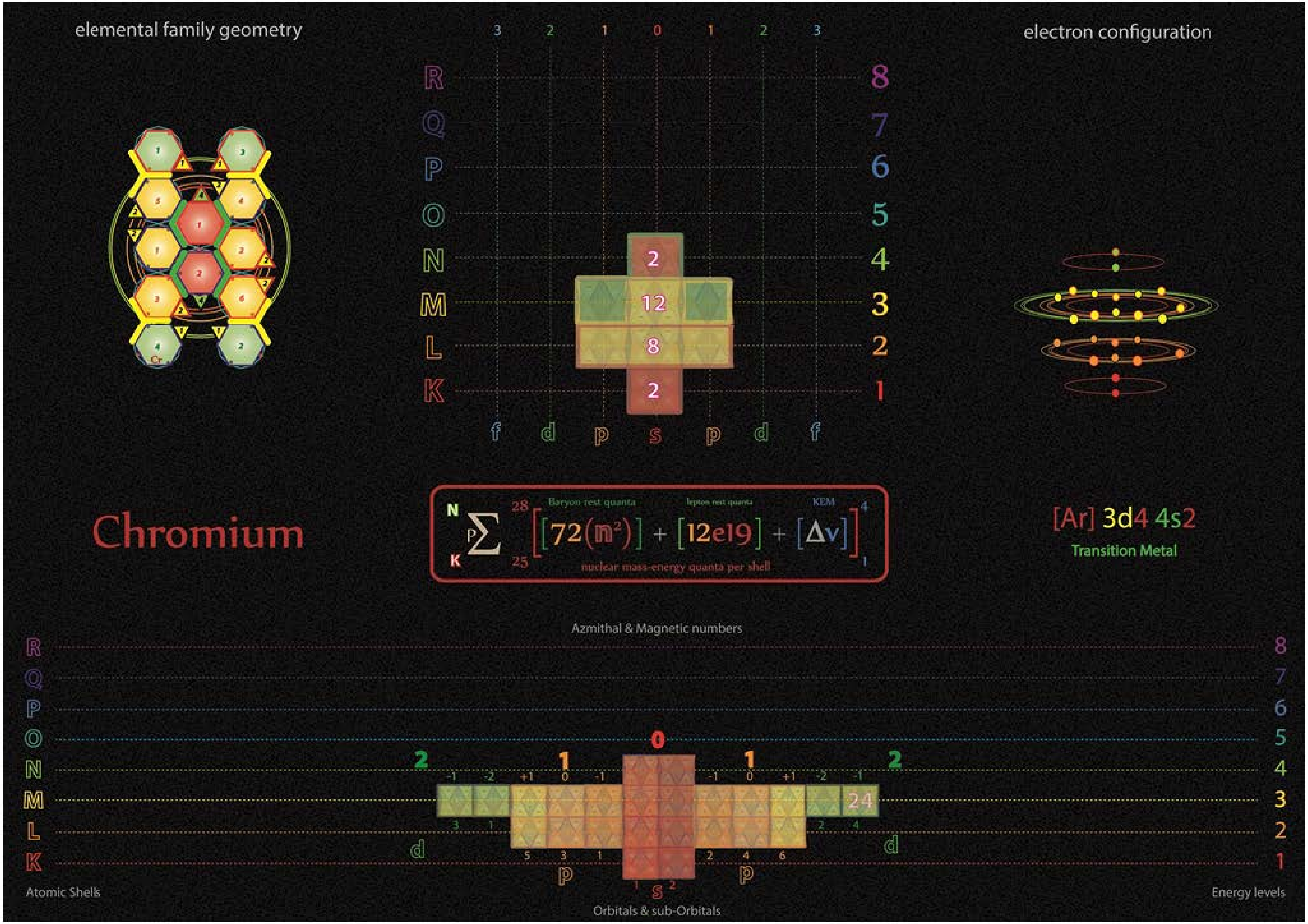
Tetryonics 53.21 - Scandium atomic config



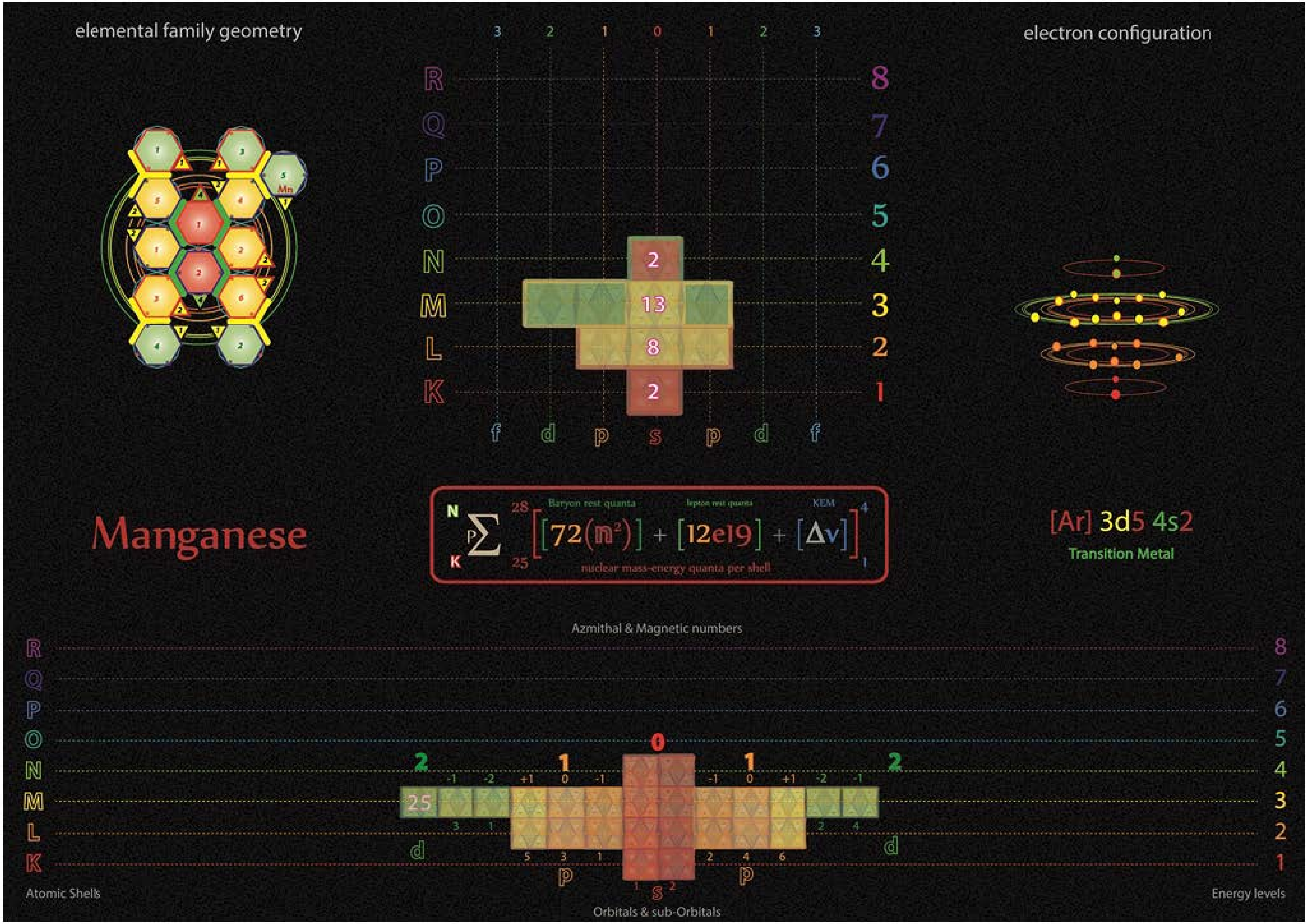
Tetryonics 53.22 - Titanium atomic config



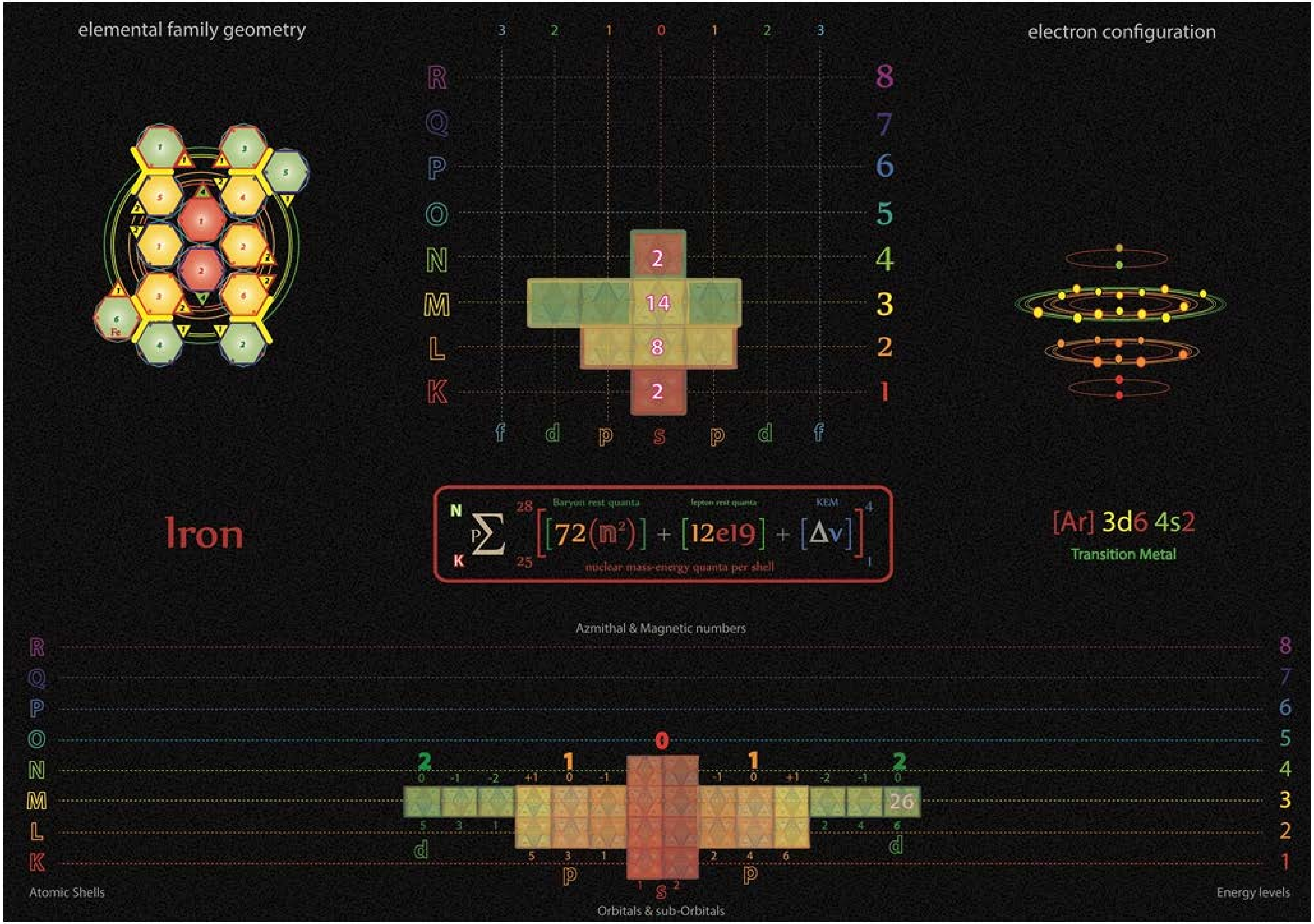
Tetryonics 53.23 - Vanadium atomic config



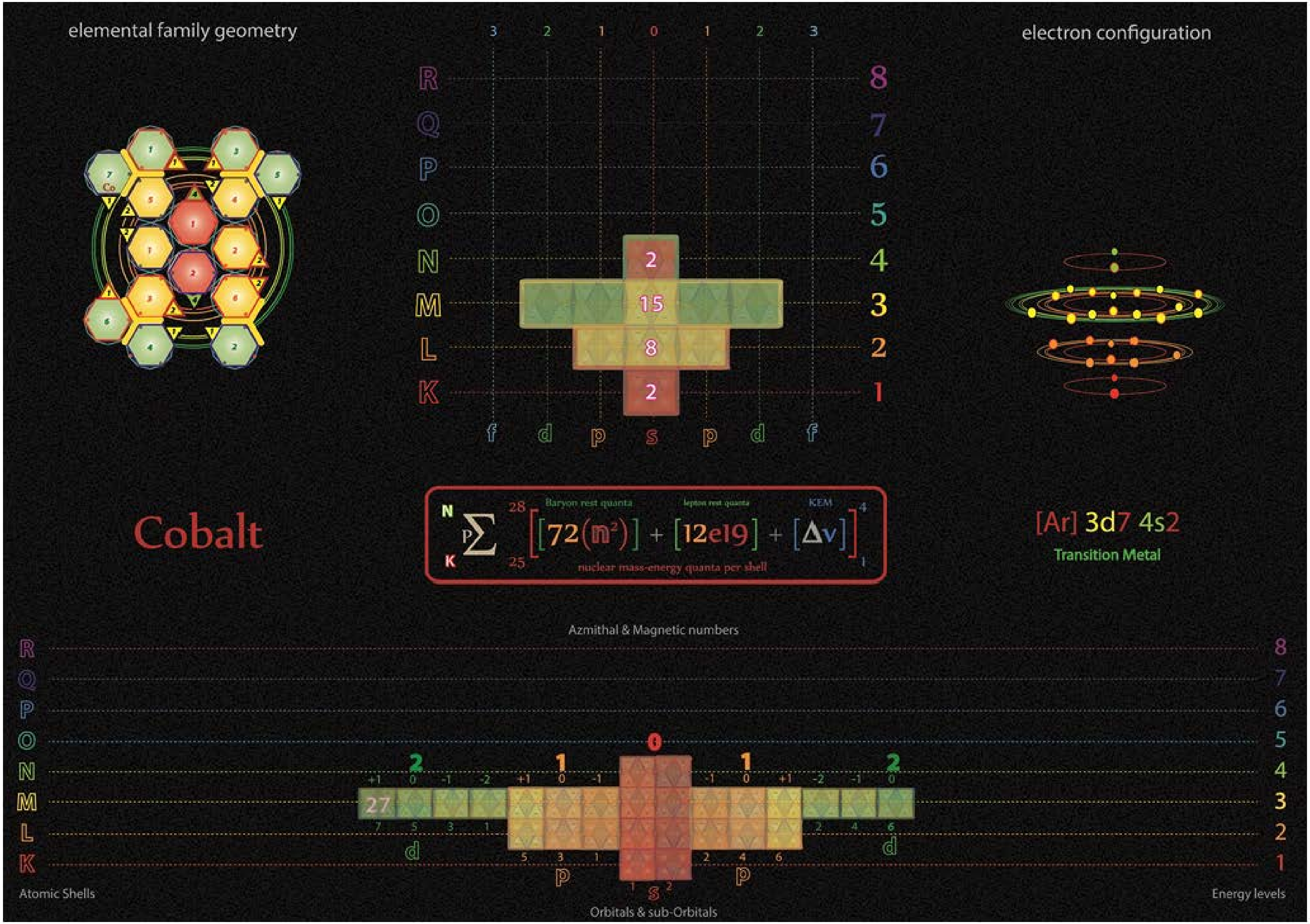
Tetryonics 53.24 - Chromium atomic config



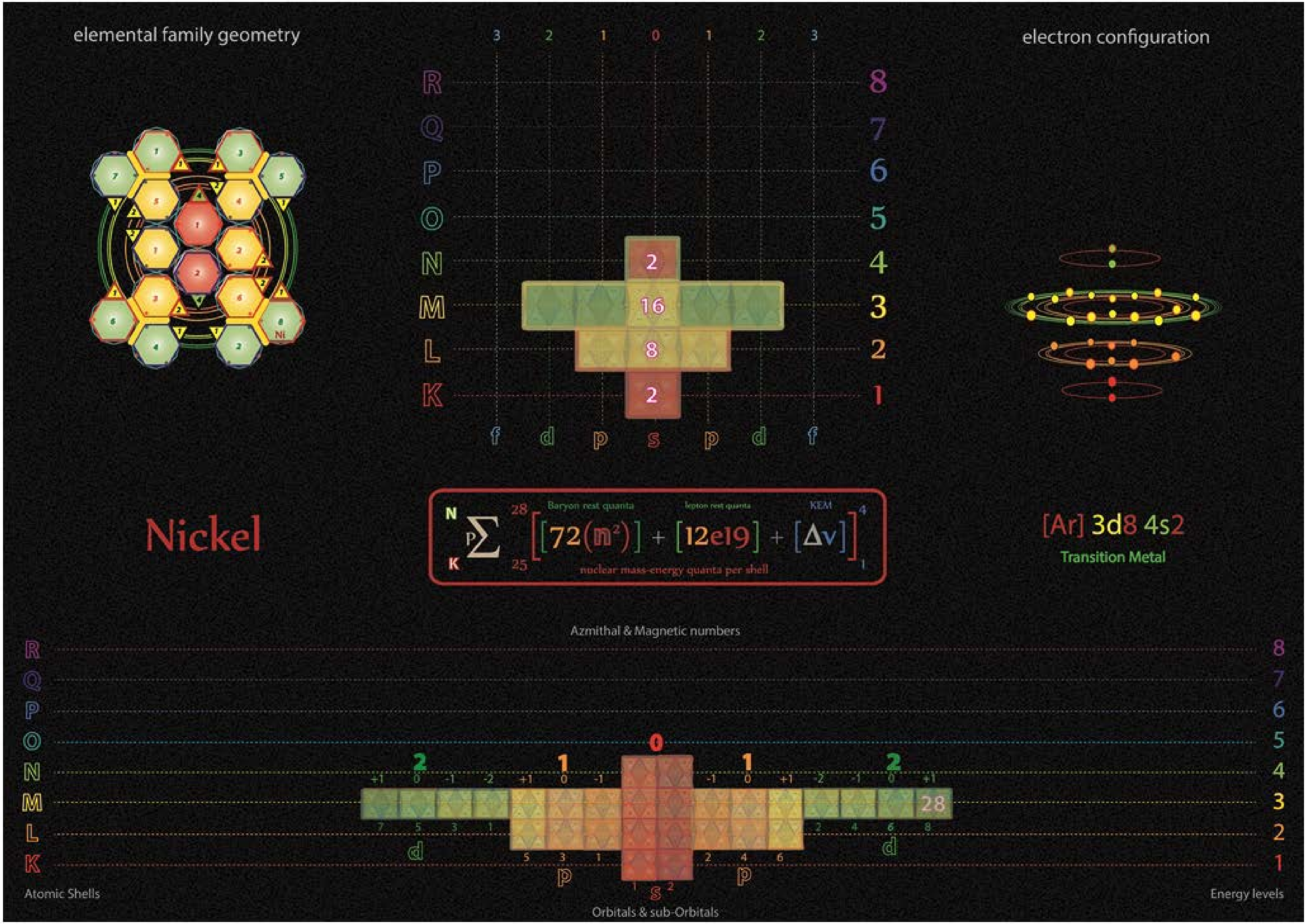
Tetryonics 53.25 - Manganese atomic config



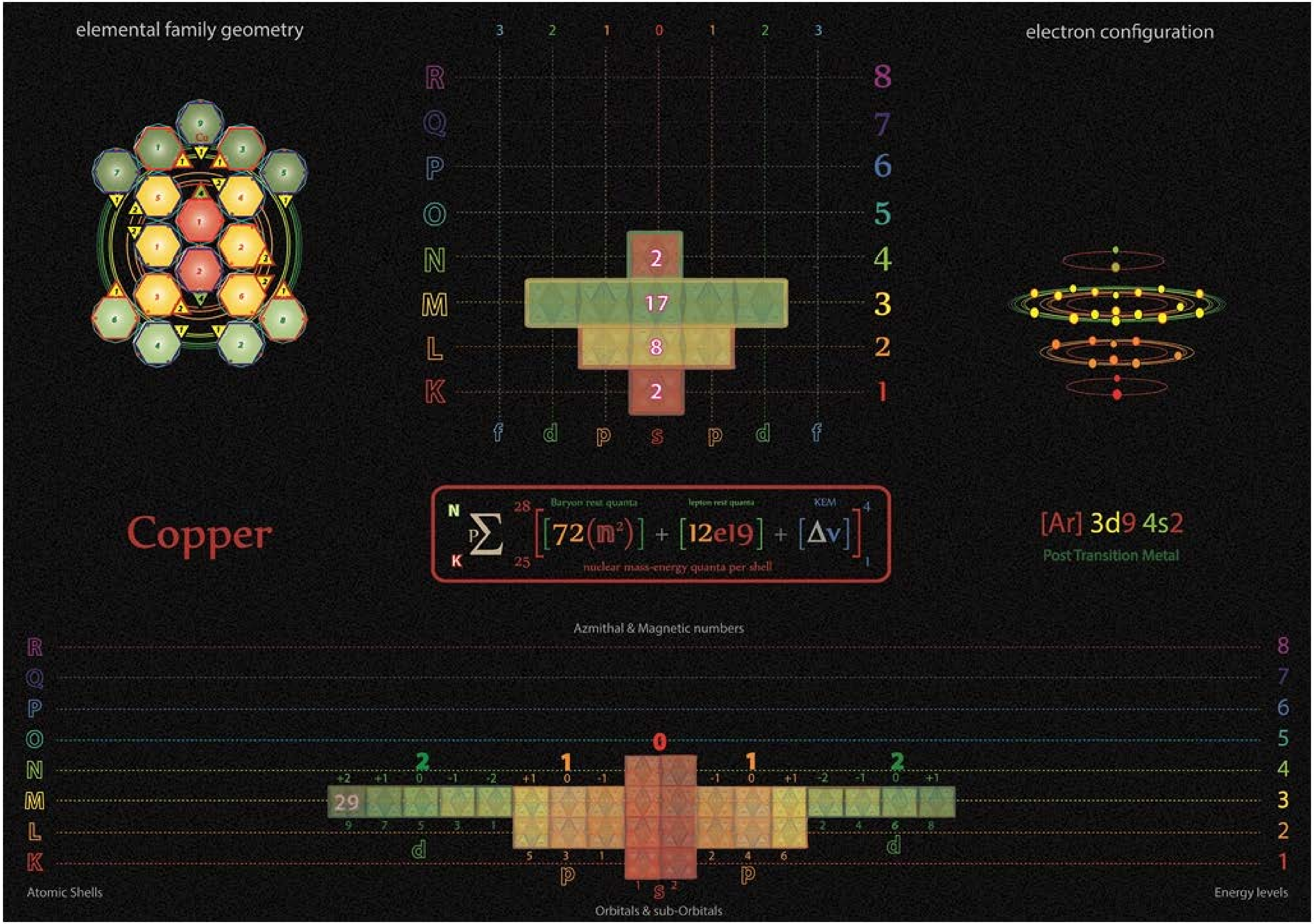
Tetryonics 53.26 - Iron atomic config



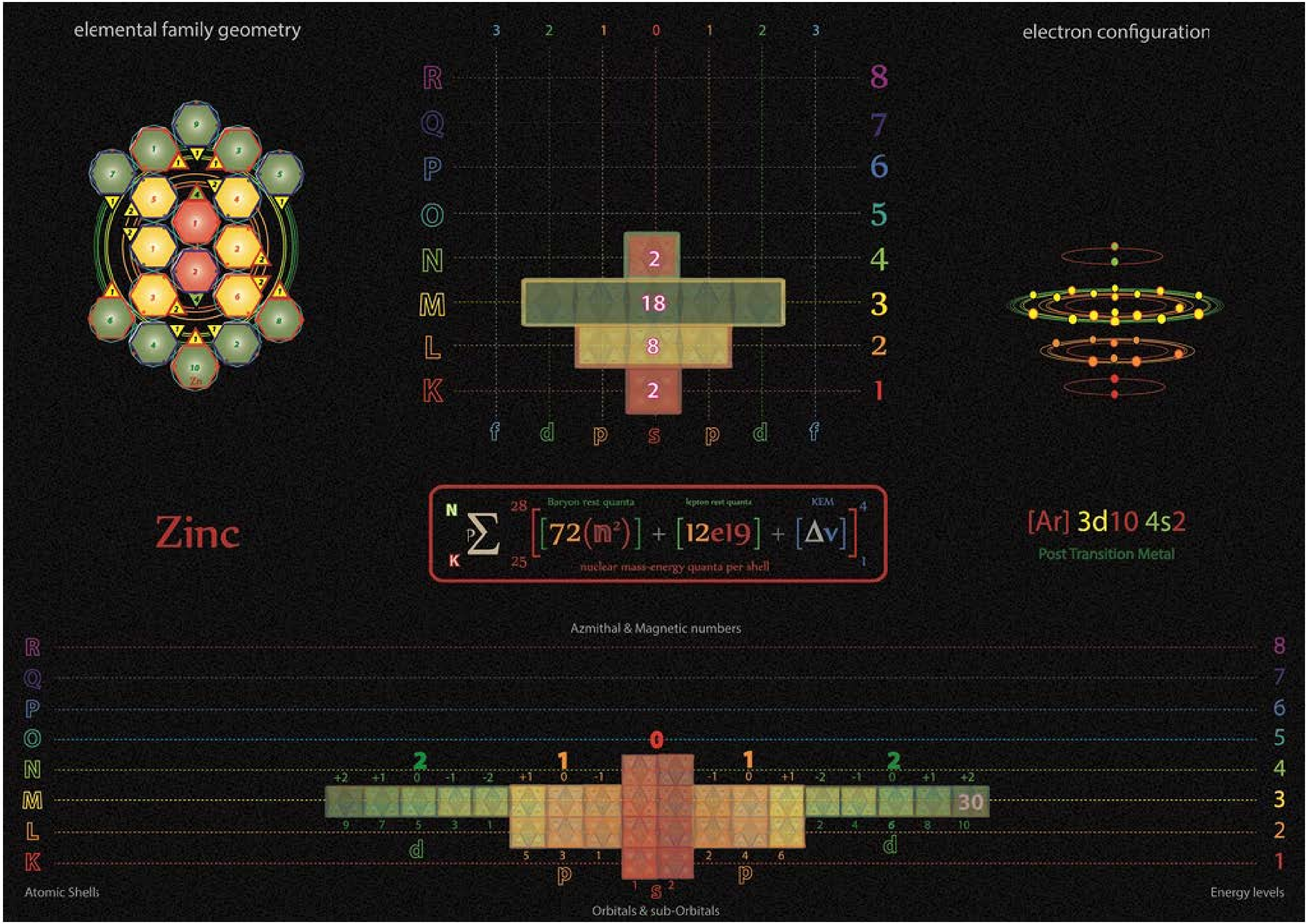
Tetryonics 53.27 - Cobalt atomic config



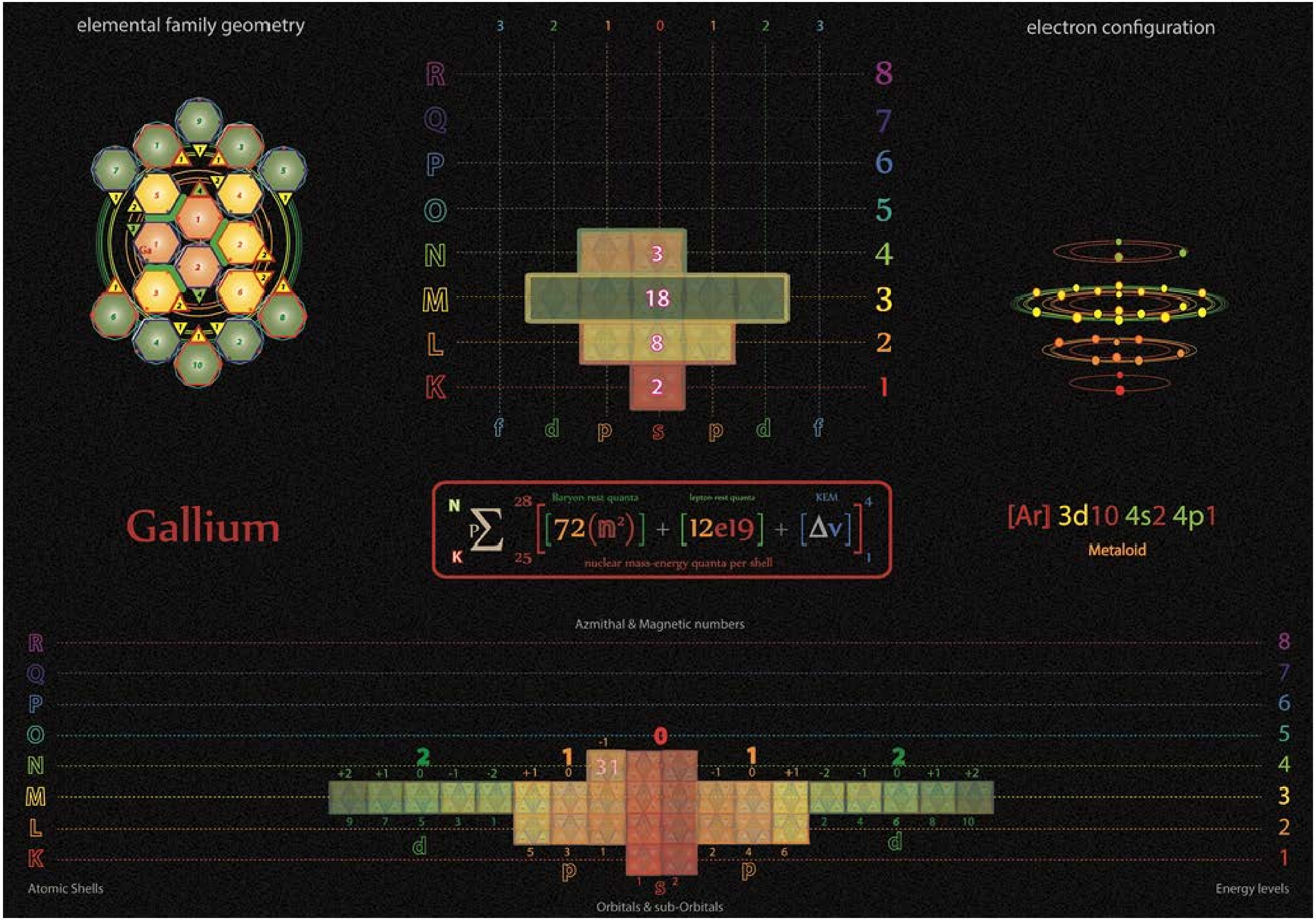
Tetryonics 53.28 - Nickel atomic config



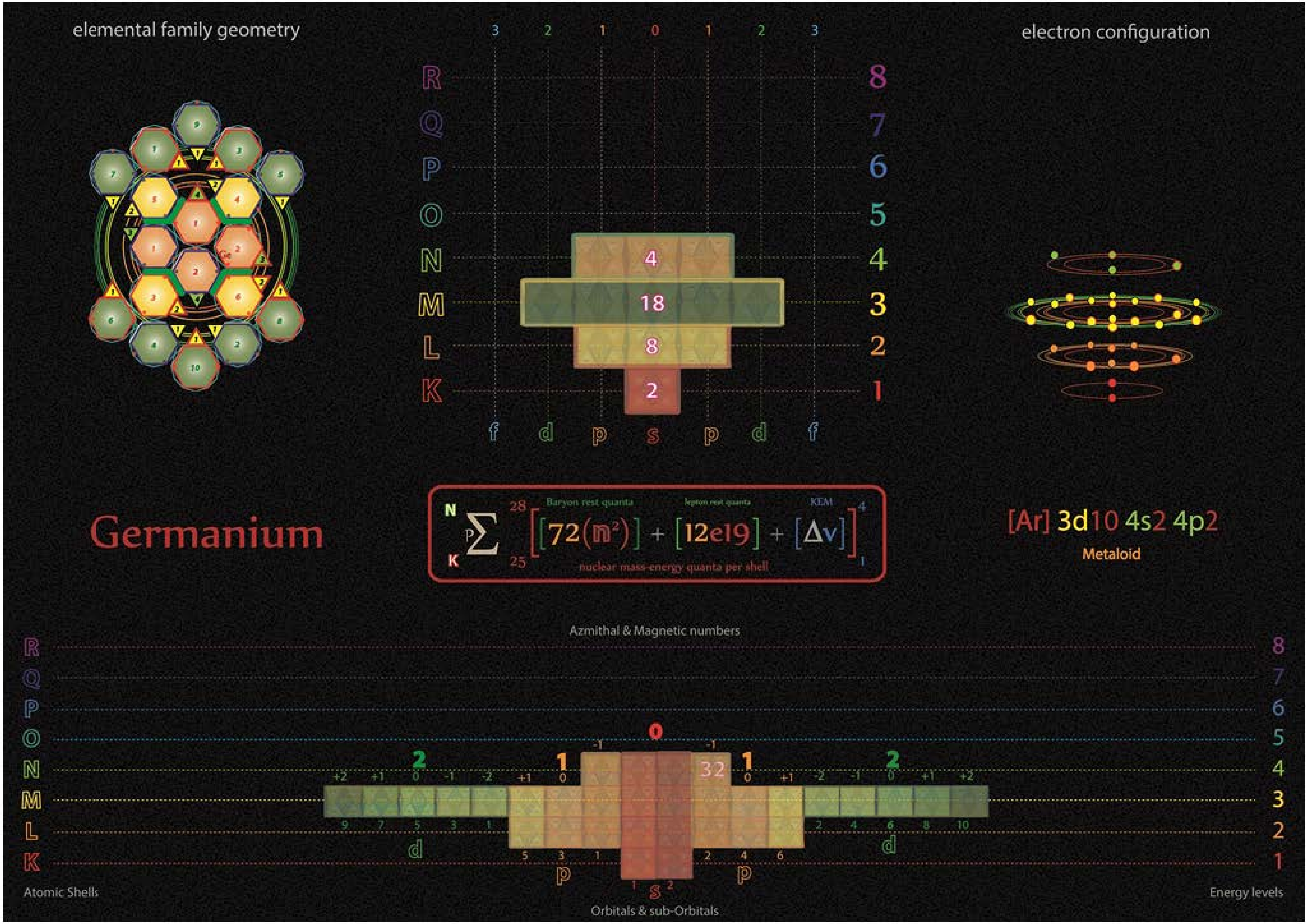
Tetryonics 53.29 - Copper atomic config

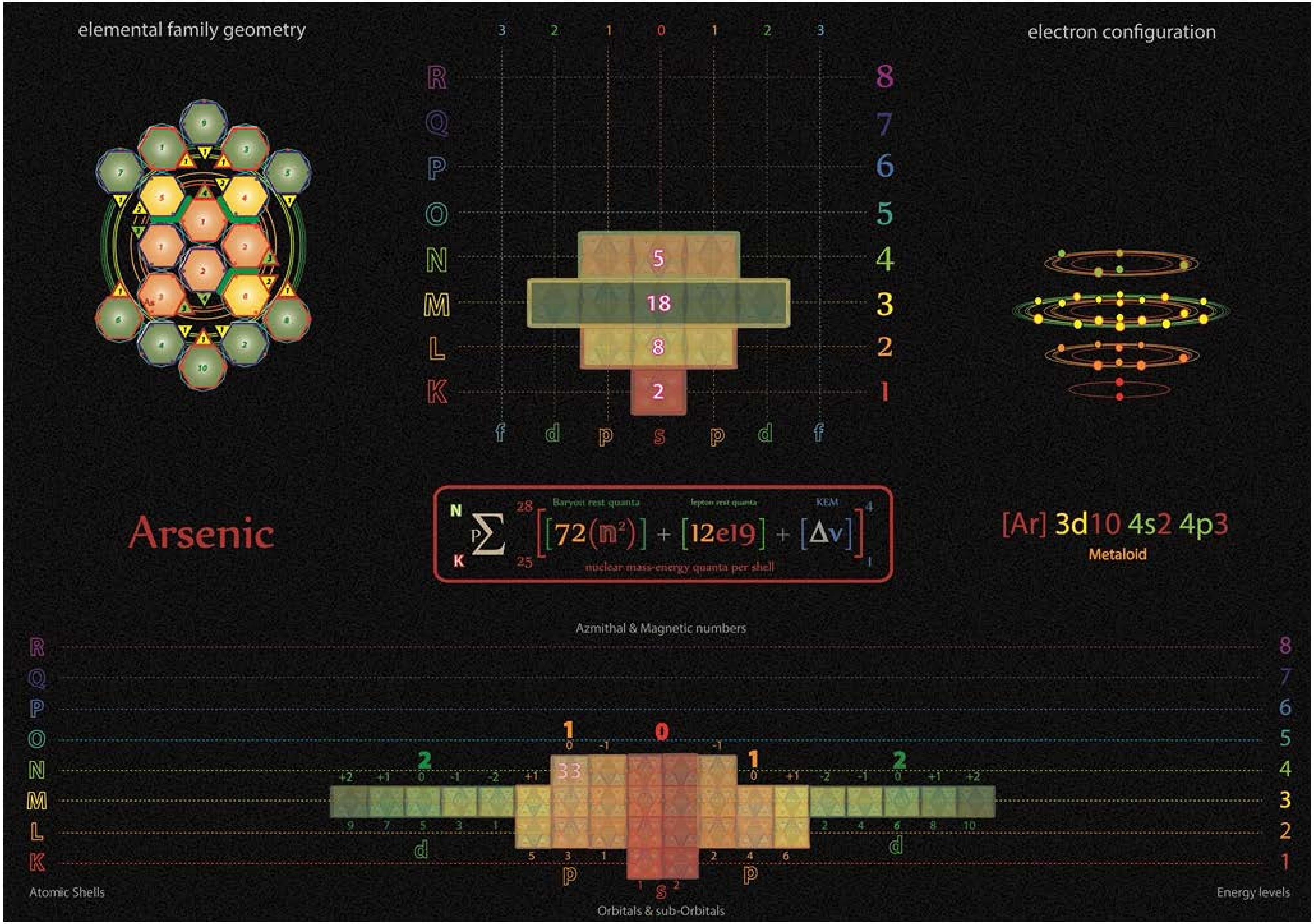


Tetryonics 53.30 - Zinc atomic config

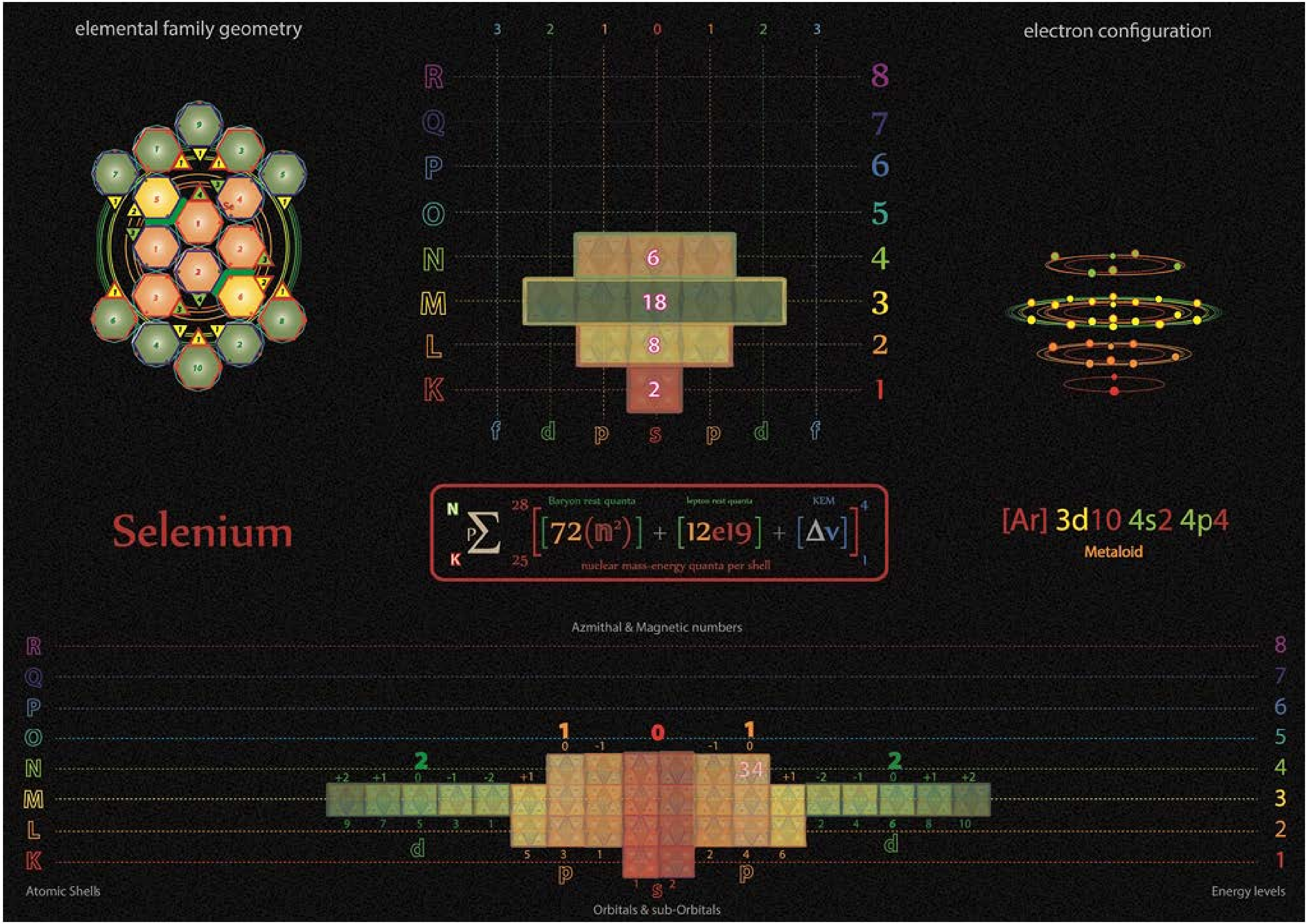


Tetryonics 53.31 - Gallium atomic config

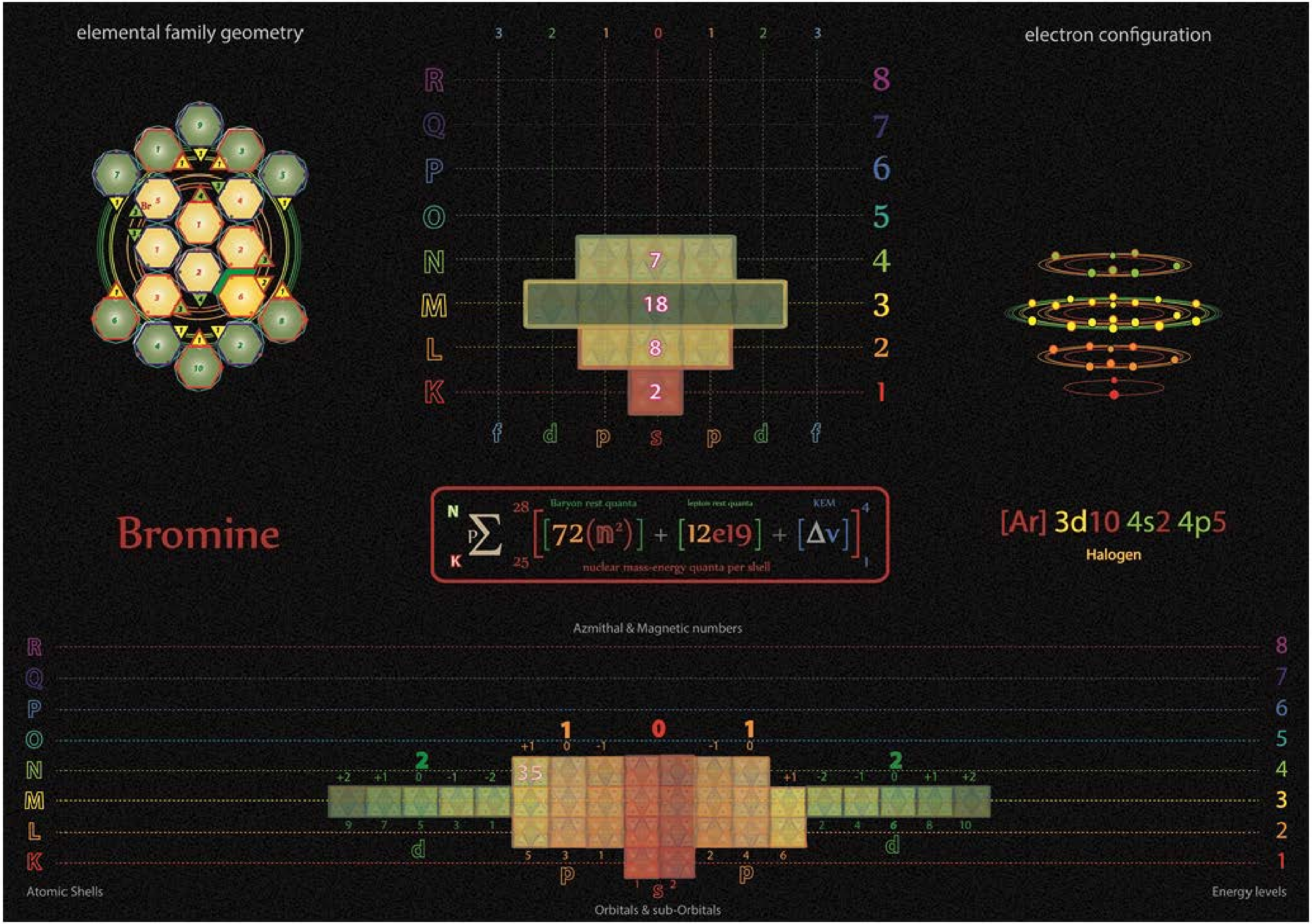

elemental family geometry
electron configuration
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
Germanium
[72(m²)] + [12e19] + [Δv]
Baryon rest quanta
KEM
nuclear mass-energy quanta per shell
[Ar] 3d10 4s2 4p2
Metaloid
Azmithal & Magnetic numbers
Atomic Shells
Energy levels
Orbitals & sub-Orbitals

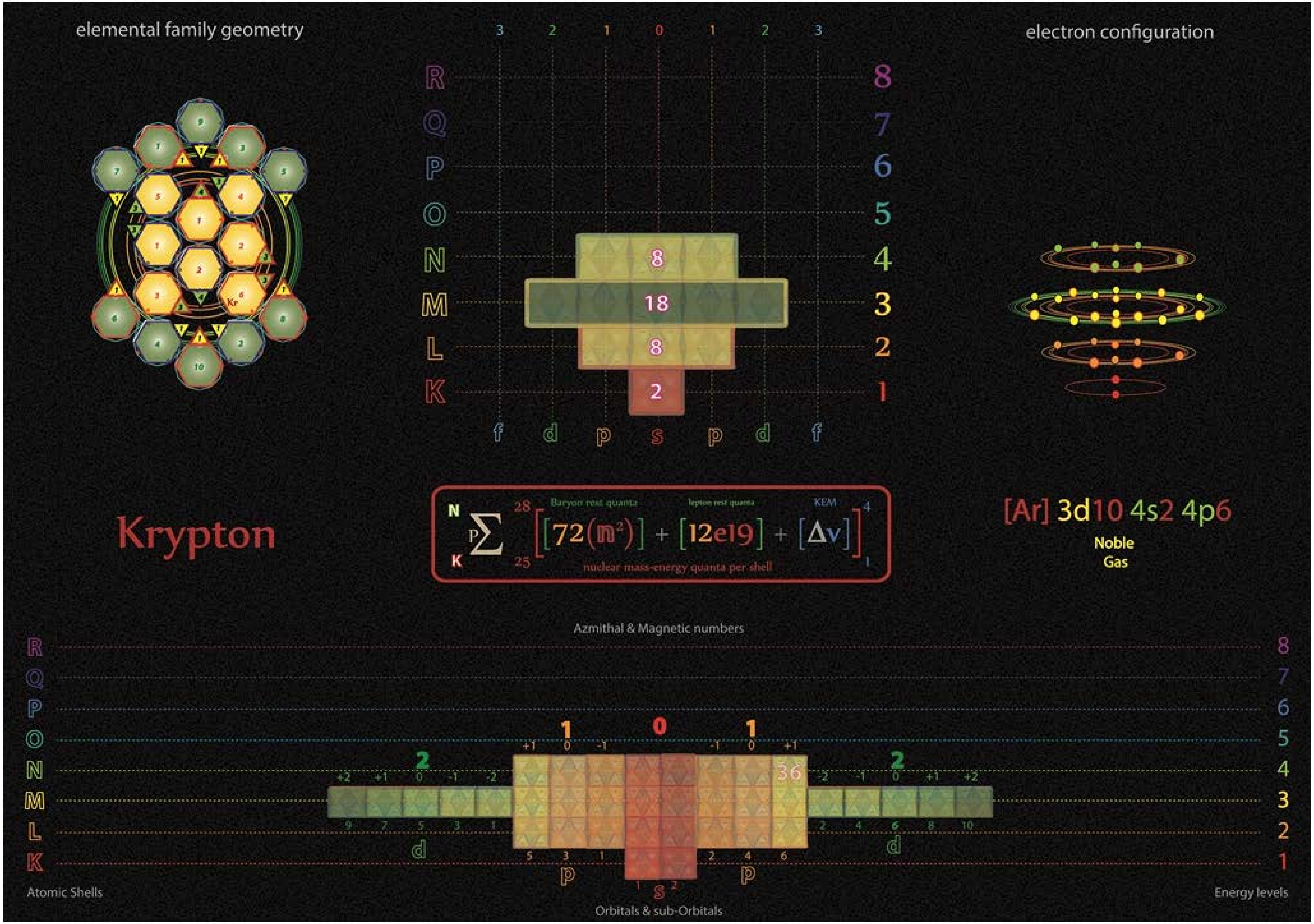


Tetryonics 53.33 - Arsenic atomic config

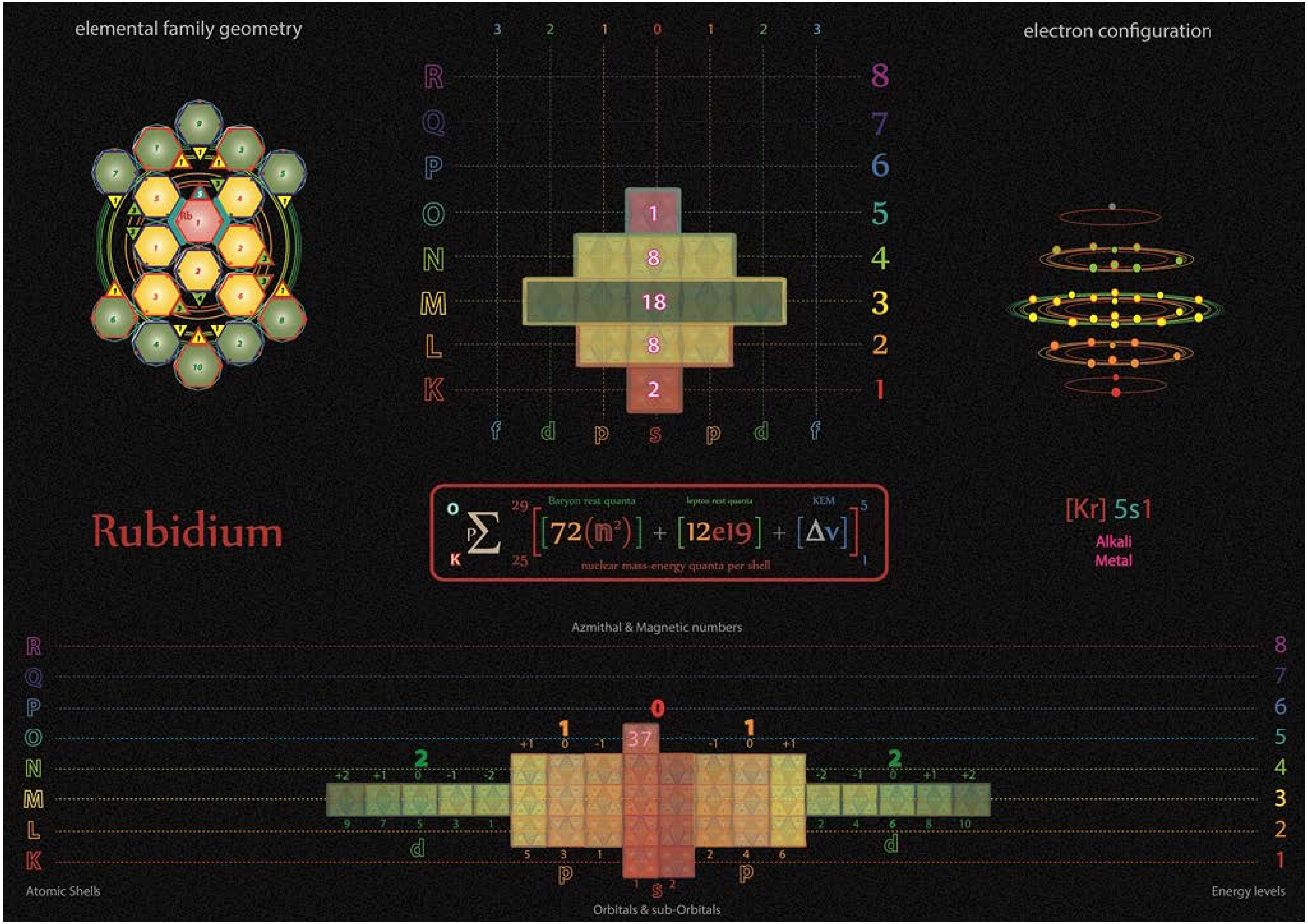


Tetryonics 53.34 - Selenium atomic config

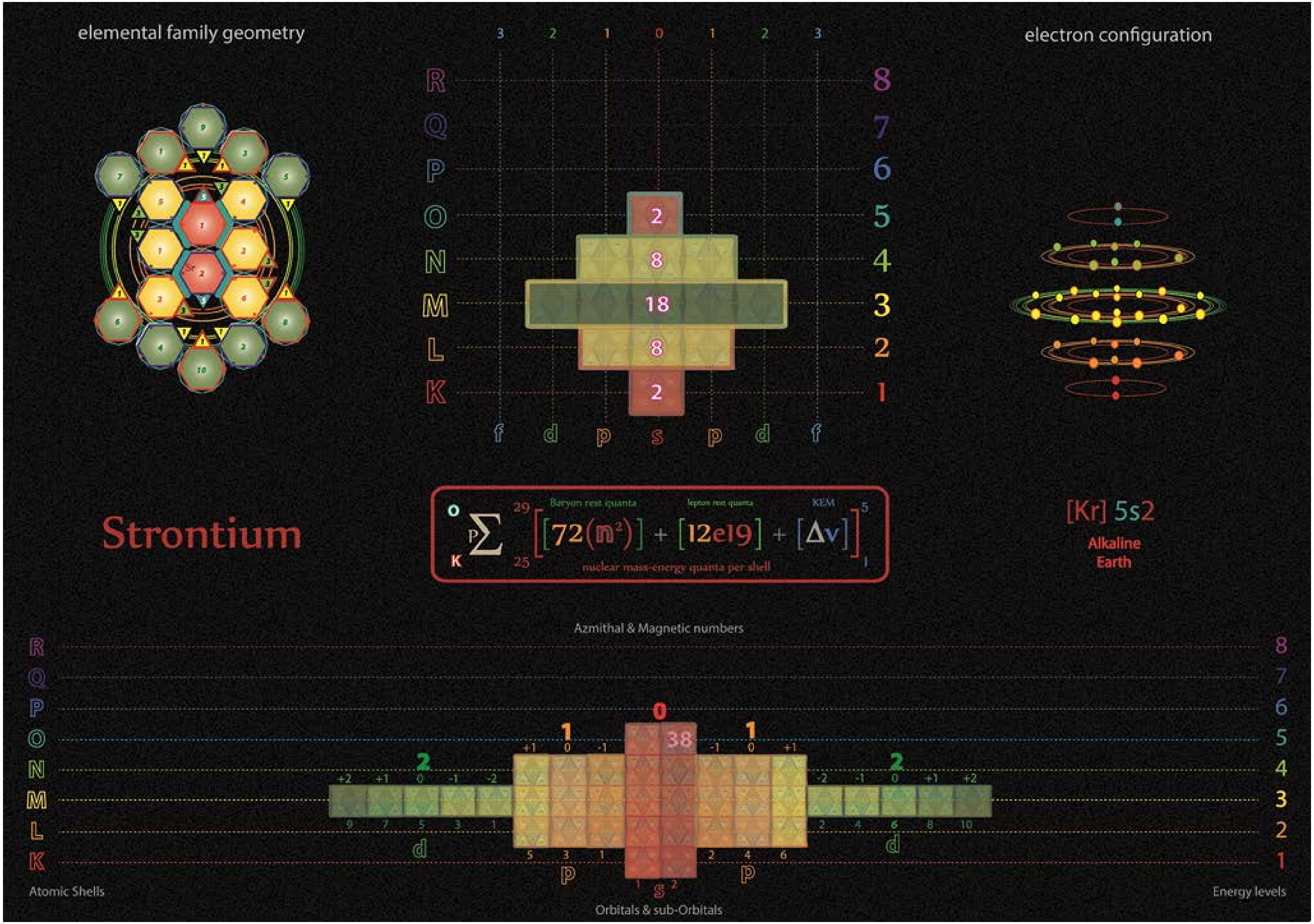

elemental family geometry
electron configuration
Bromine
nuclear mass-energy quanta per shell
Baryon rest quanta
lepton rest quanta
KEM
[Ar] 3d10 4s2 4p5
Halogen
Azmithal & Magnetic numbers
Atomic Shells
Energy levels
Orbitals & sub-Orbitals



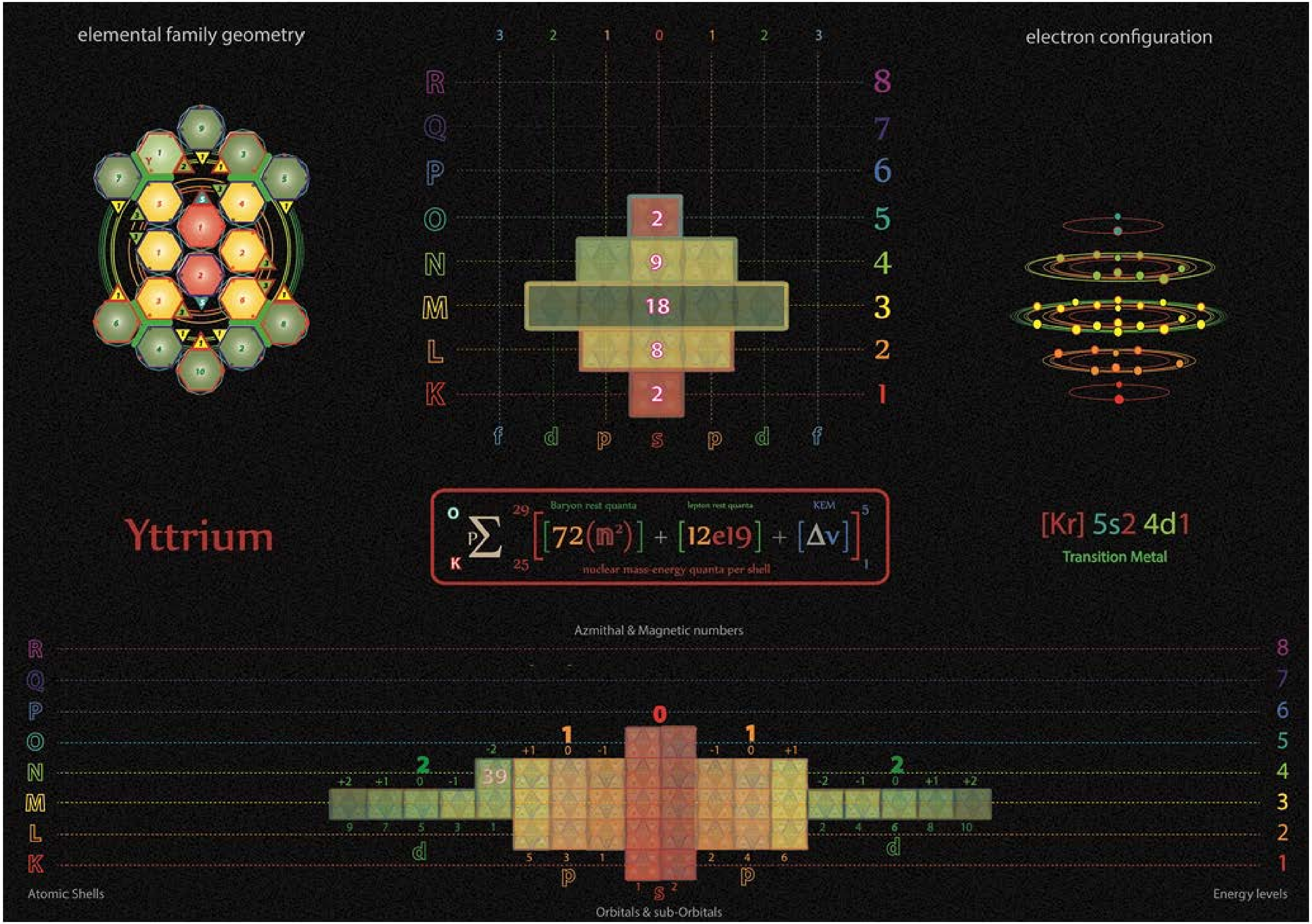
Tetryonics 53.36 - Krypton atomic config



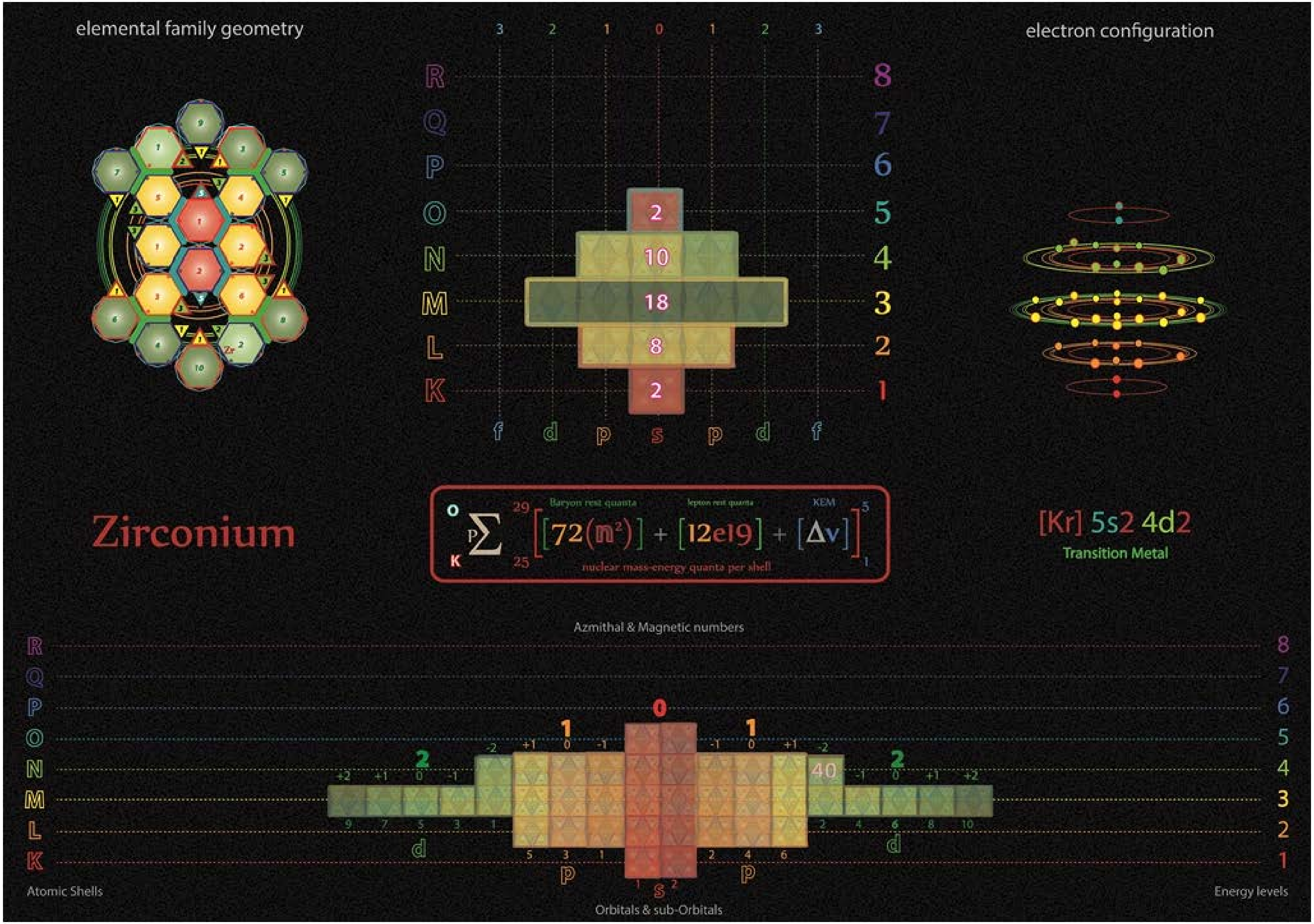
Tetryonics 53.37 - Rubidium atomic config



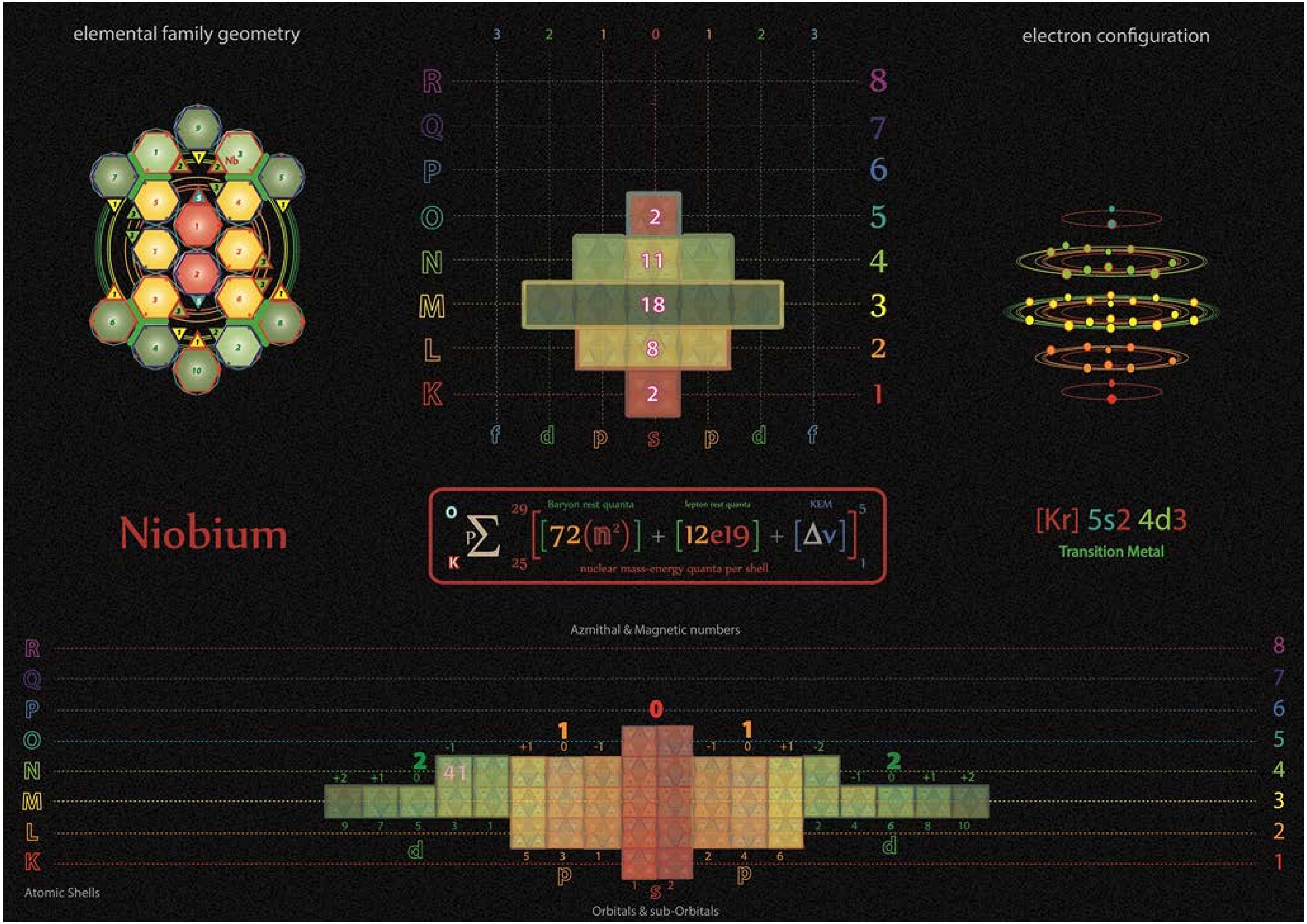
Tetryonics 53.38 - Strontium atomic config



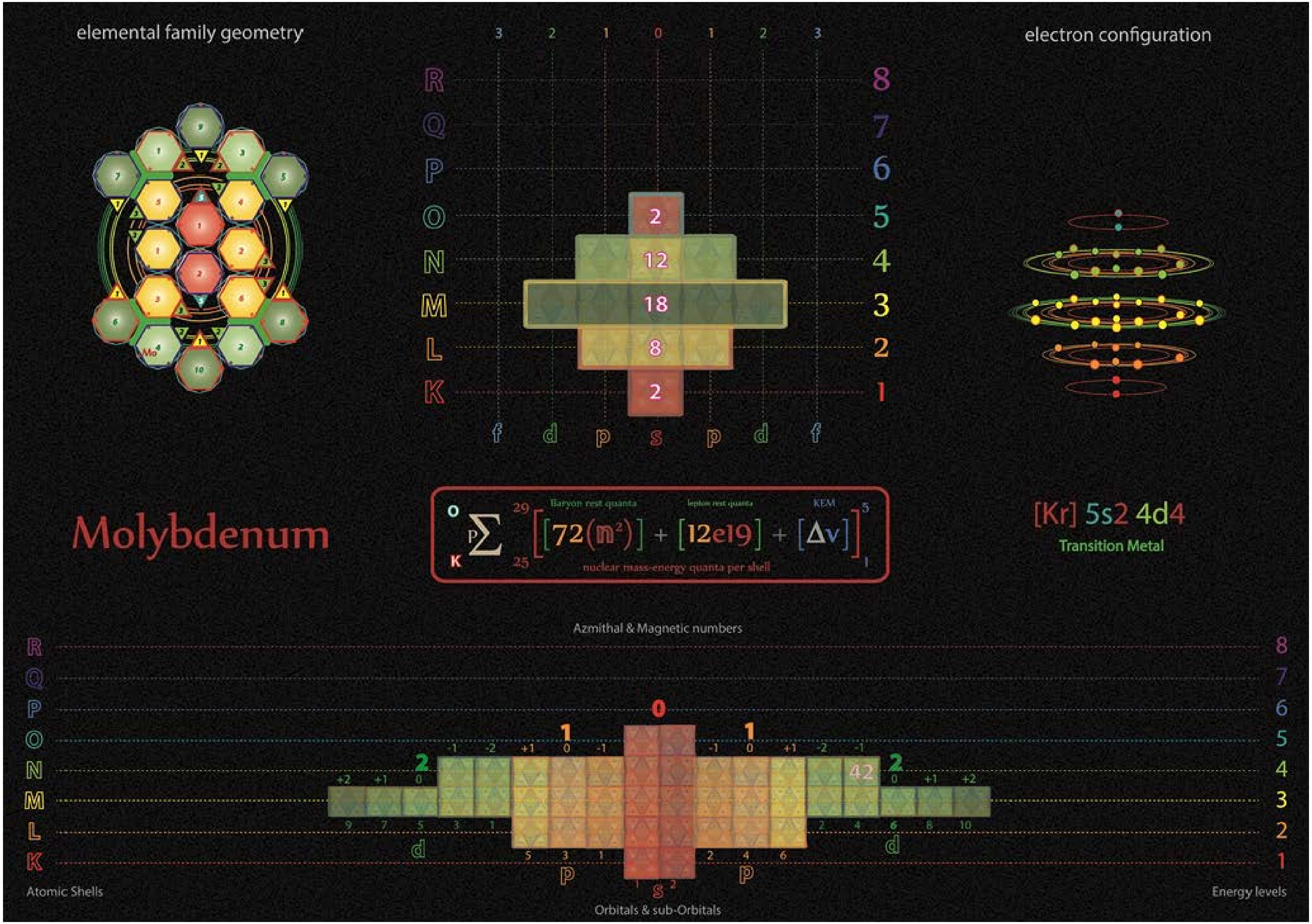
Tetryonics 53.39 - Yttrium atomic config



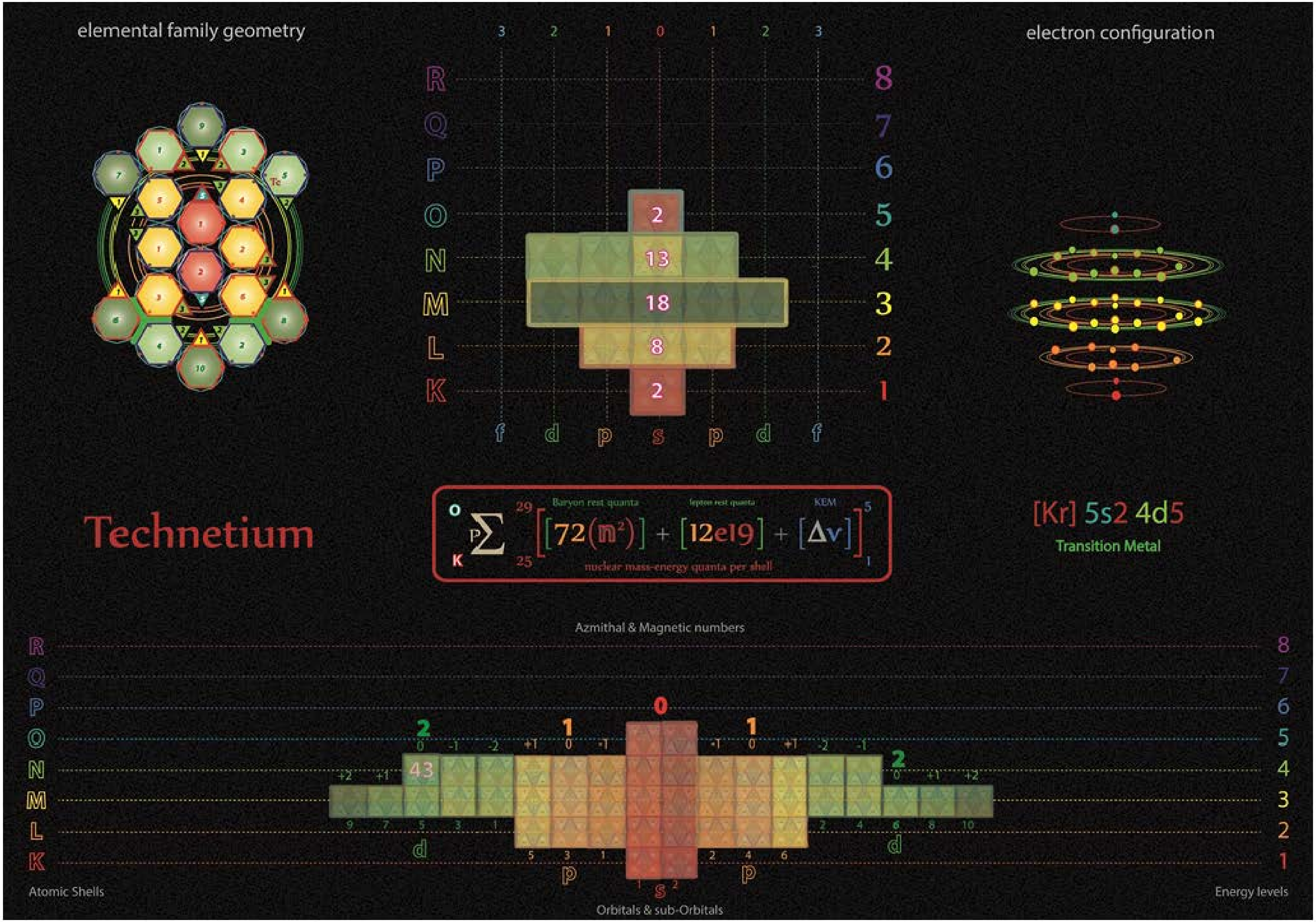
Tetryonics 53.40 - Zirconium atomic config



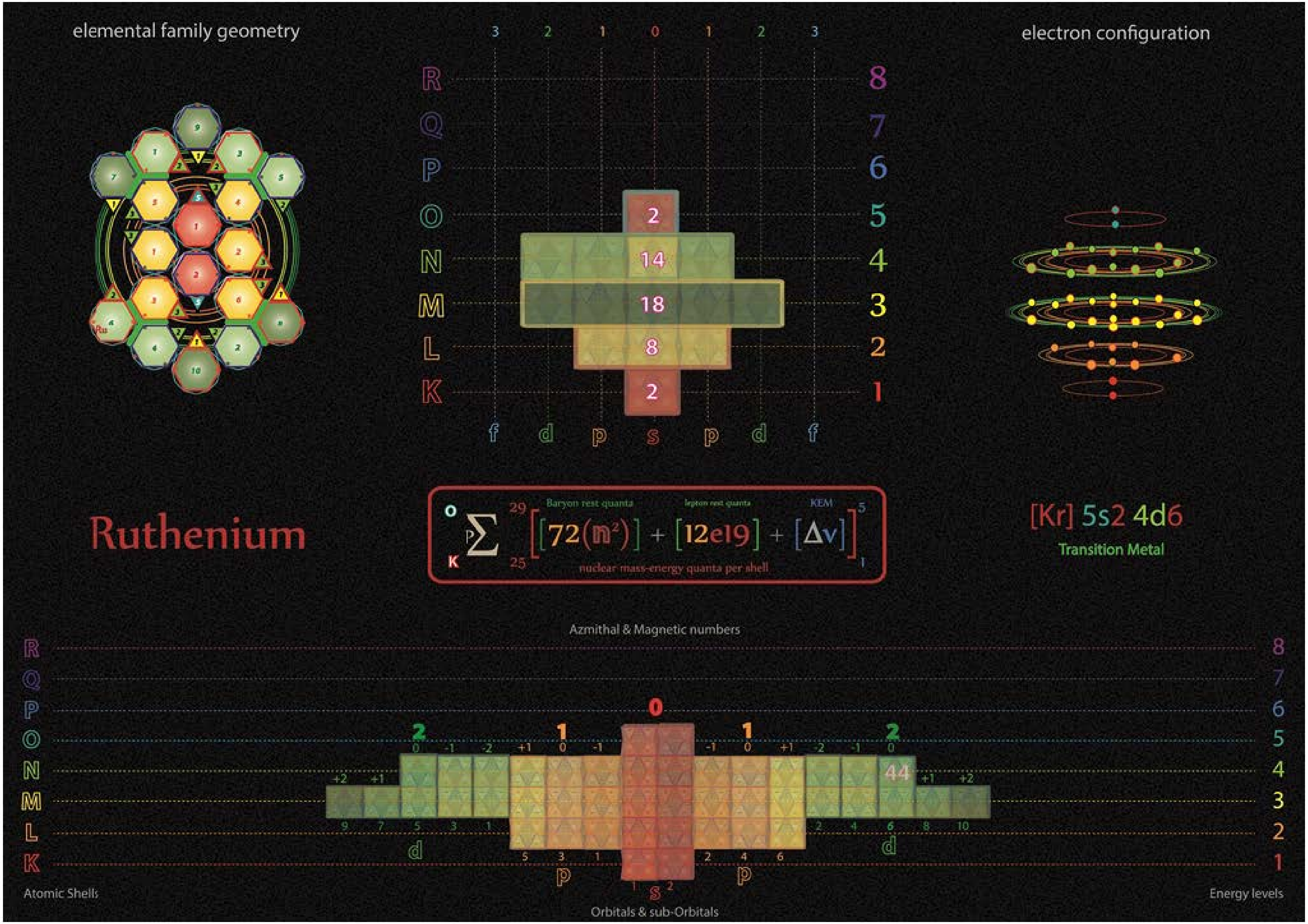
Tetryonics 53.41 - Niobium atomic config



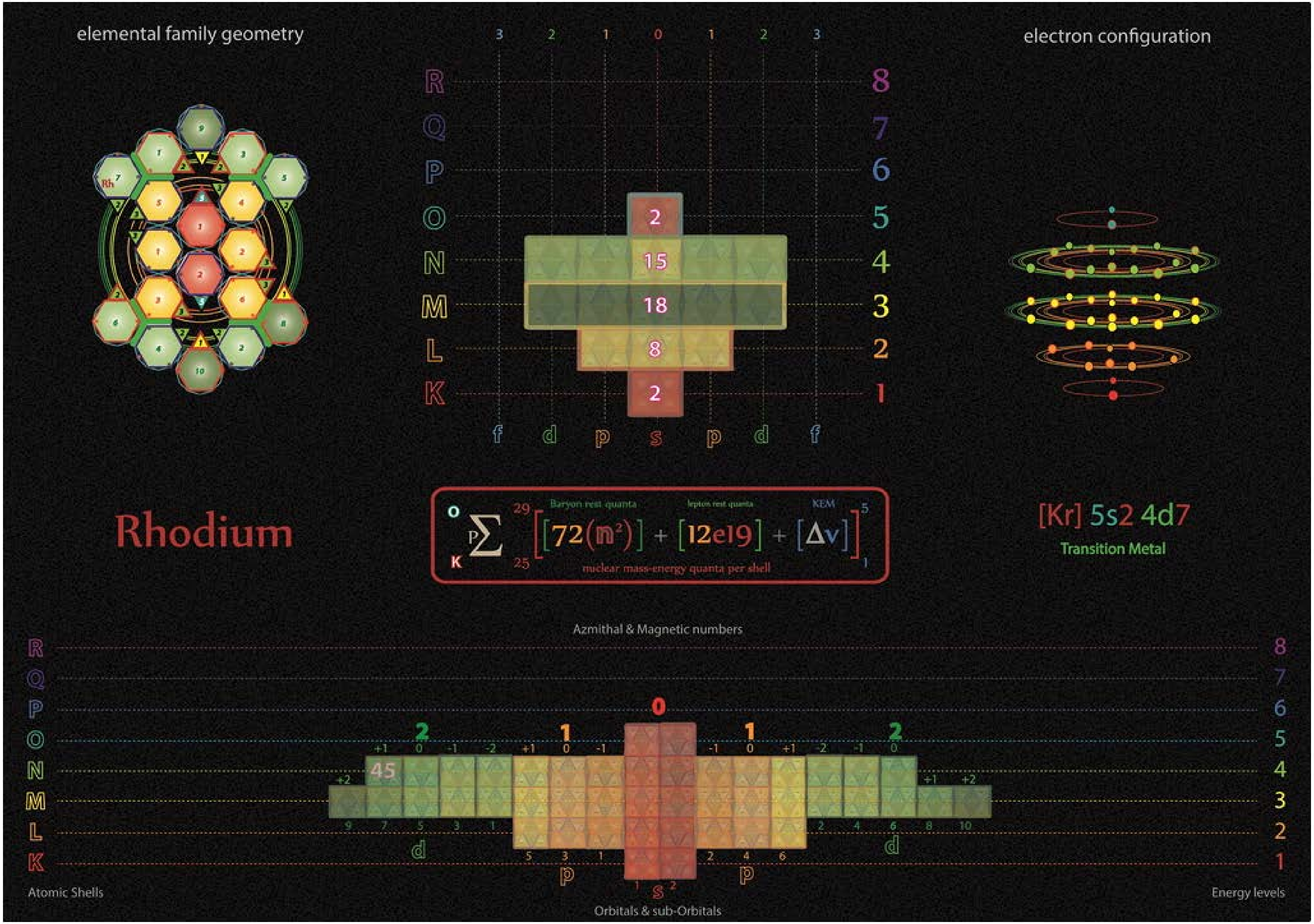
Tetryonics 53.42 - Molybdenum atomic config



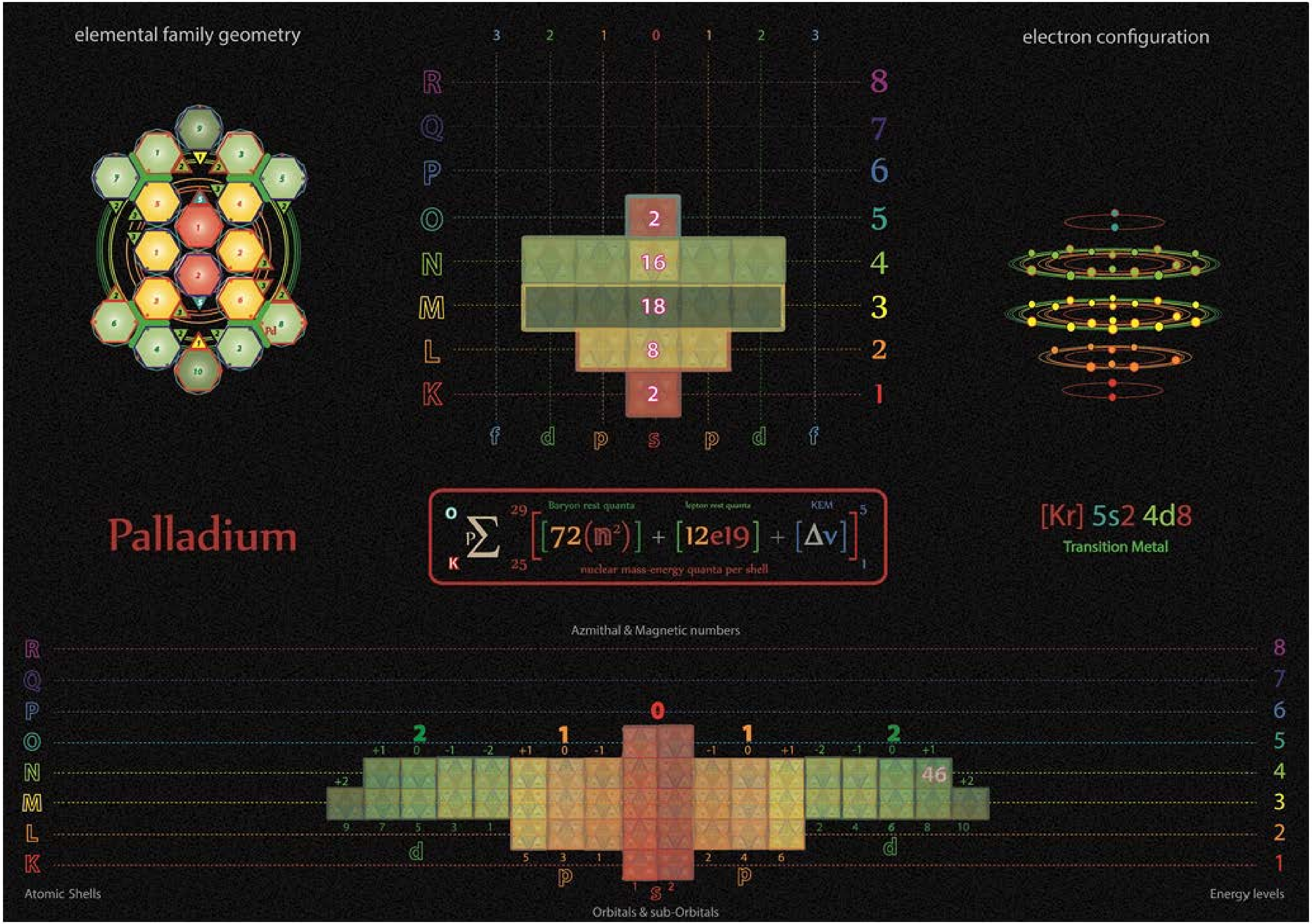
Tetryonics 53.43 - Technetium atomic config



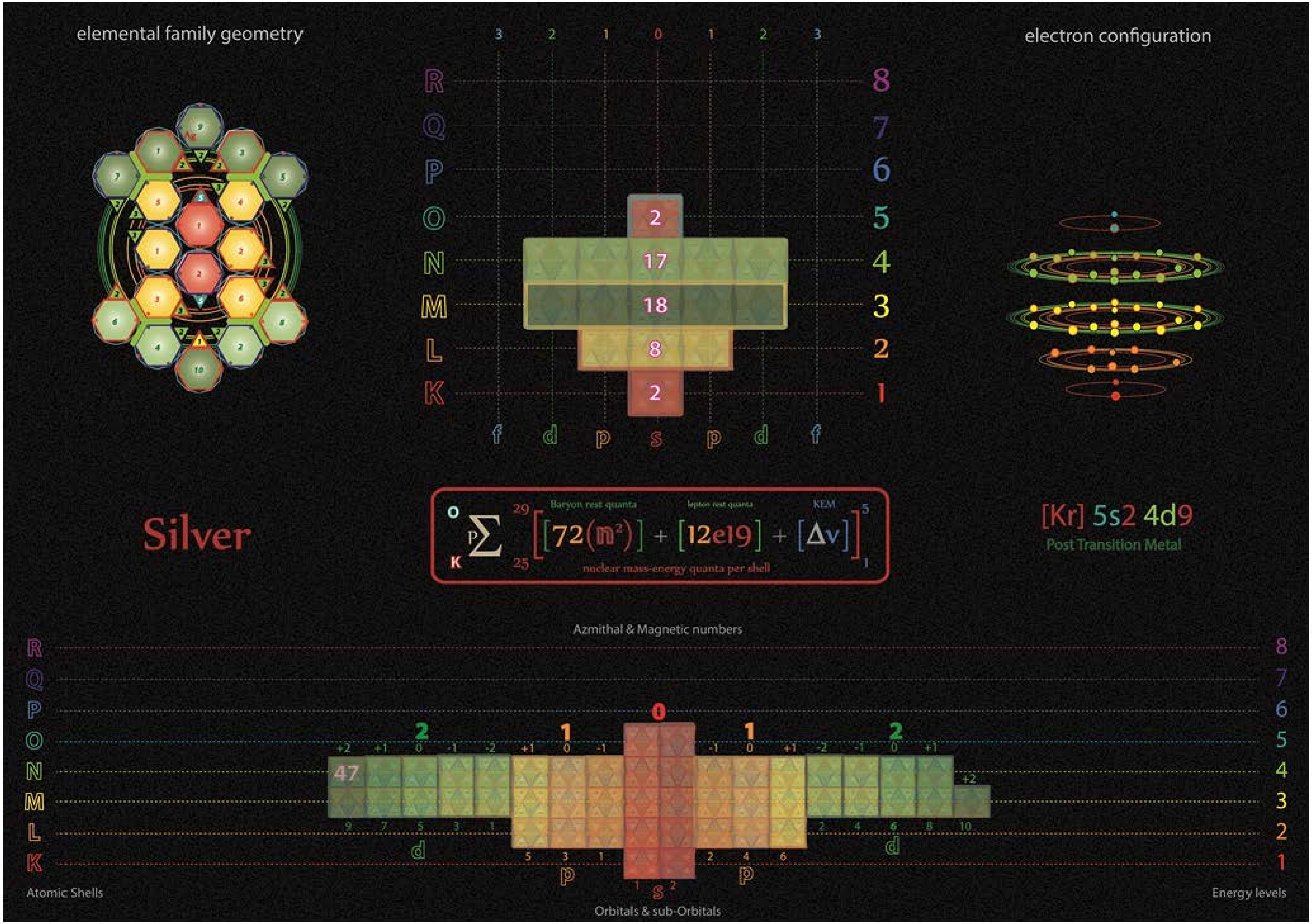
Tetryonics 53.44 - Ruthenium atomic config



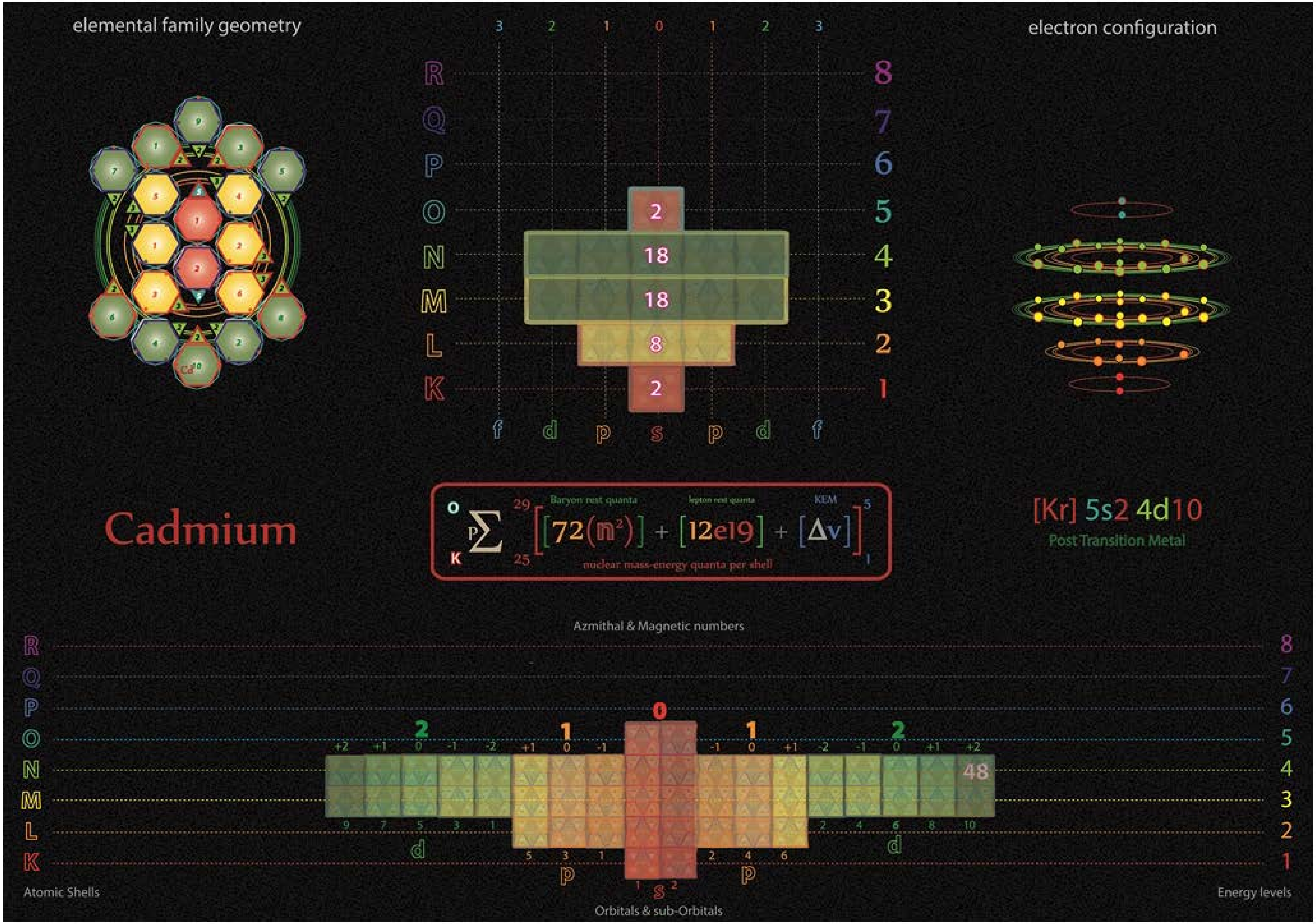
Tetryonics 53.45 - Rhodium atomic config



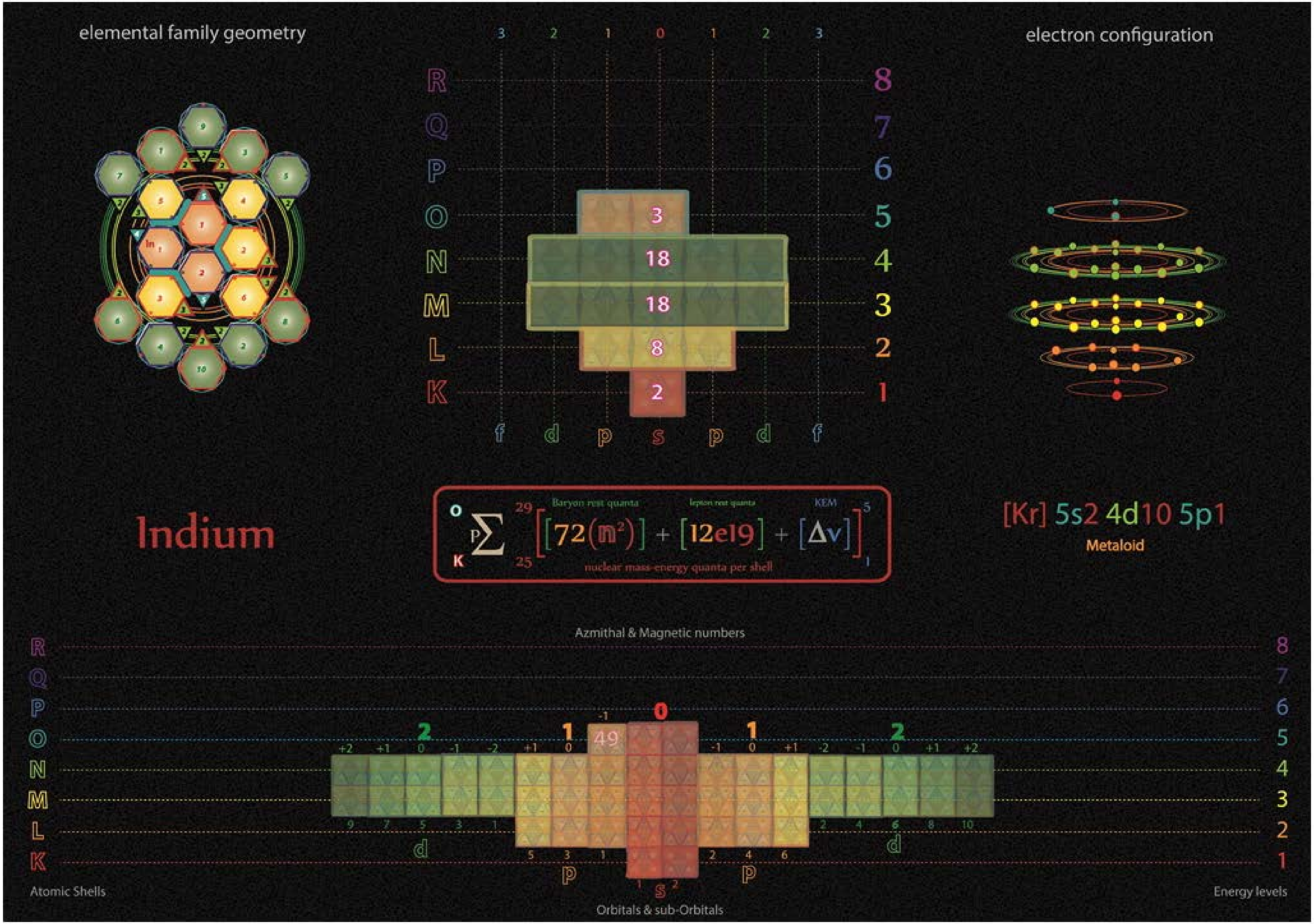
Tetryonics 53.46 - Palladium atomic config



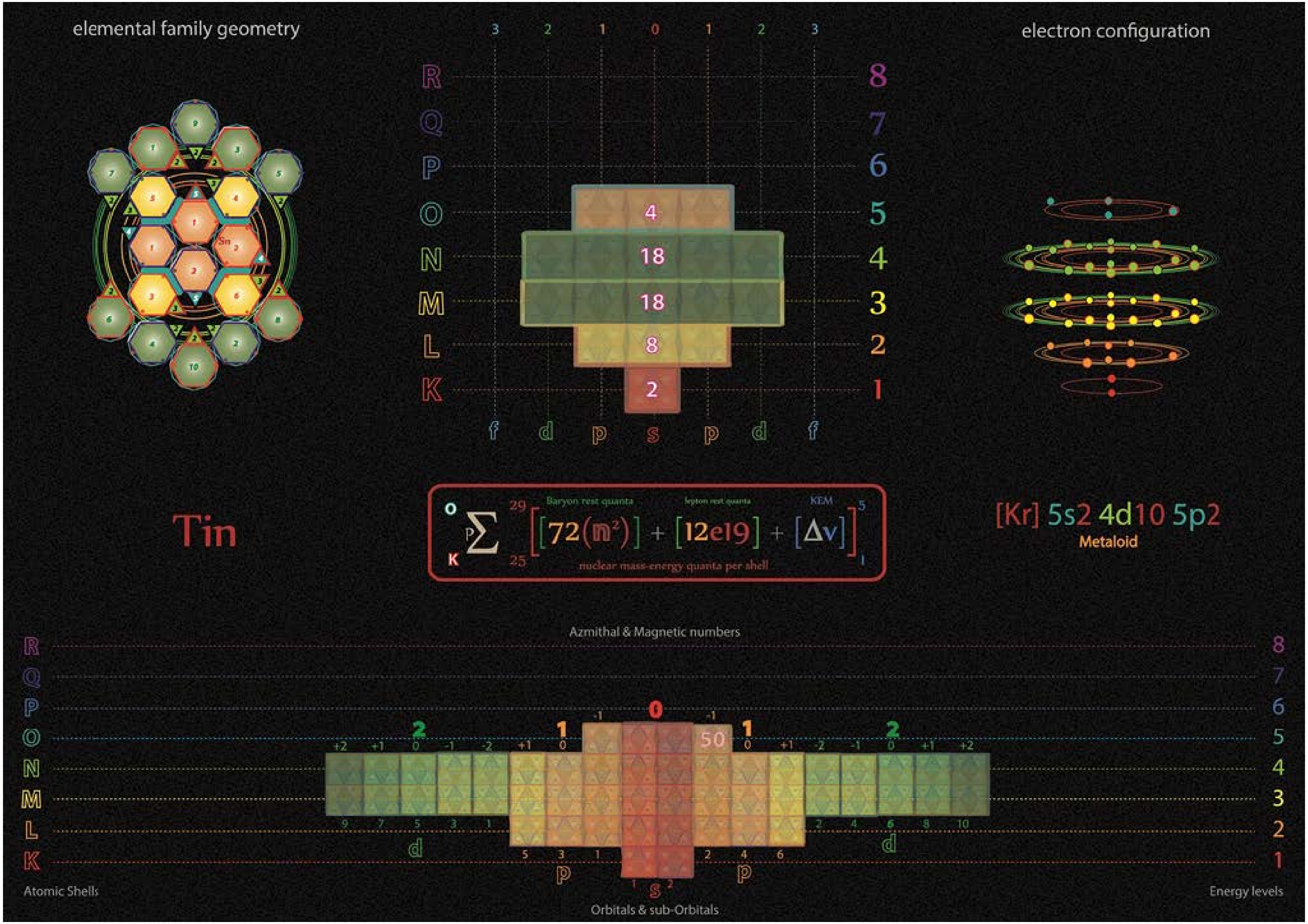
Tetryonics 53.47 - Silver atomic config

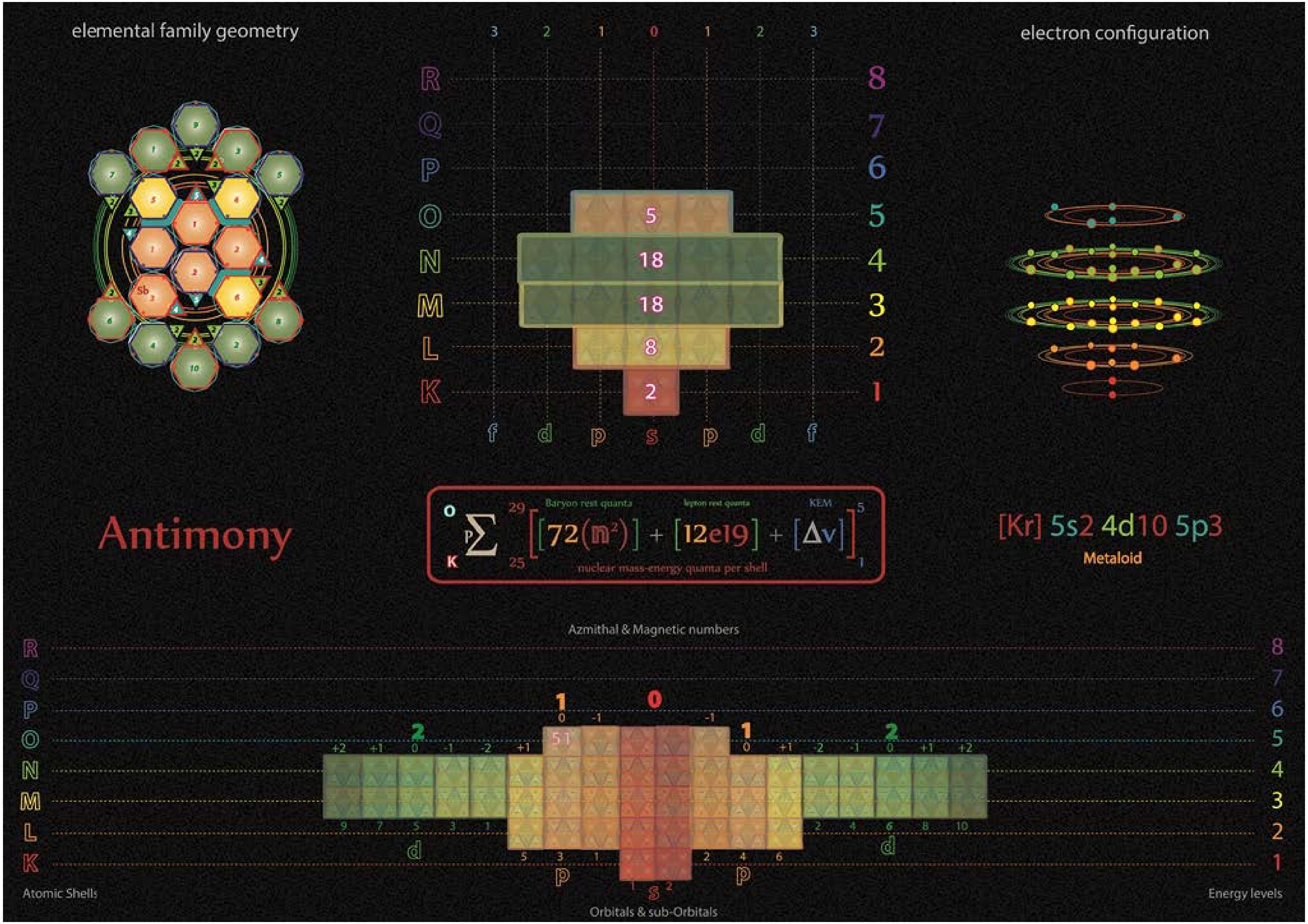


Tetryonics 53.48 - Cadmium atomic config

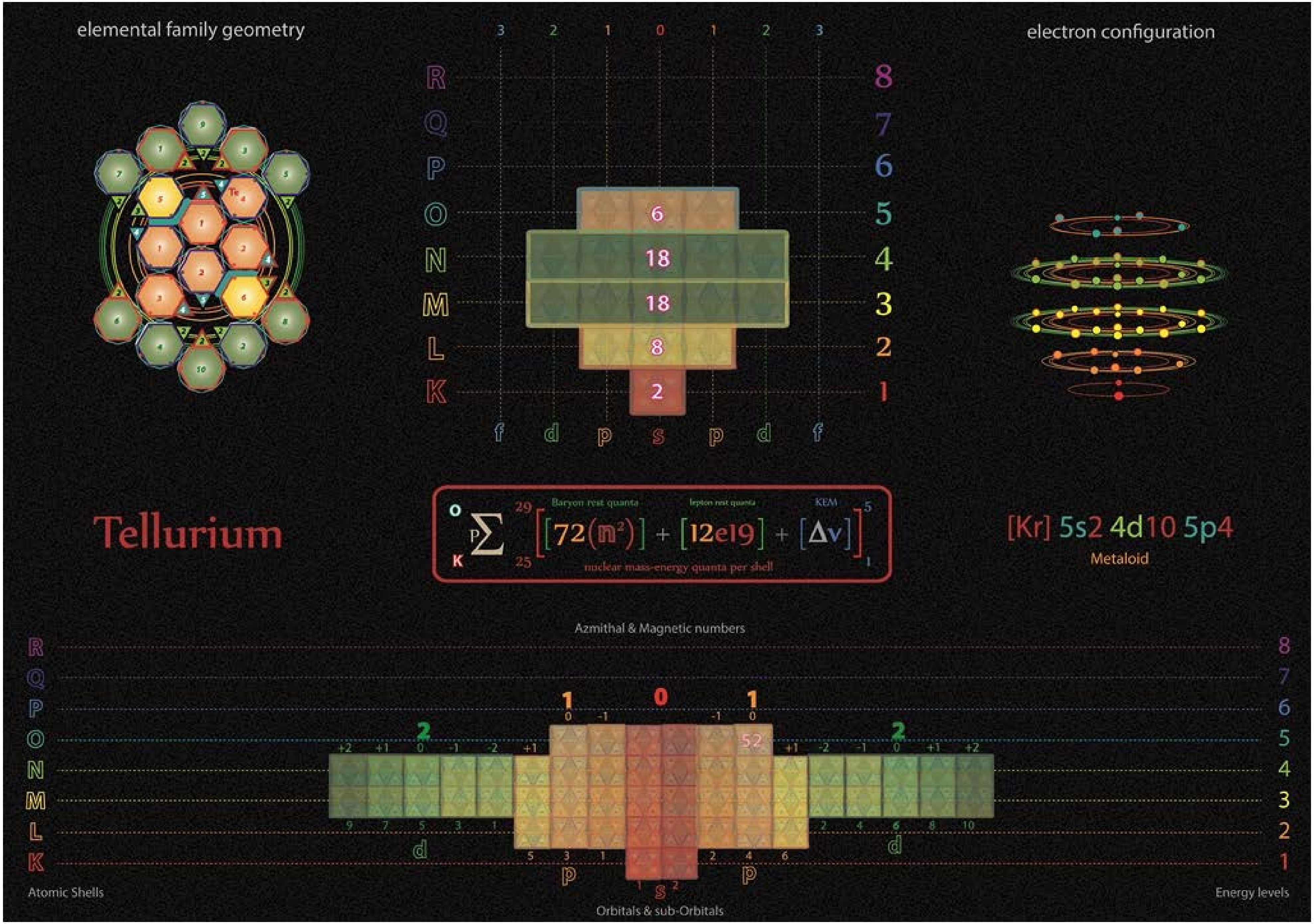


Tetryonics 53.49 - Indium atomic config

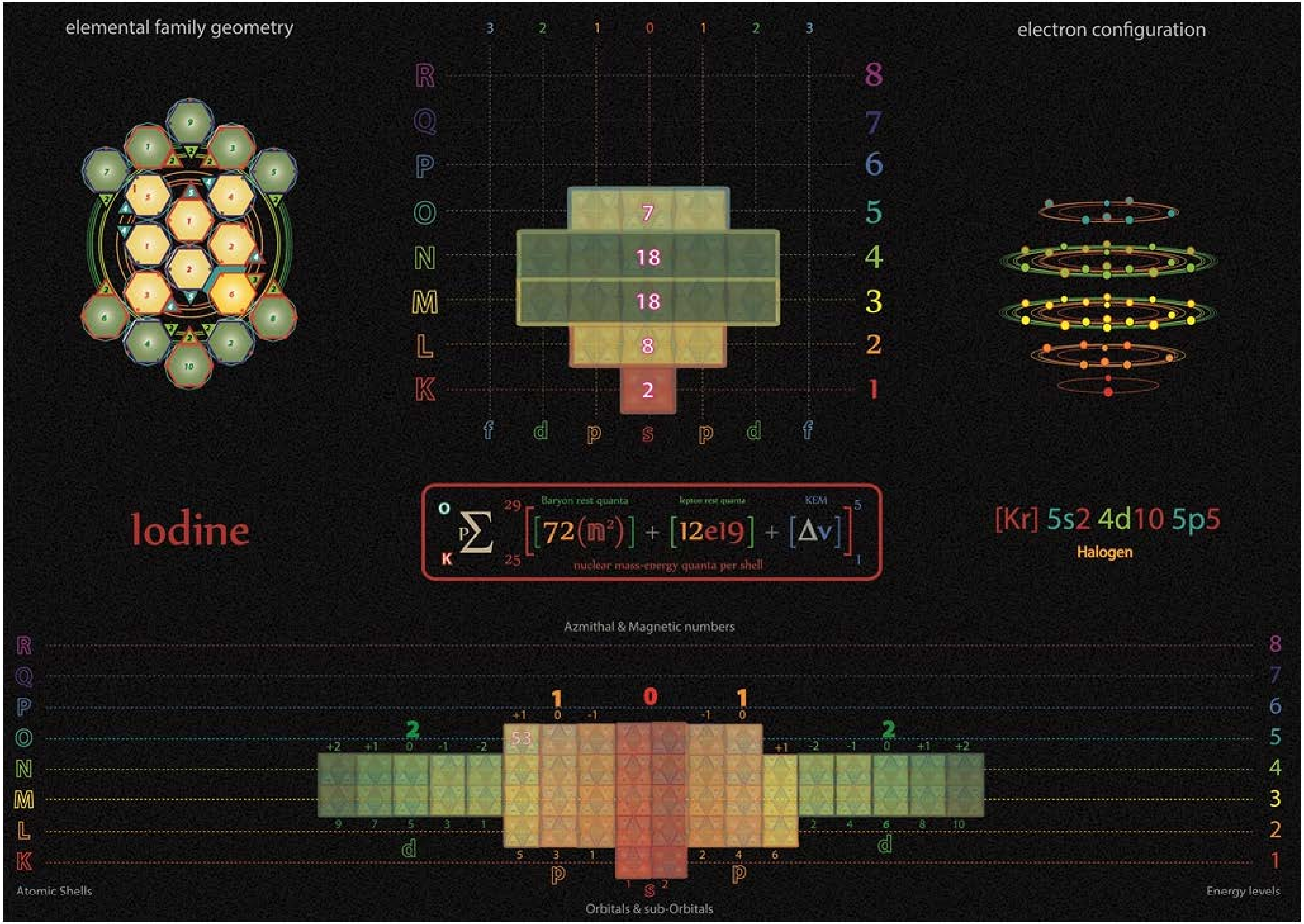

elemental family geometry
electron configuration
Tin
[Kr] 5s2 4d10 5p2
Metaloid
Baryon rest quanta
lepton rest quanta
KEM
nuclear mass-energy quanta per shell
Azmithal & Magnetic numbers
Atomic Shells
Energy levels
Orbitals & sub-Orbitals



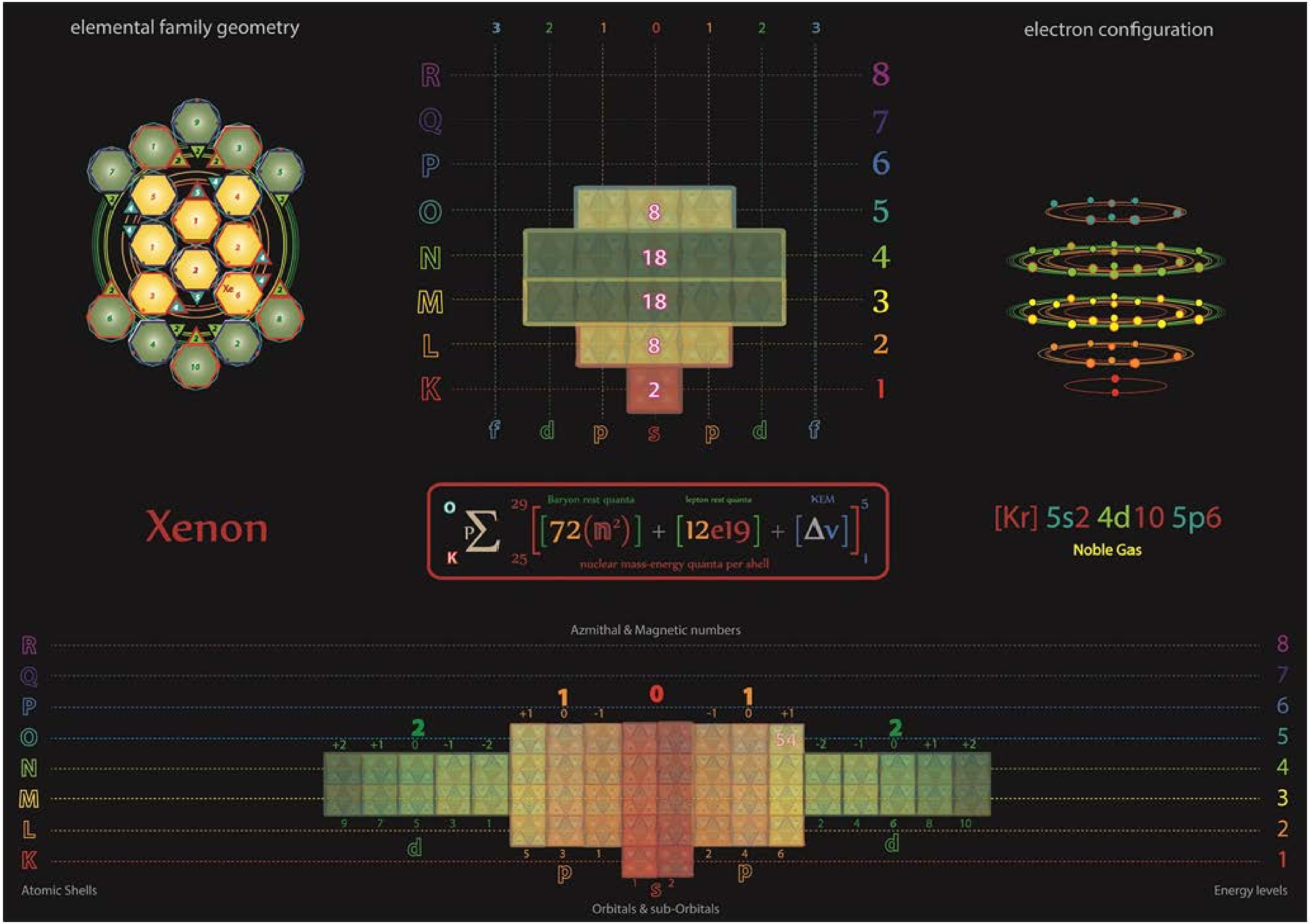
Tetryonics 53.51 - Antimony atomic config



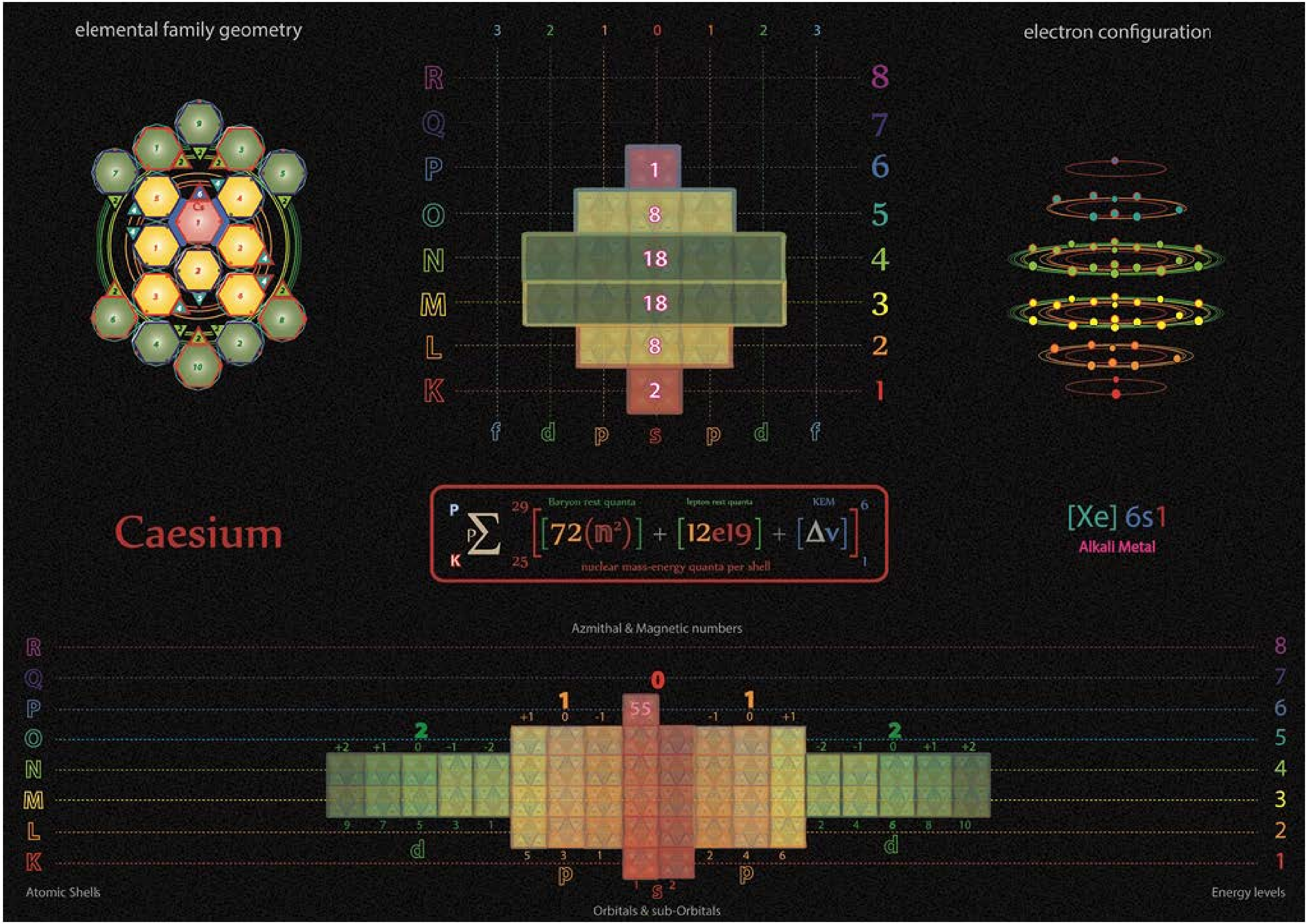
Tetryonics 53.52 - Tellurium atomic config



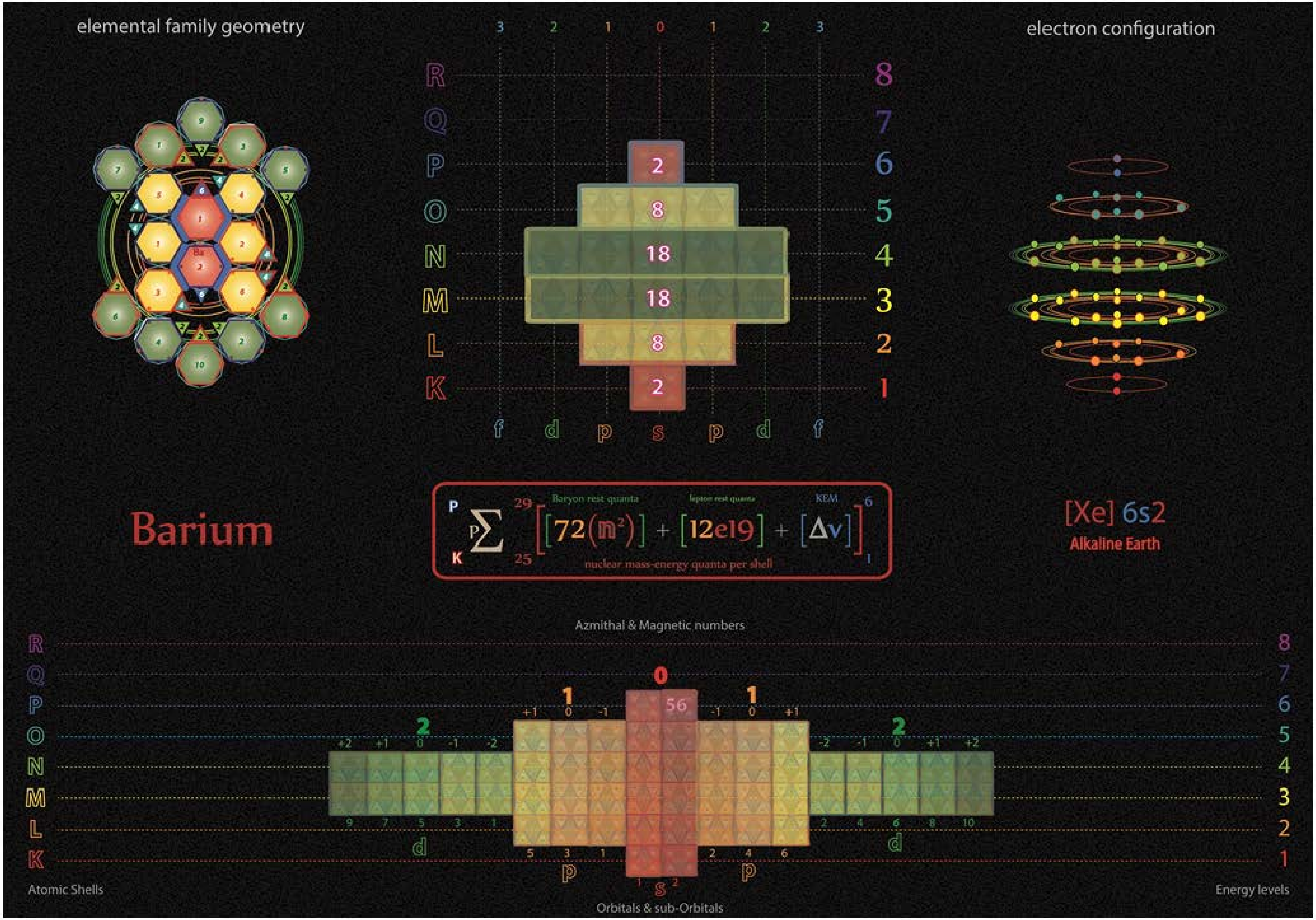
Tetryonics 53.53 - Iodine atomic config



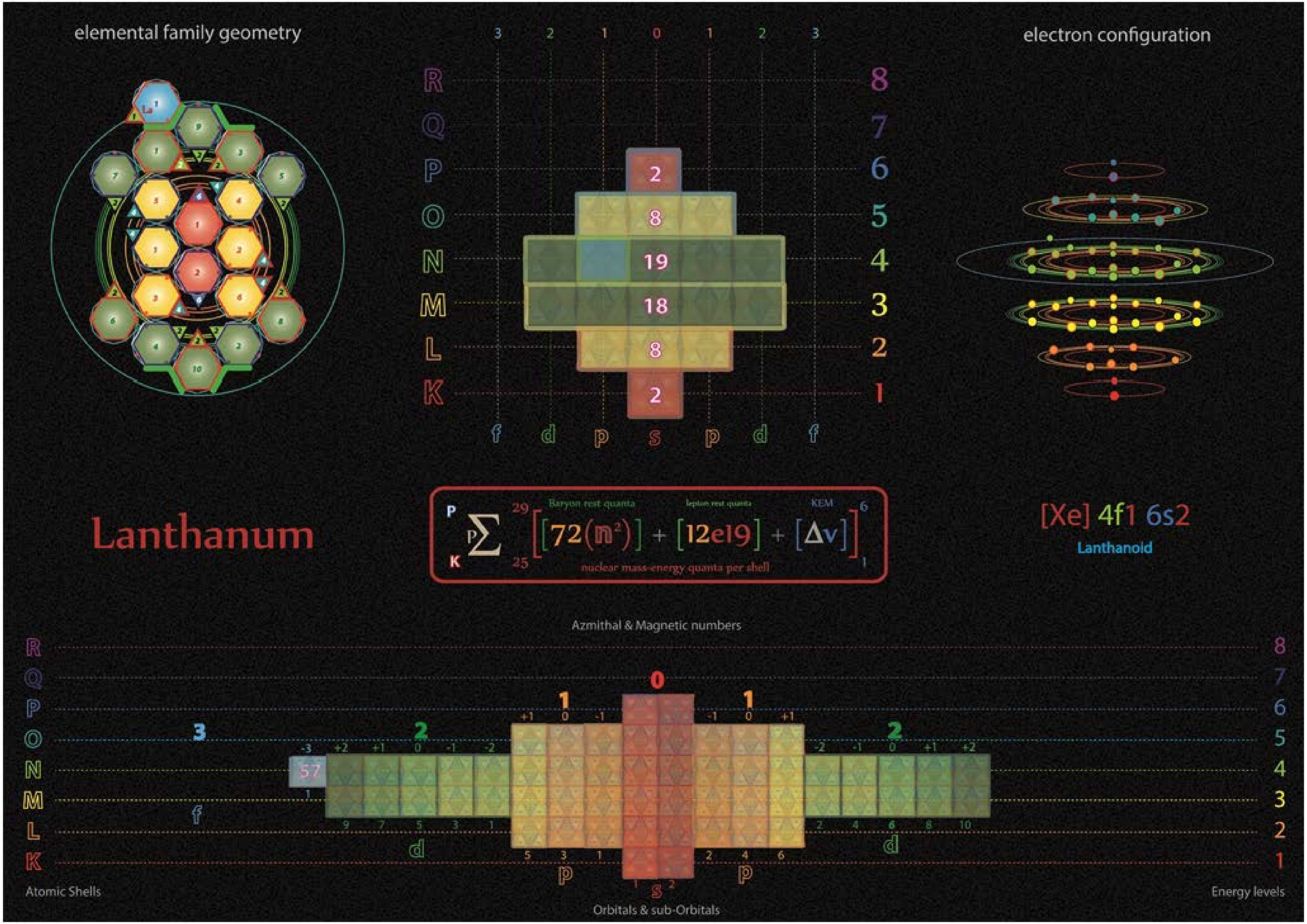
Tetryonics 53.54 - Xenon atomic config



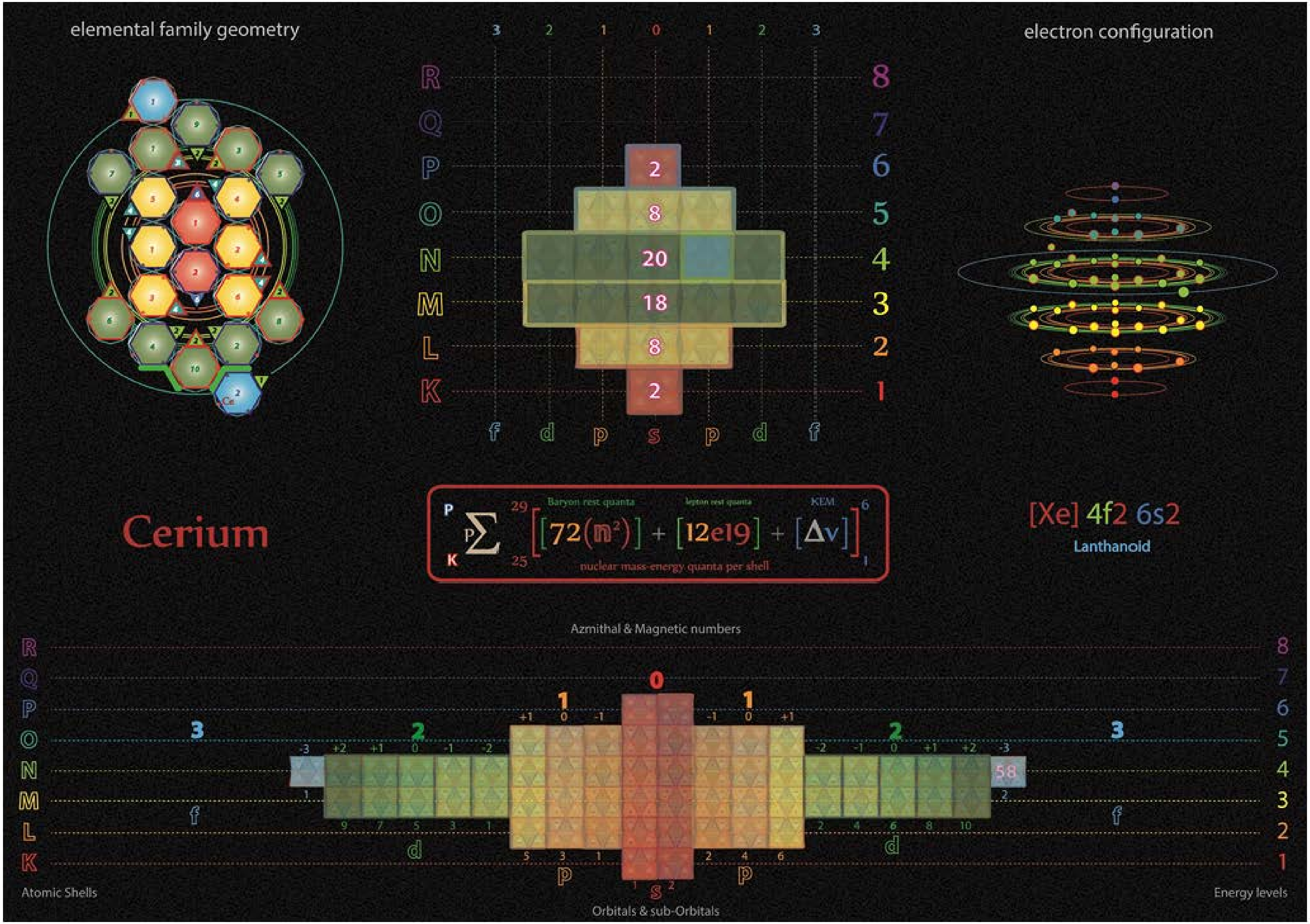
Tetryonics 53.55 - Caesium atomic config



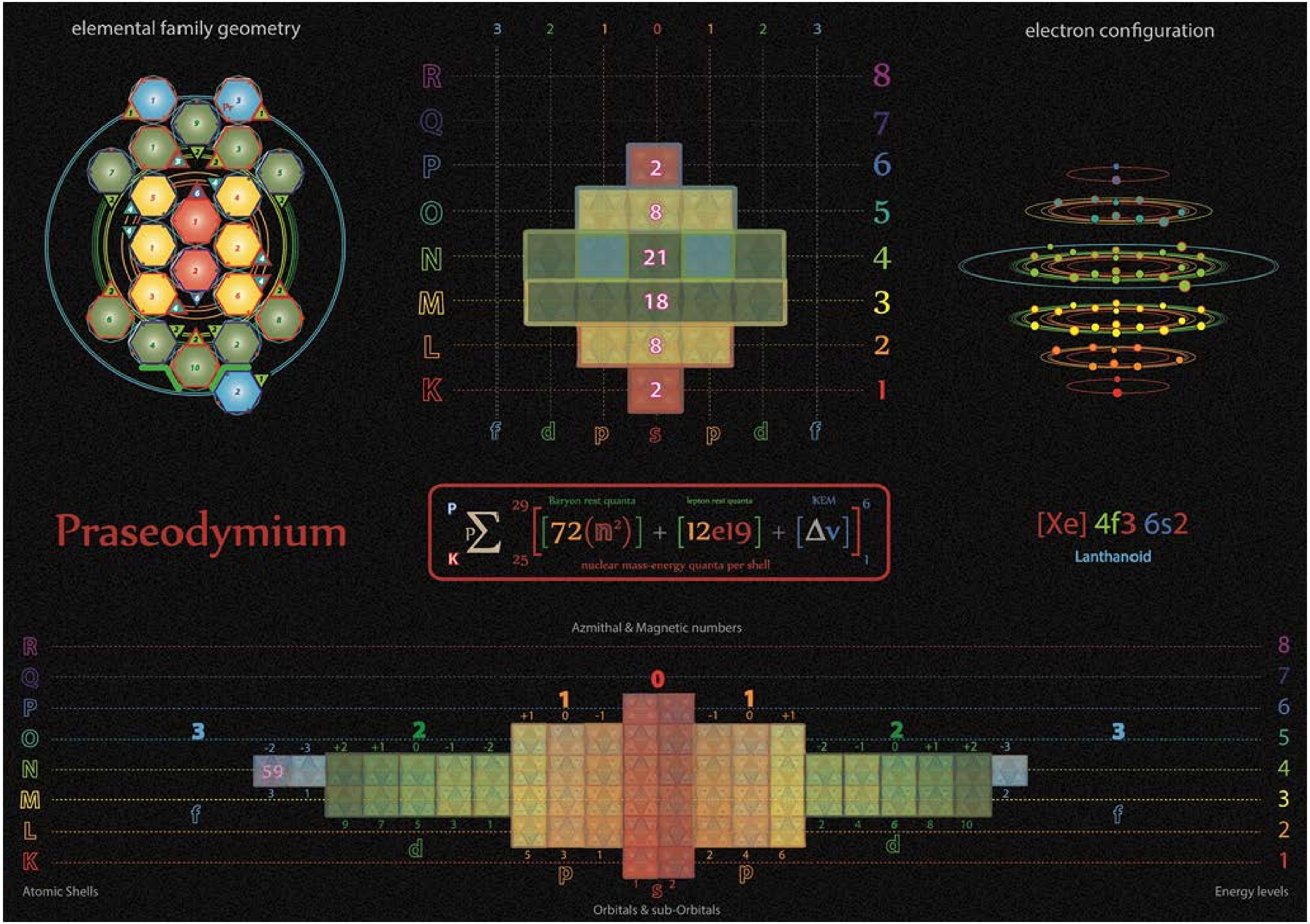
Tetryonics 53.56 - Barium atomic config



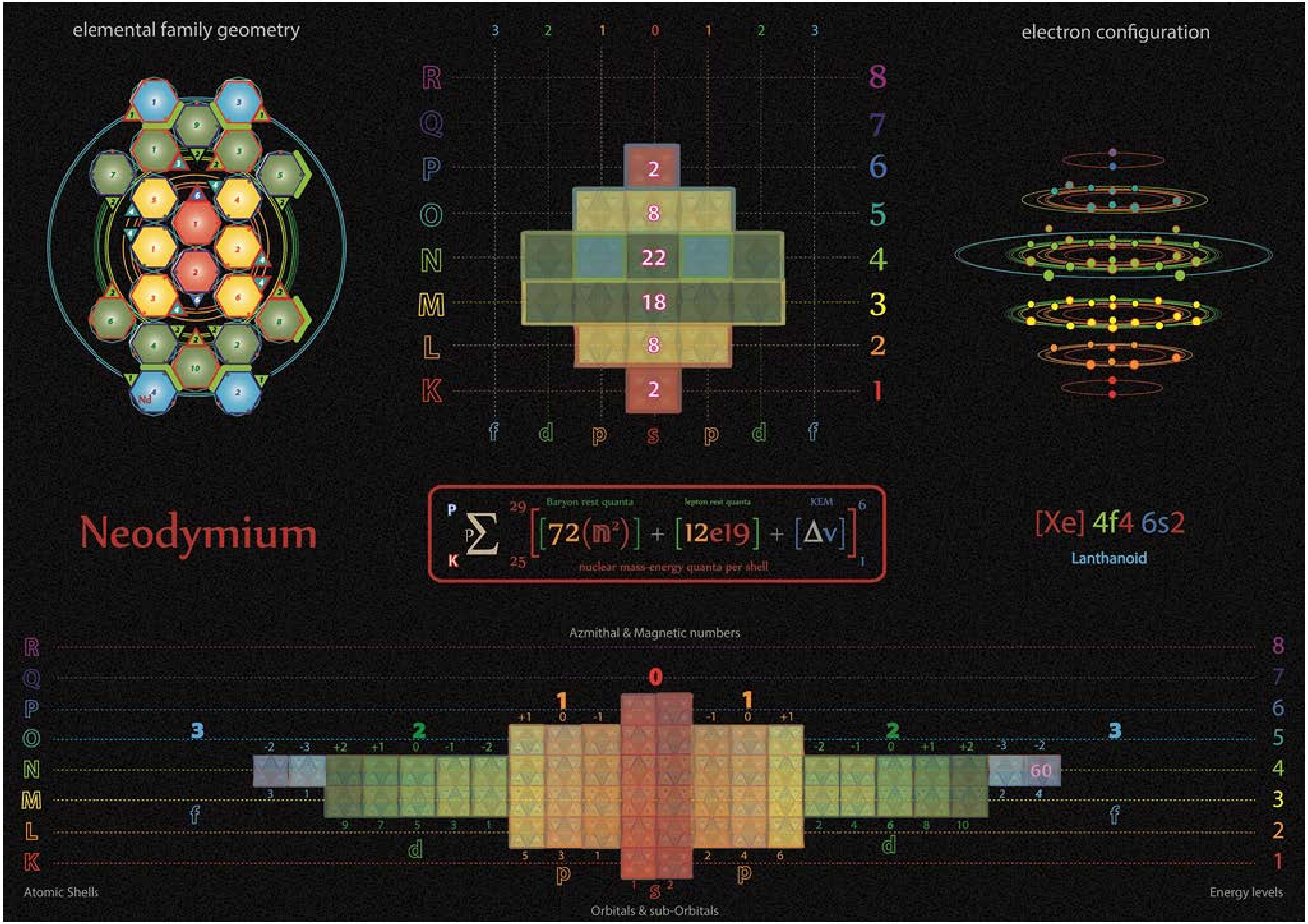
Tetryonics 53.57 - Lanthanum atomic config



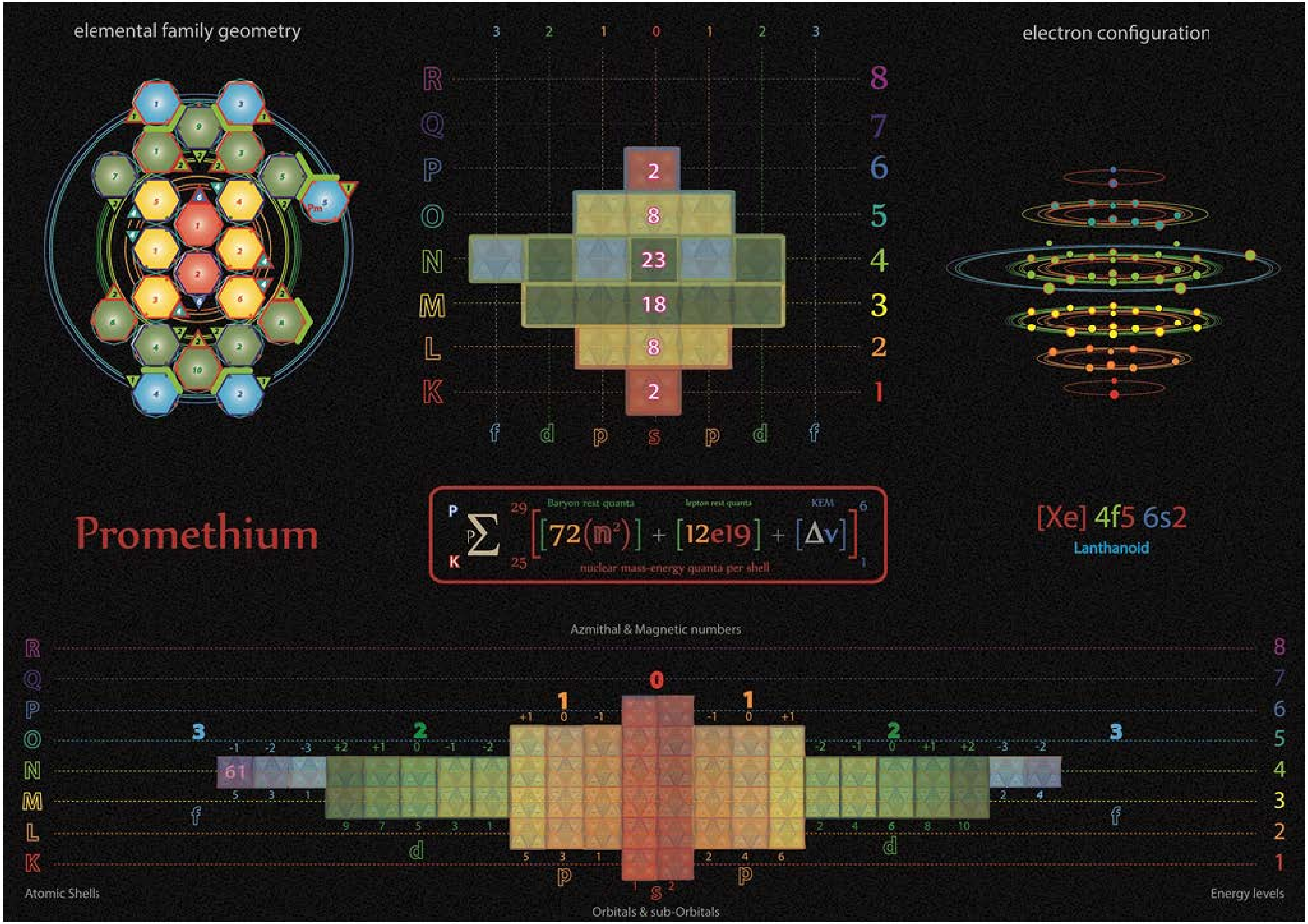
Tetryonics 53.58 - Cerium atomic config



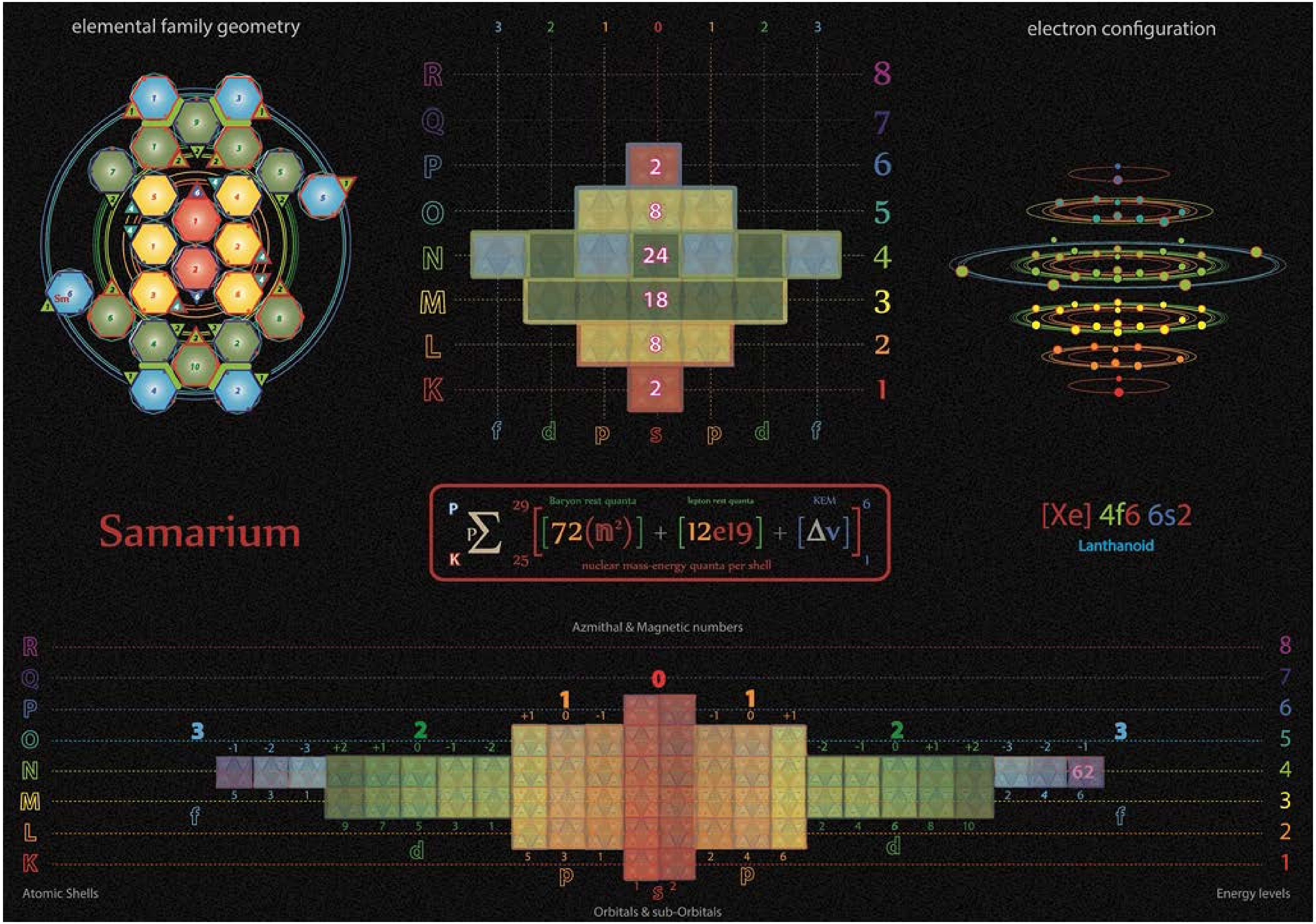
Tetryonics 53.59 - Praseodymium atomic config



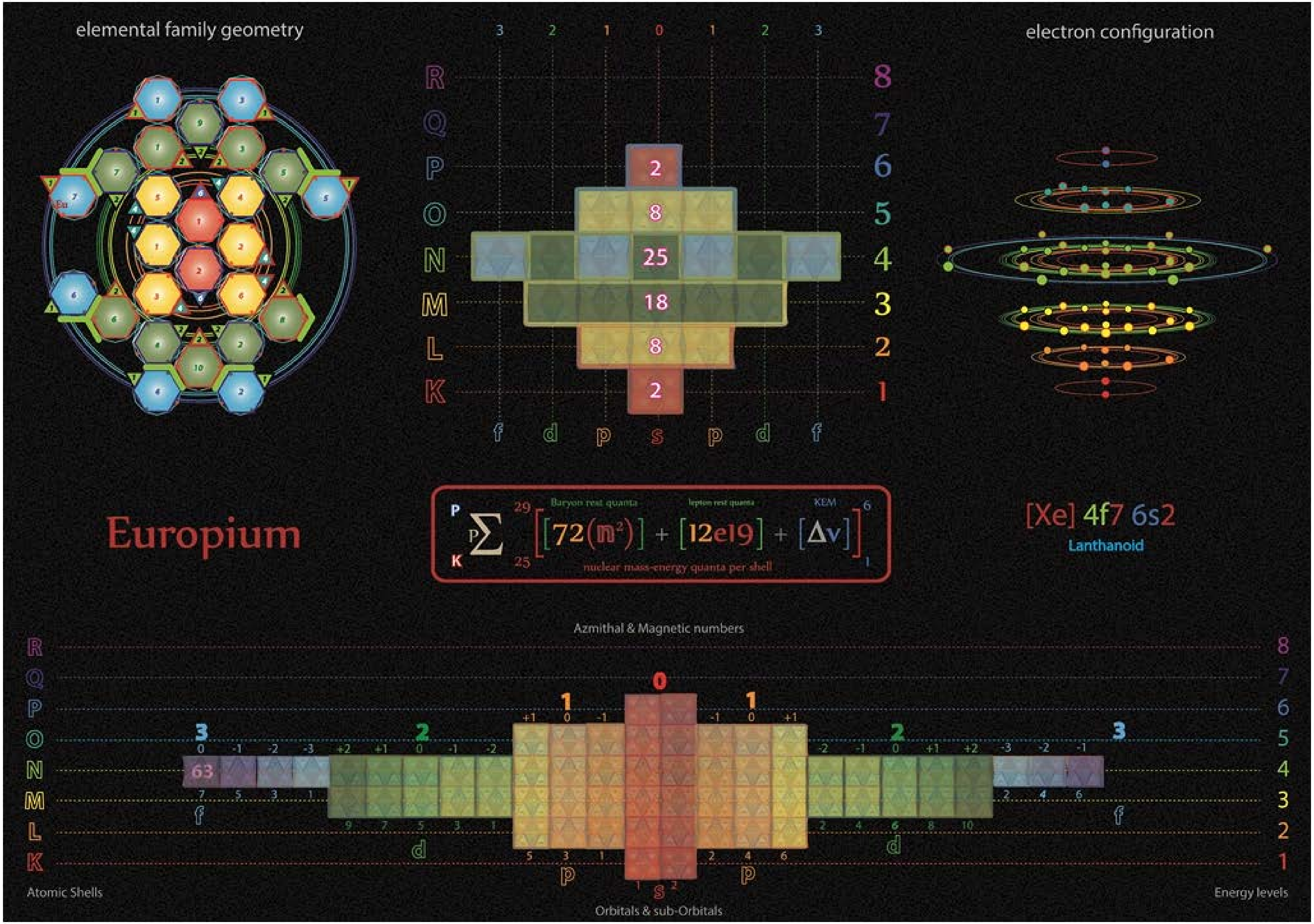
Tetryonics 53.60 - Neodymium atomic config



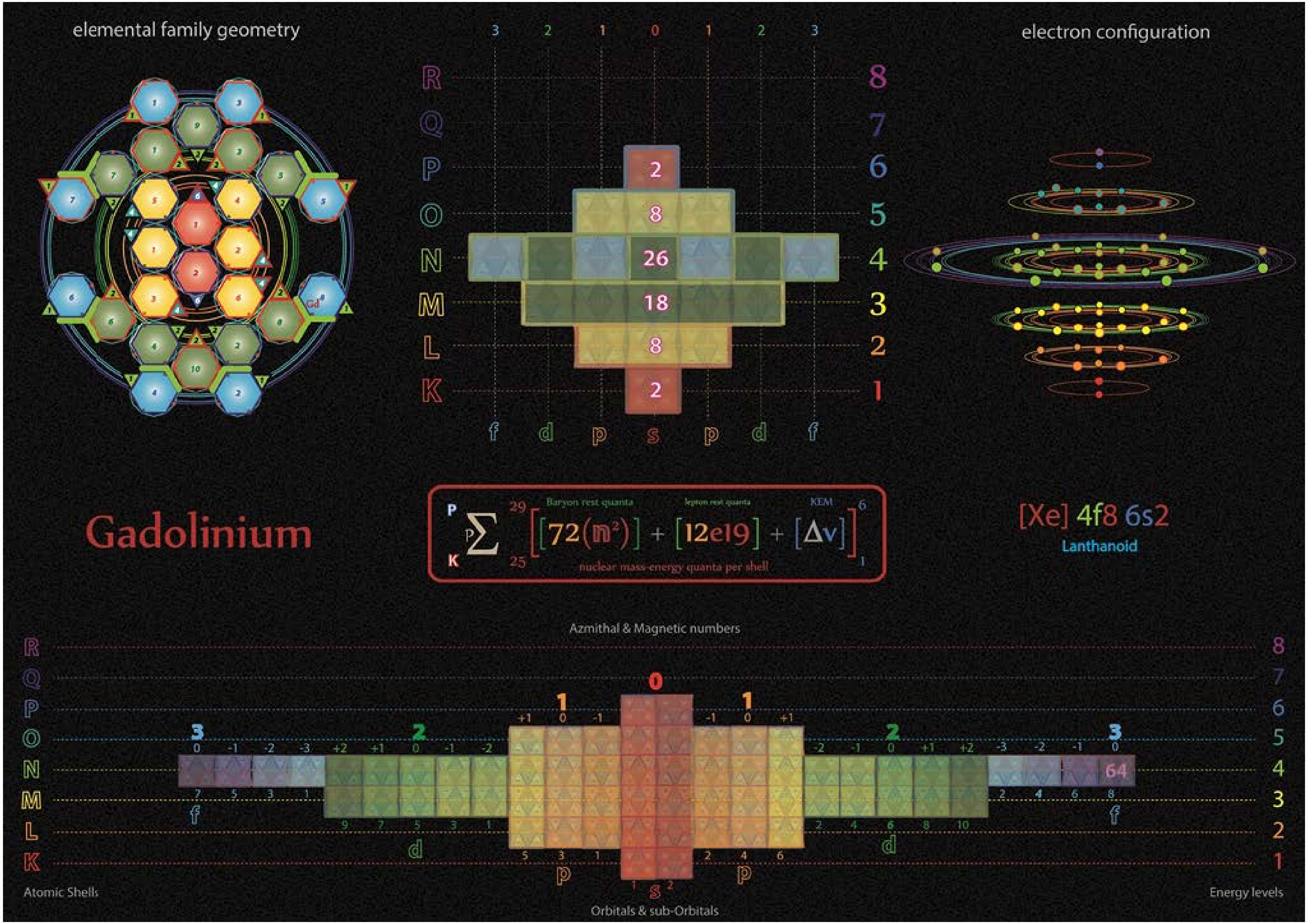
elemental family geometry
electron configuration
Pm
R Q P O N M L K
8 7 6 5 4 3 2 1
3 2 1 0 1 2 3
2
8
23
18
8
2
f d p s p d f
Promethium
Baryon rest quanta
lepton rest quanta
KEM
[72(n²)] + [12e19] + [Δv]
nuclear mass-energy quanta per shell
[Xe] 4f5 6s2
Lanthanoid
Azmithal & Magnetic numbers
61
Atomic Shells
Energy levels
Orbitals & sub-Orbitals



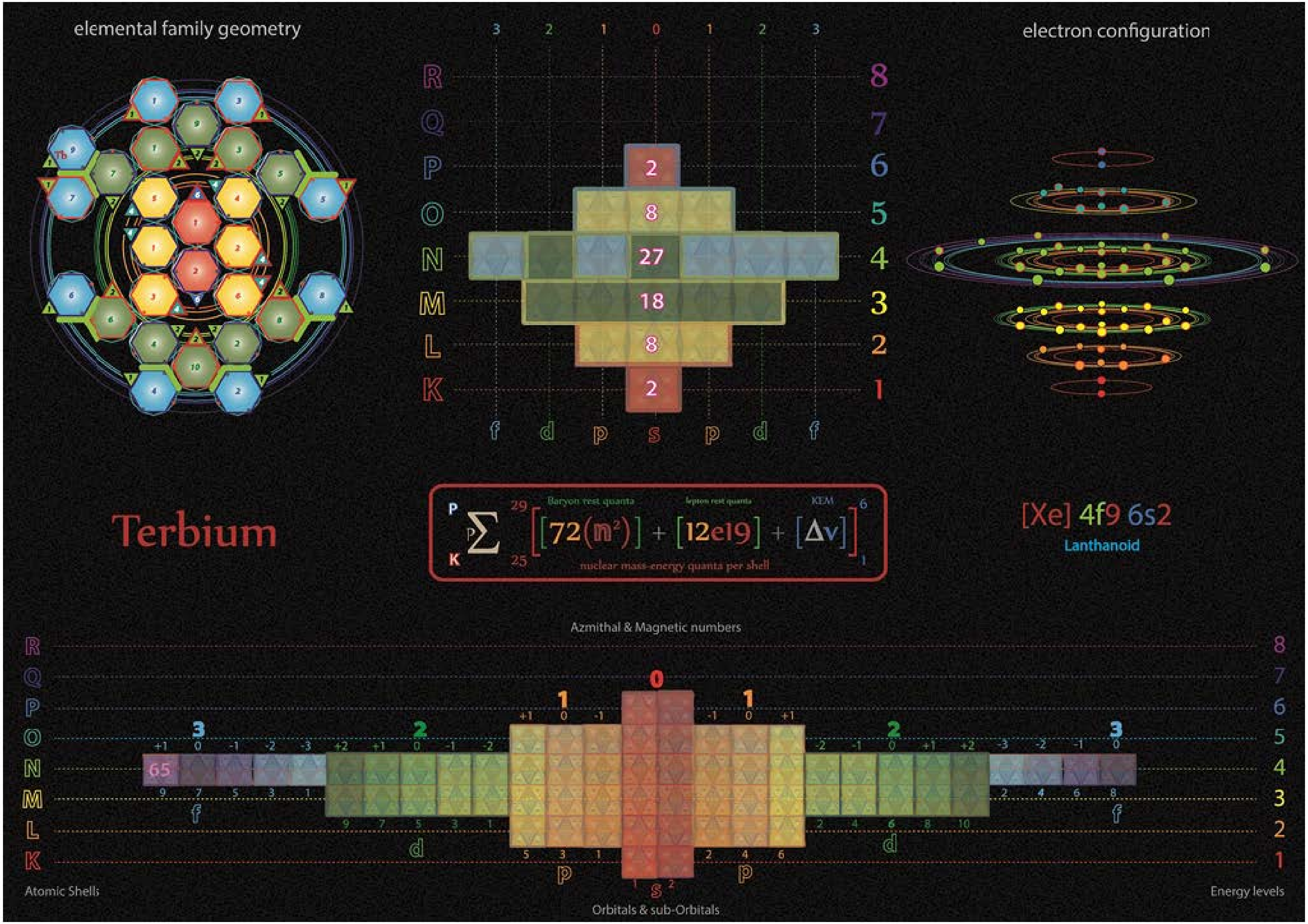
Tetryonics 53.62 - Samarium atomic config



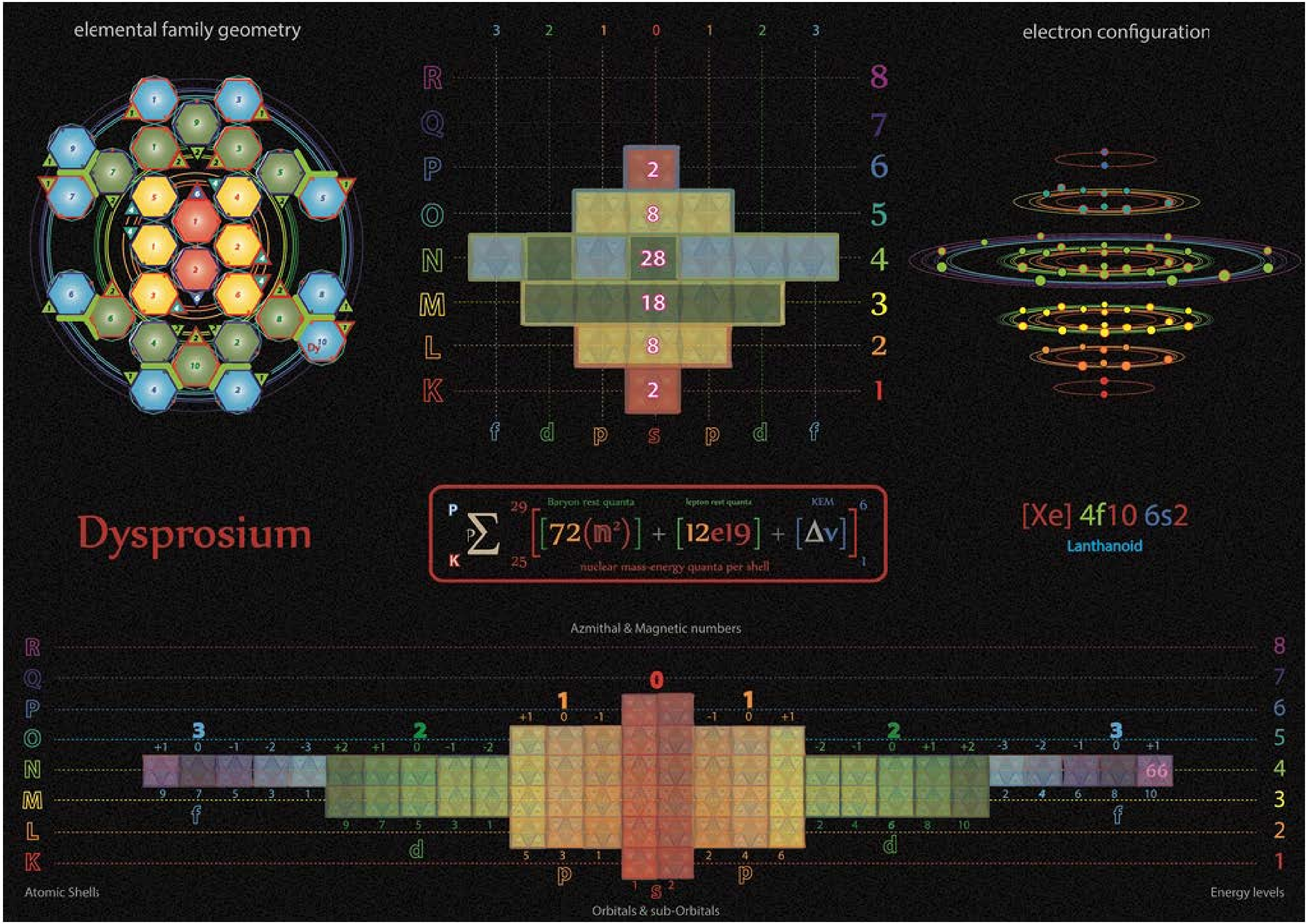
Tetryonics 53.63 - Europium atomic config



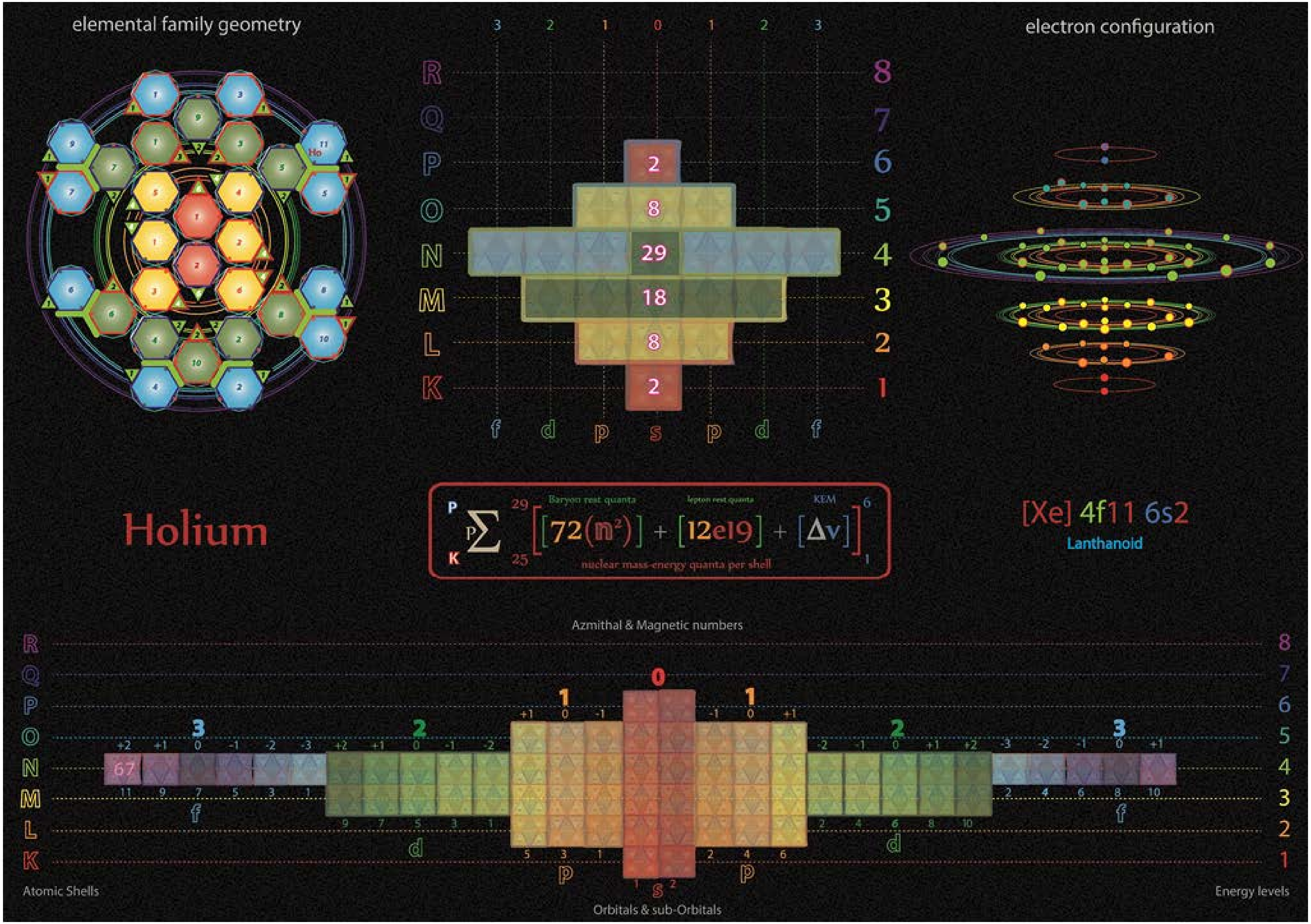
Tetryonics 53.64 - Gadolinium atomic config

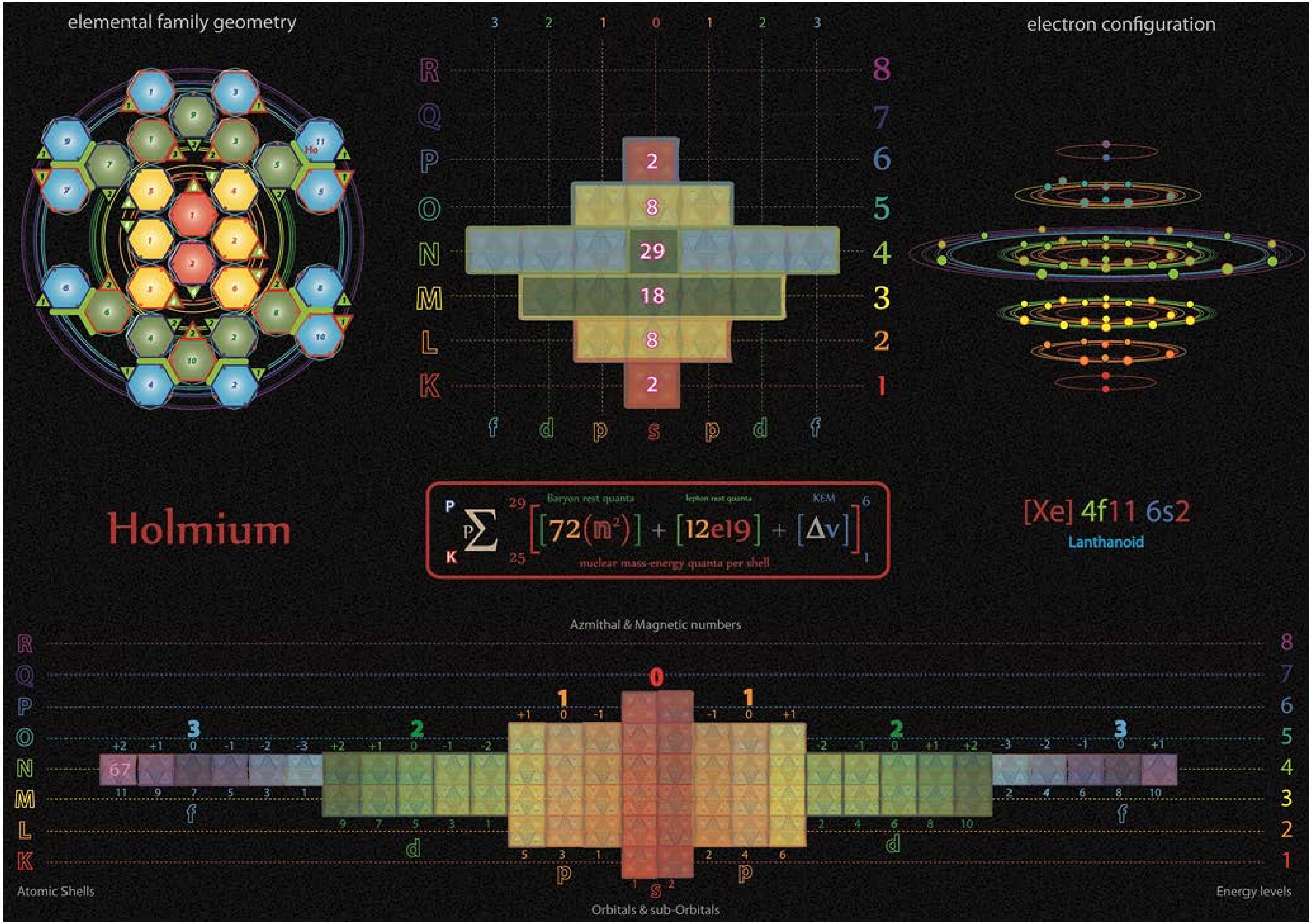


Tetryonics 53.65 - Terbium atomic config

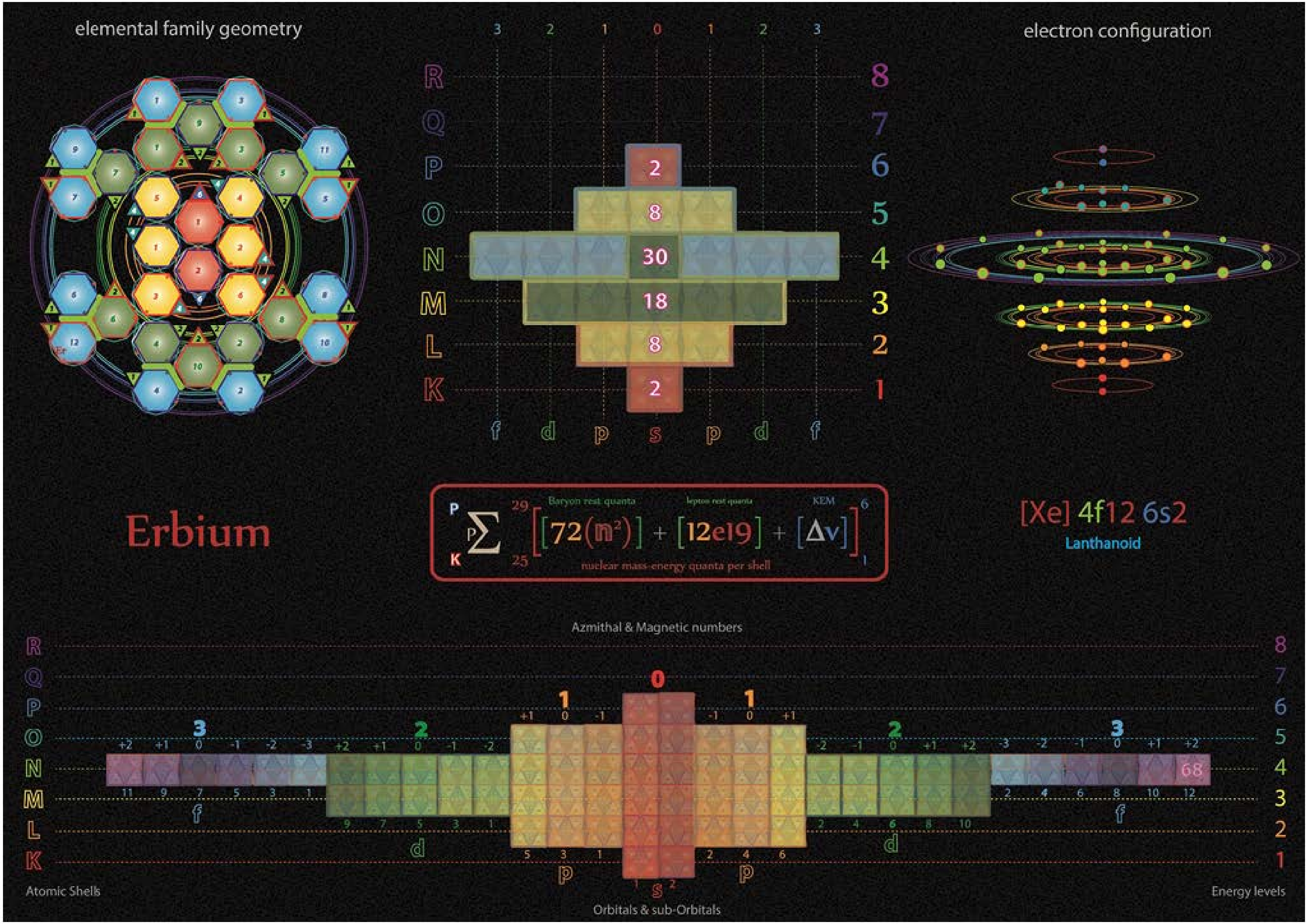


Tetryonics 53.66 - Dysprosium atomic config

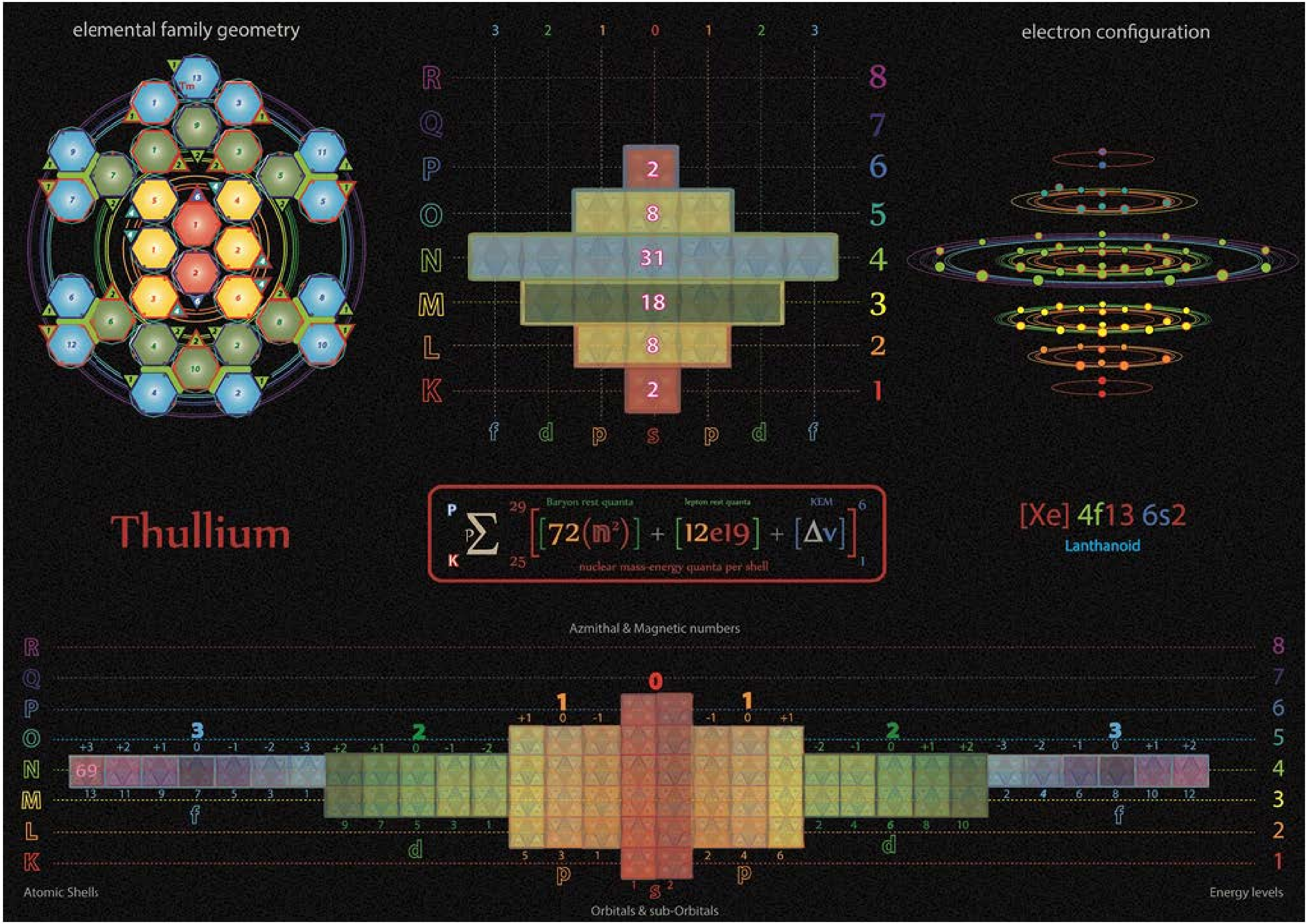

elemental family geometry
electron configuration
Holium
[Xe] 4f11 6s2
Lanthanoid
Baryon rest quanta
lepton rest quanta
KEM
nuclear mass-energy quanta per shell
Azmithal & Magnetic numbers
Atomic Shells
Energy levels
Orbitals & sub-Orbitals
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f



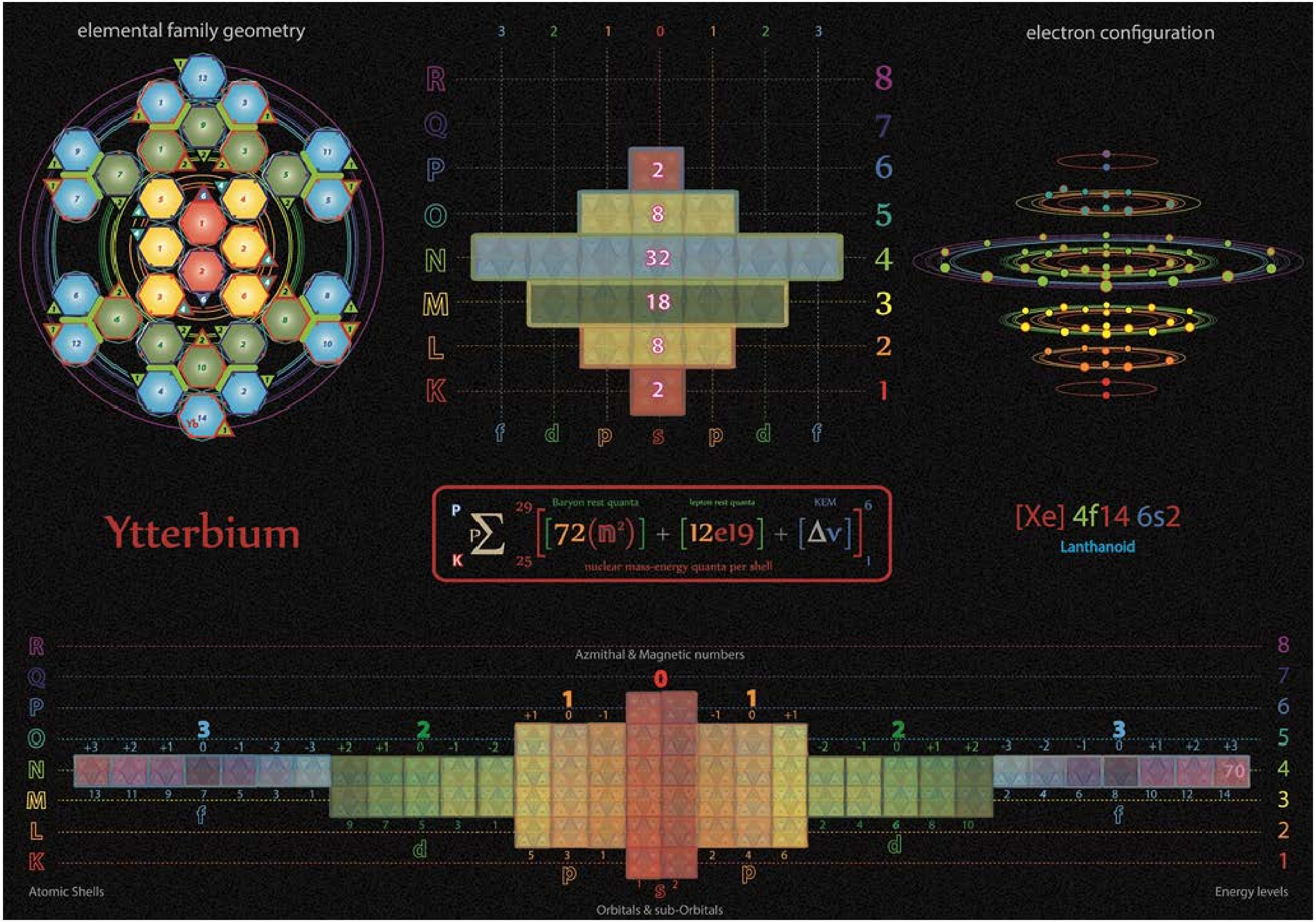
Tetryonics 53.67 - Holmium atomic config



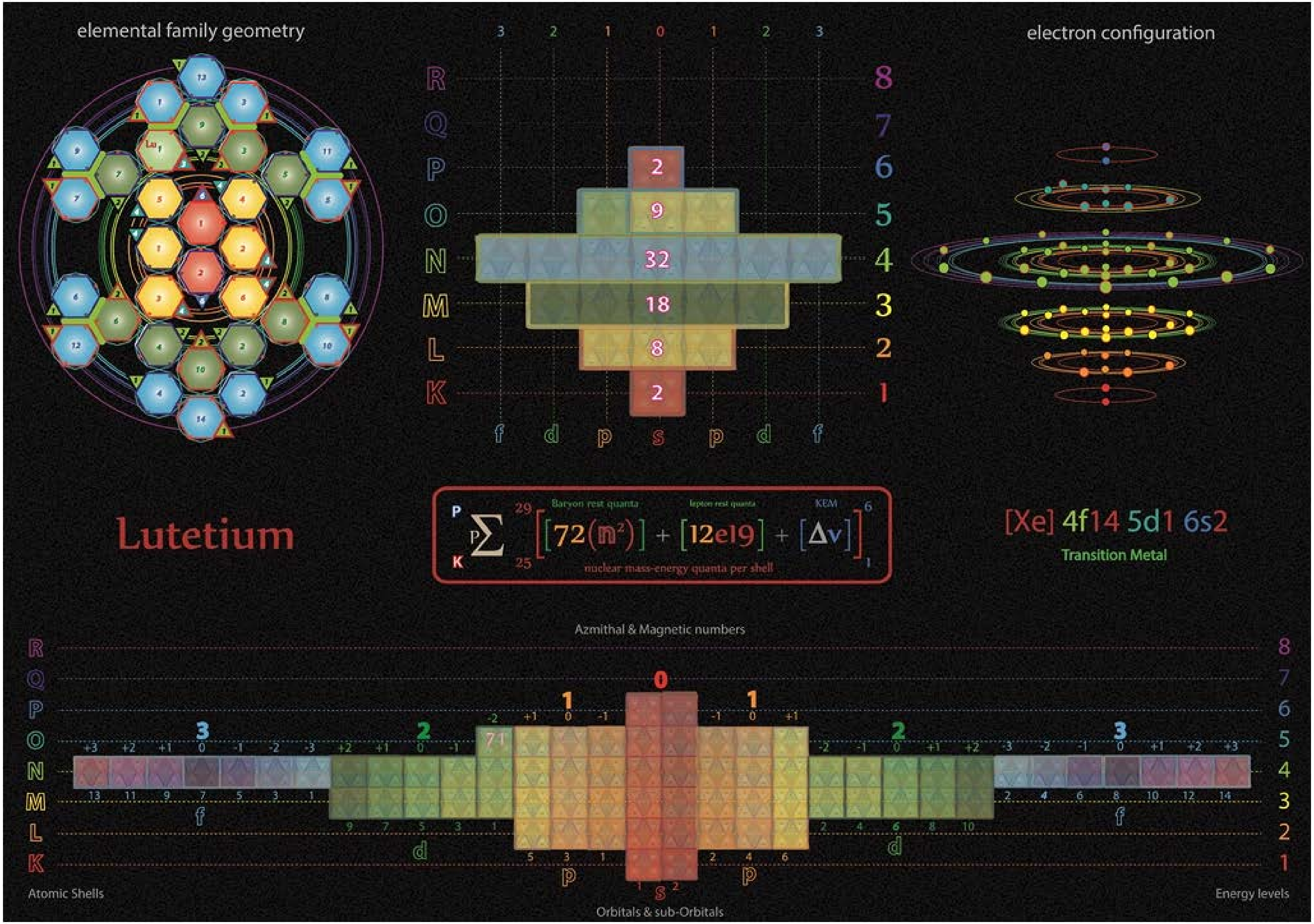
Tetryonics 53.68 - Erbium atomic config



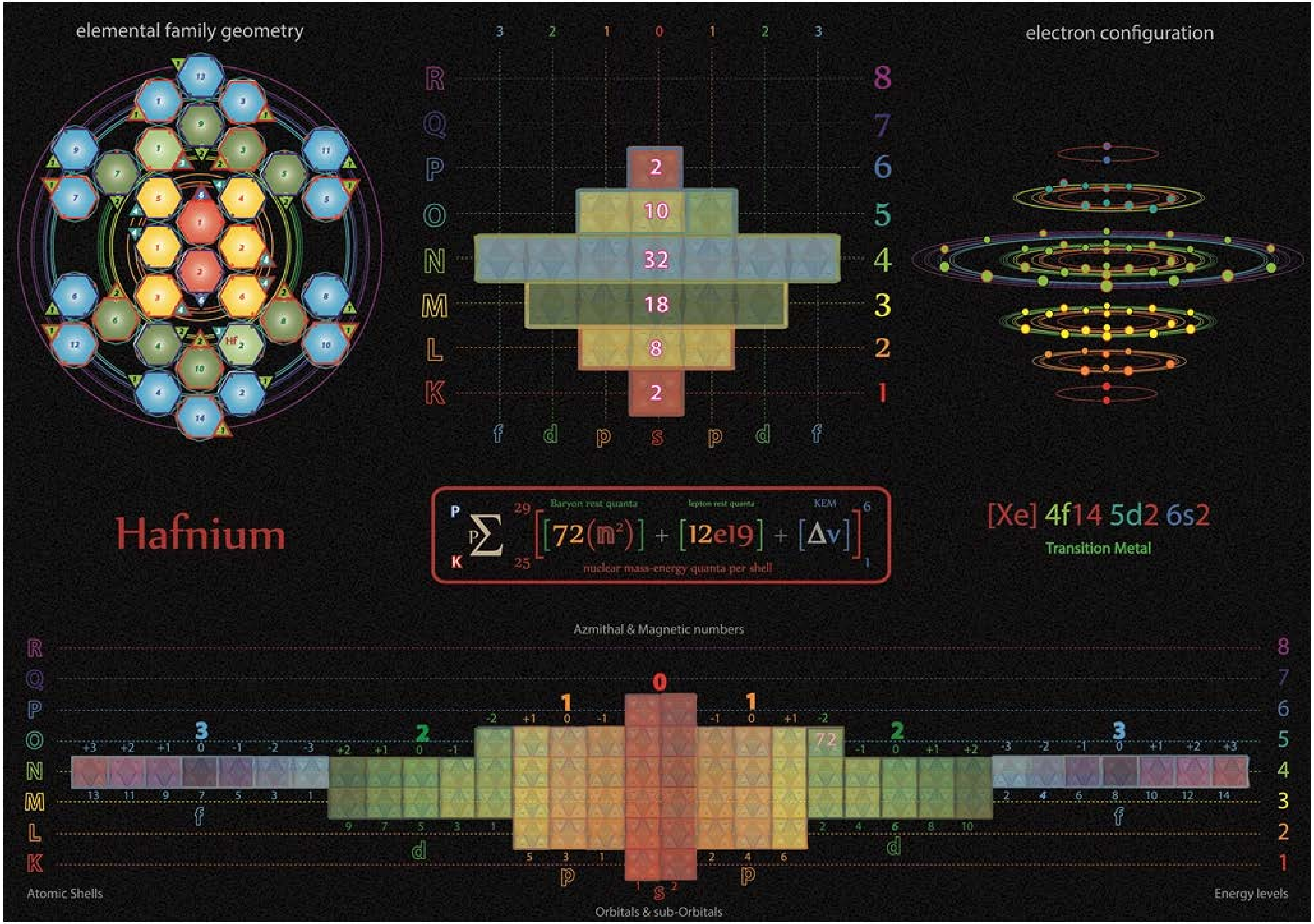
Tetryonics 53.69 - Thulium atomic config



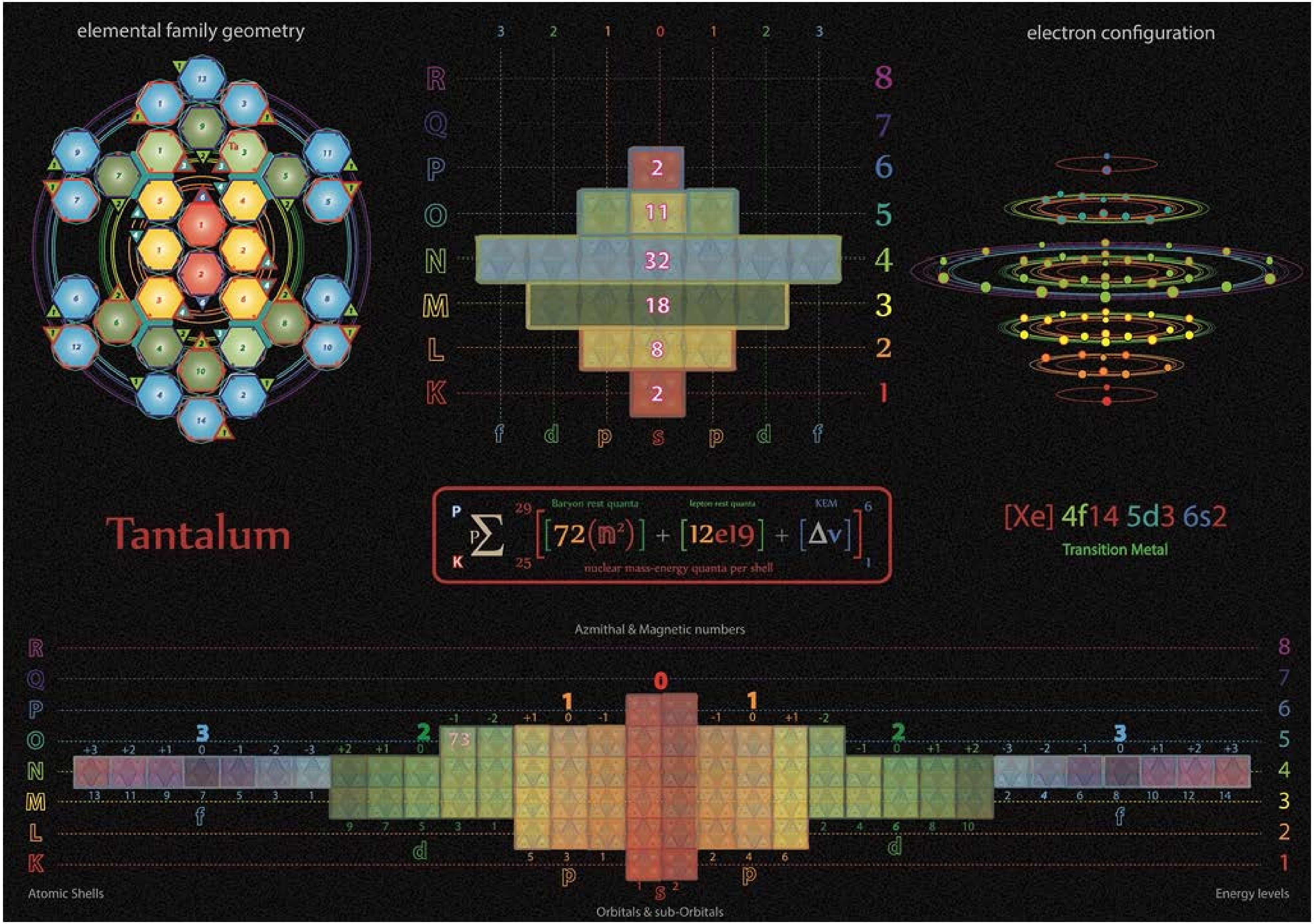
Tetryonics 53.70 - Ytterbium atomic config



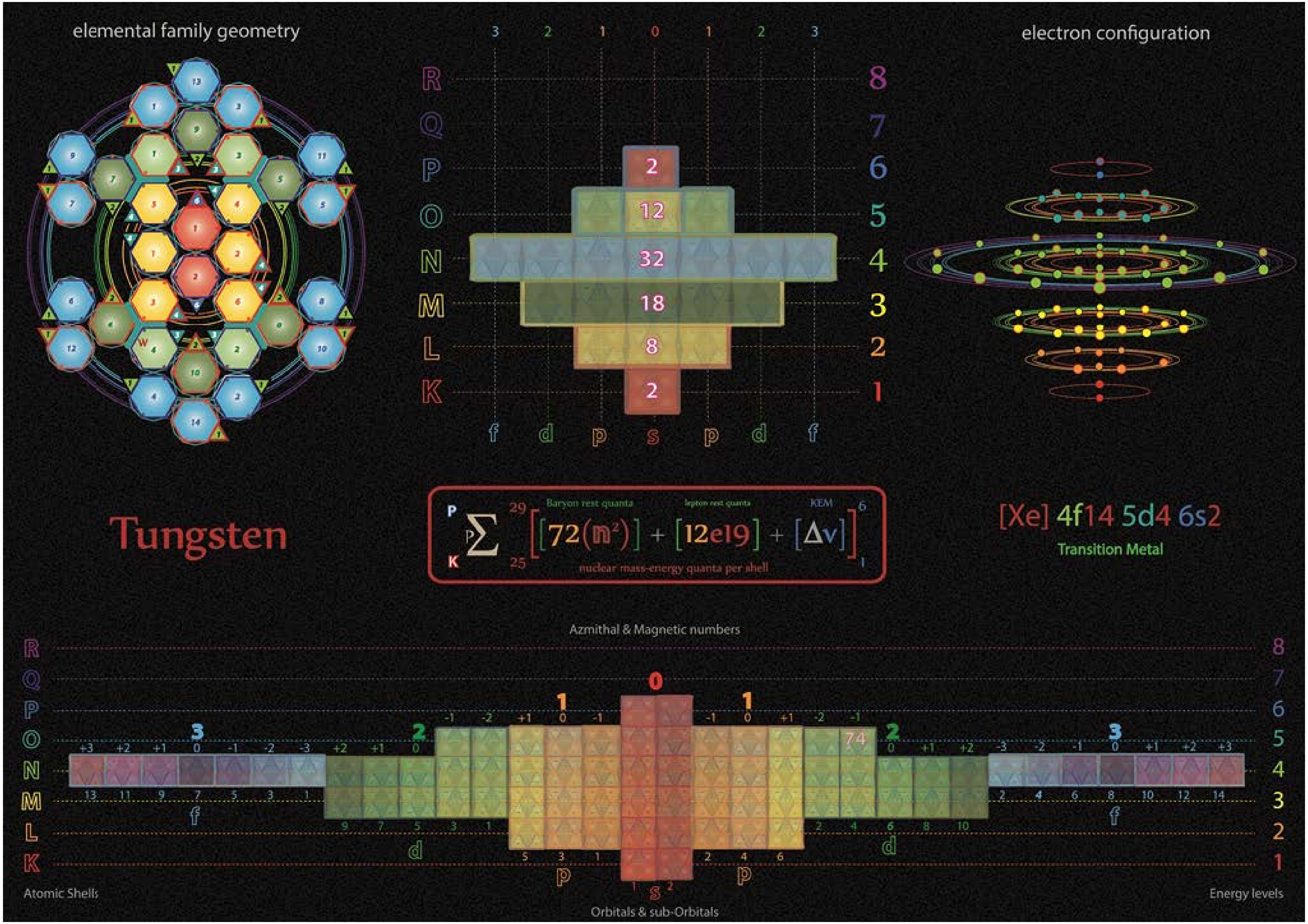
Tetryonics 53.71 - Lutetium atomic config



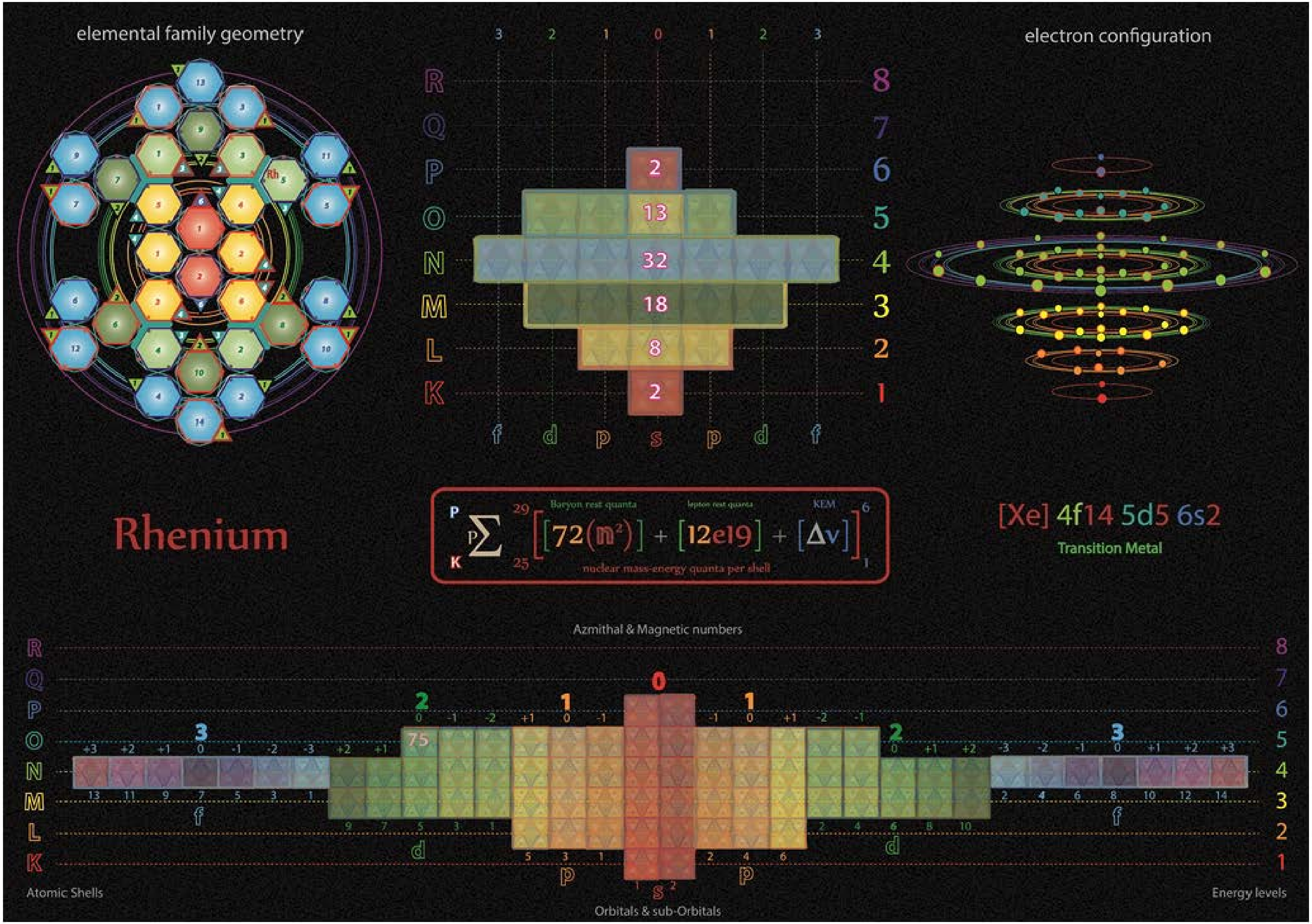
Tetryonics 53.72 - Hafnium atomic config



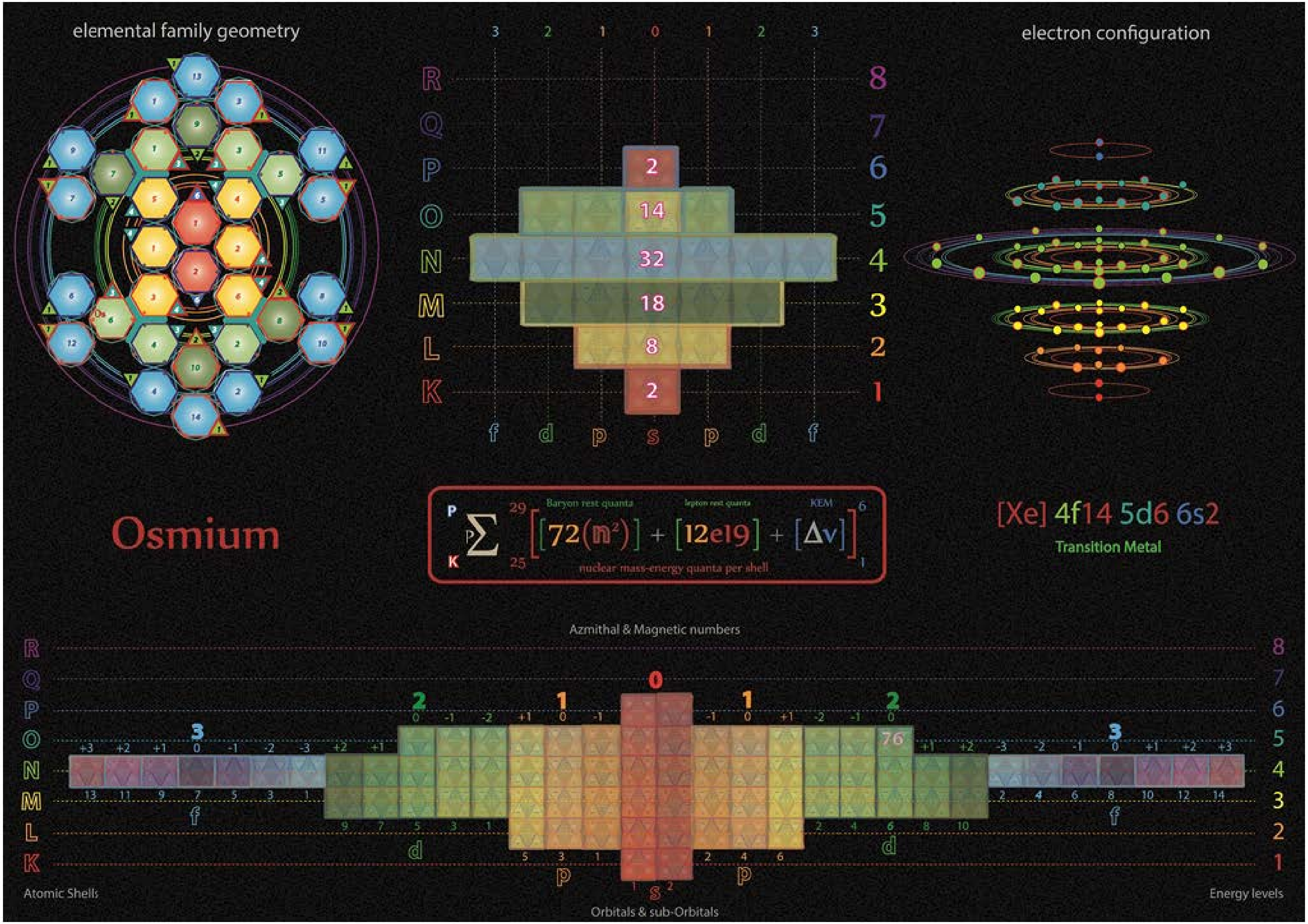
Tetryonics 53.73 - Tantalum atomic config



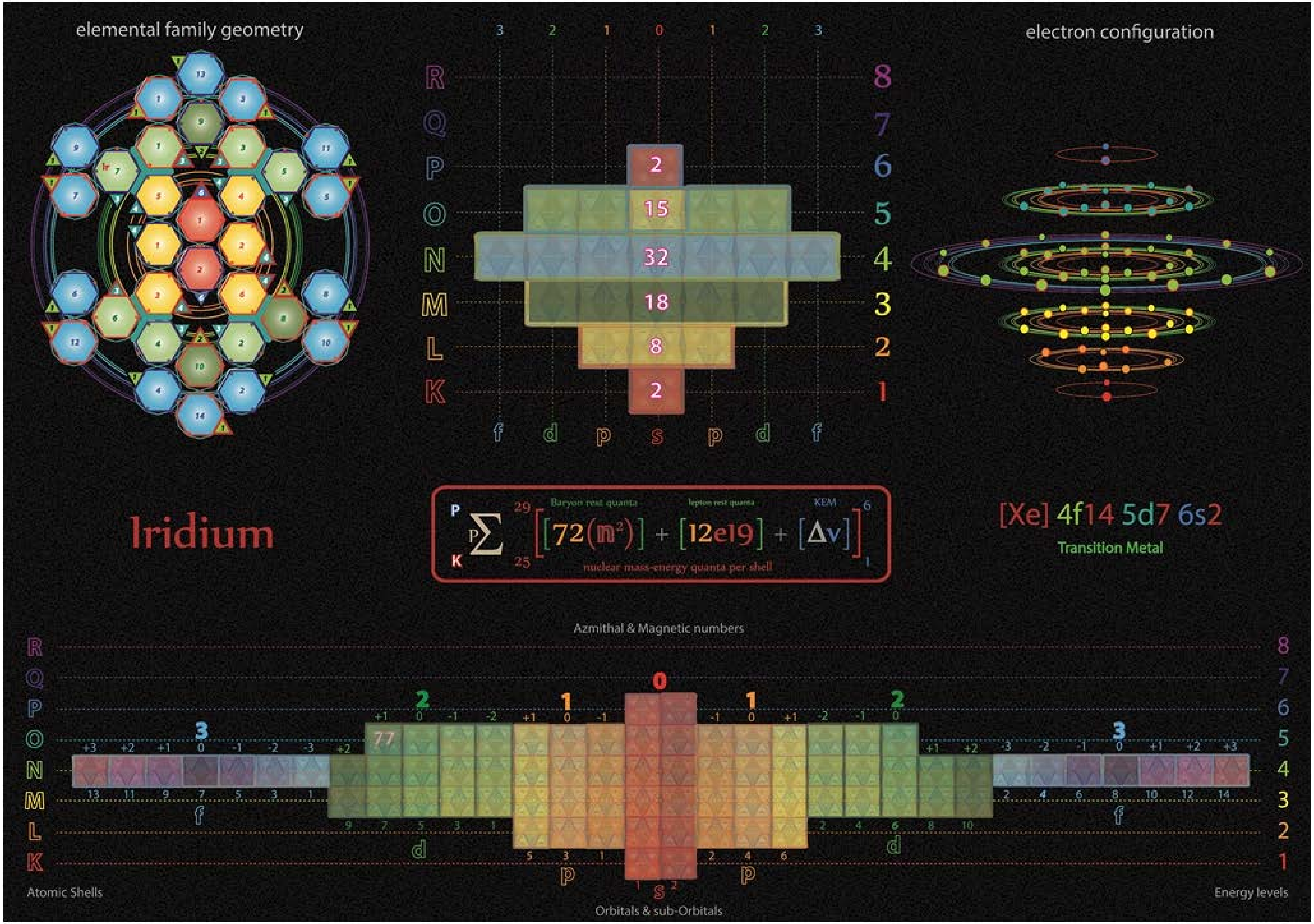
Tetryonics 53.74 - Tungsten atomic config



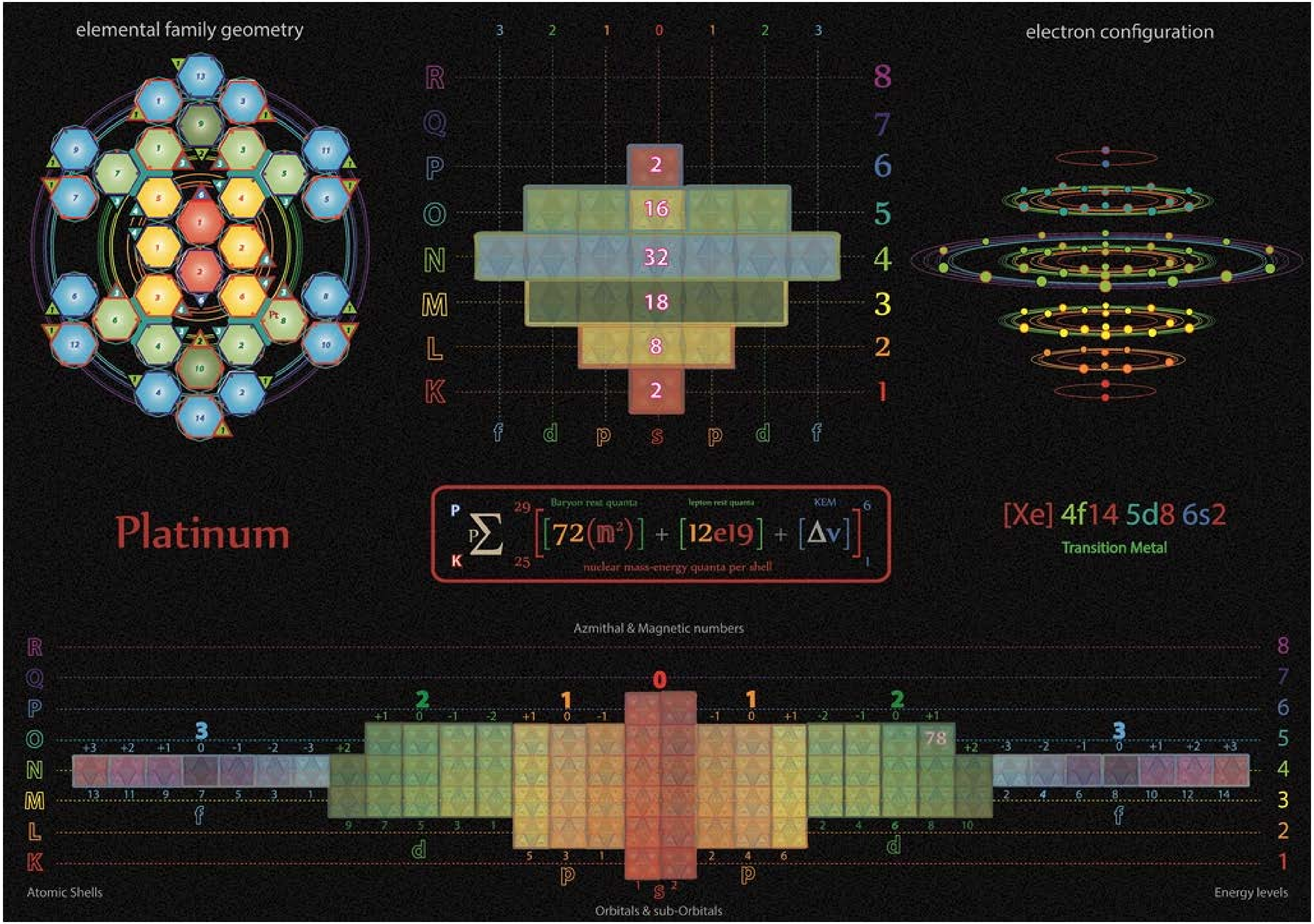
Tetryonics 53.75 - Rhenium atomic config



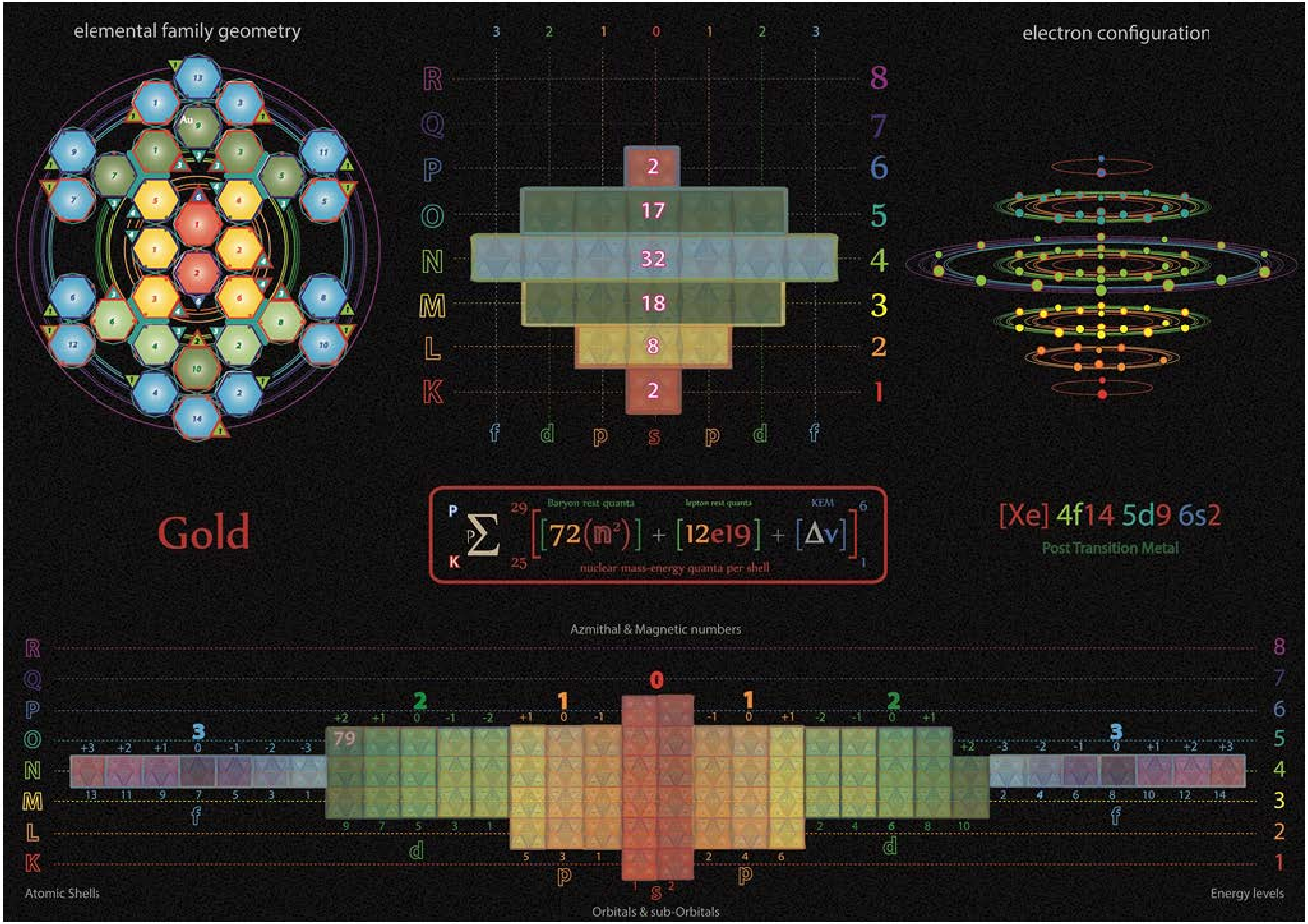
Tetryonics 53.76 - Osmium atomic config



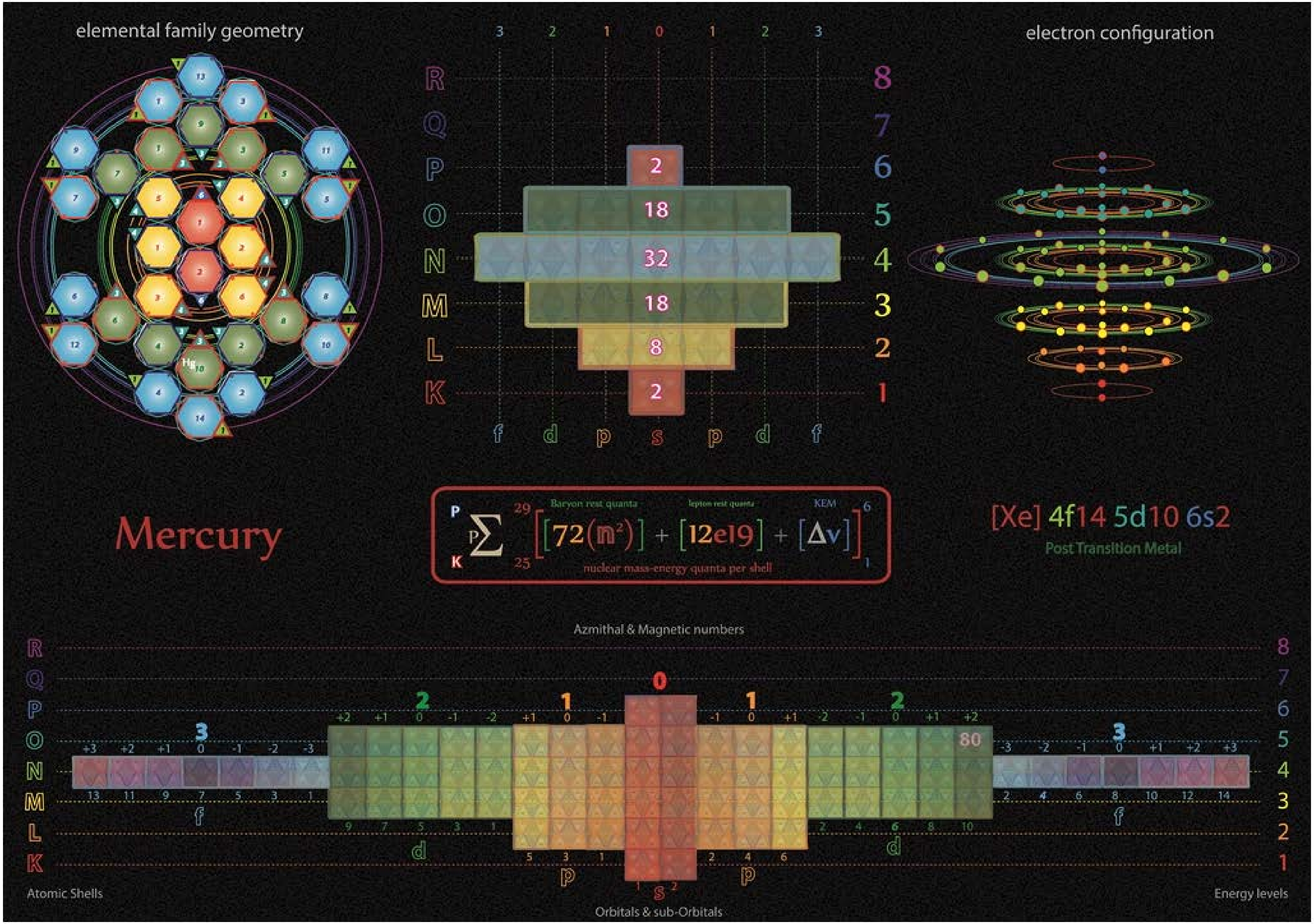
Tetryonics 53.77 - Iridium atomic config



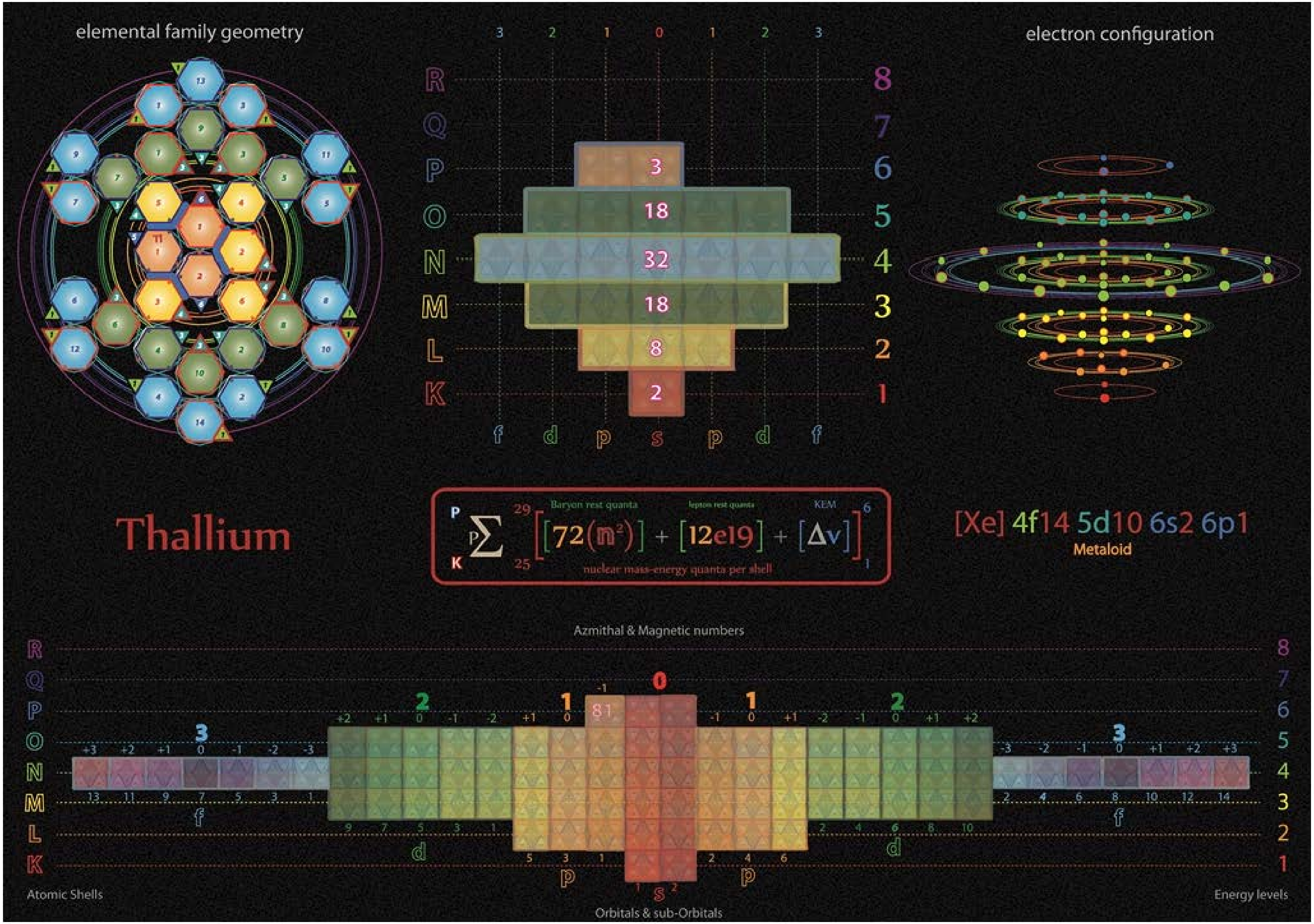
Tetryonics 53.78 - Platinum atomic config

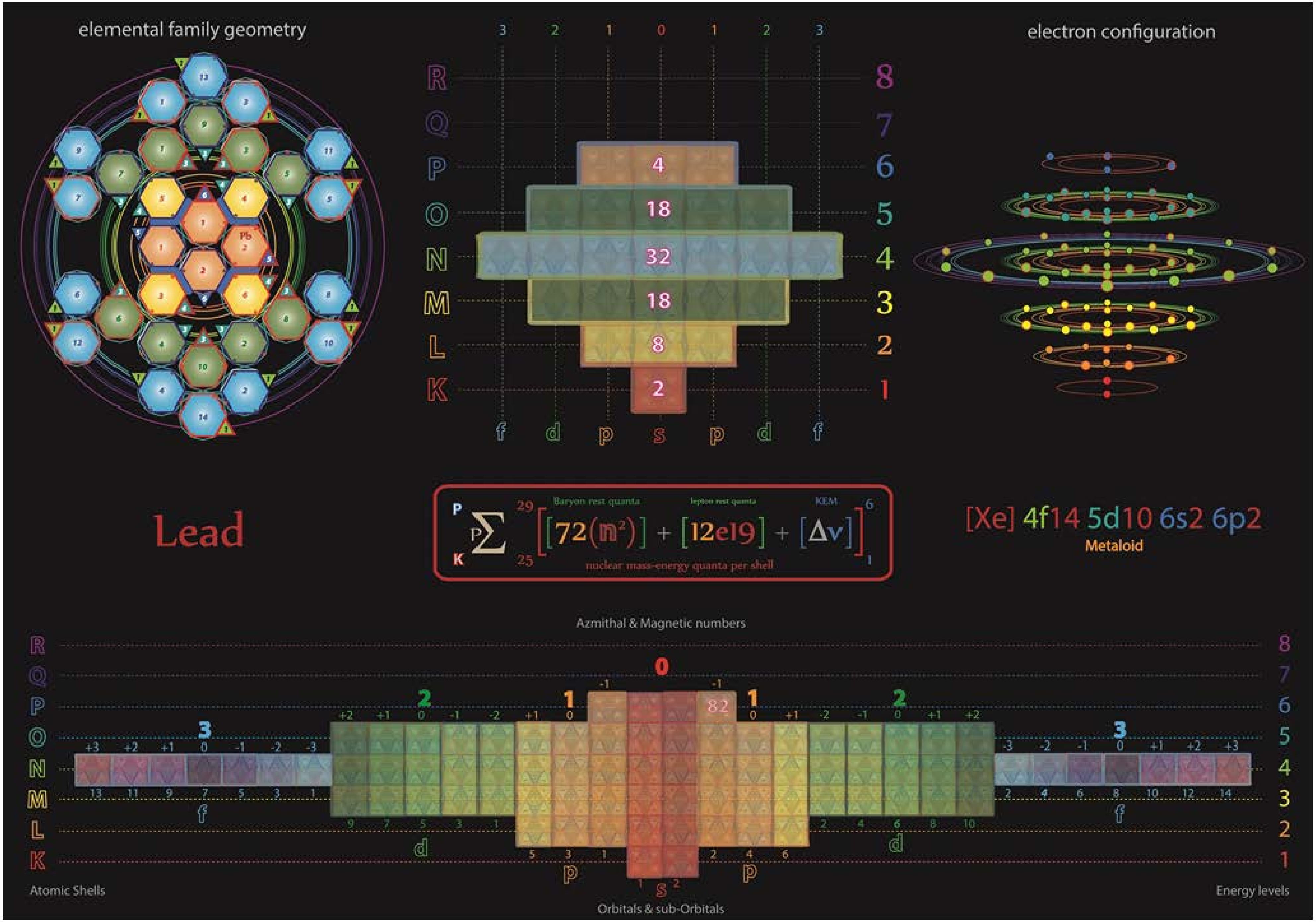


Tetryonics 53.79 - Gold atomic config

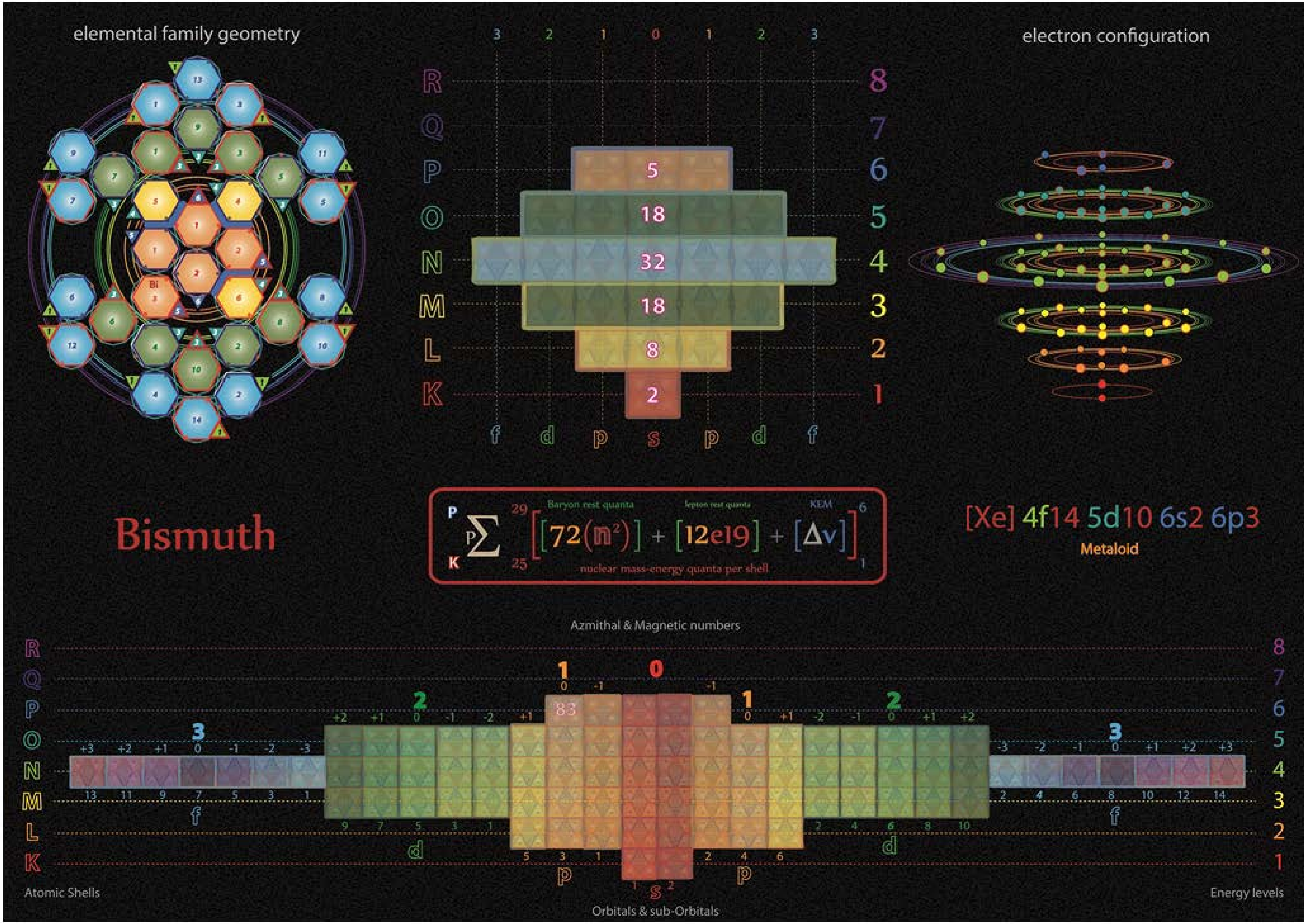


Tetryonics 53.80 - Mercury atomic config

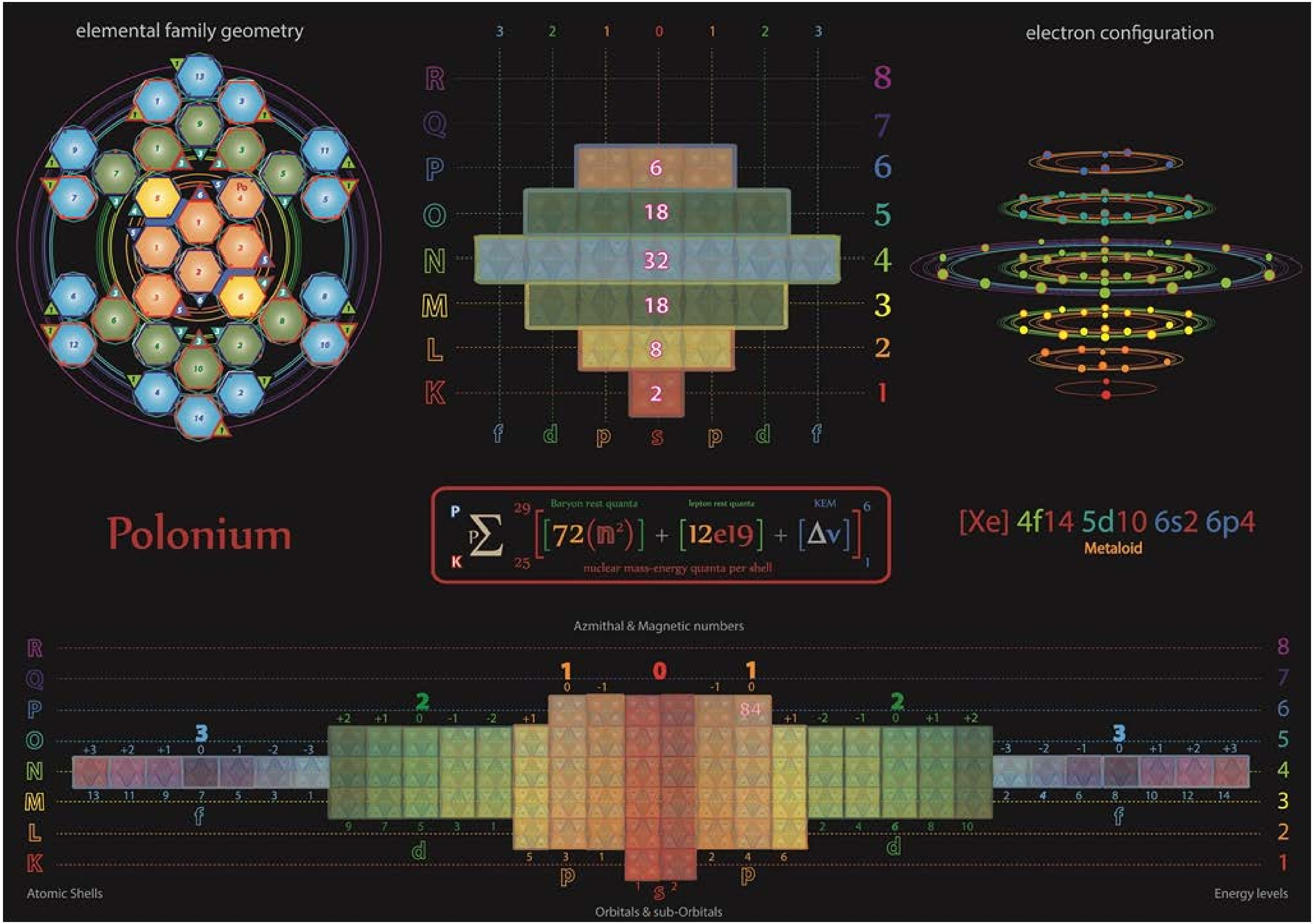

elemental family geometry
electron configuration
Thallium
Baryon rest quanta
lepton rest quanta
KEM
[72(n²)] + [12e19] + [Δv]
nuclear mass-energy quanta per shell
[Xe] 4f14 5d10 6s2 6p1
Metaloid
Azmithal & Magnetic numbers
Atomic Shells
Energy levels
Orbitals & sub-Orbitals



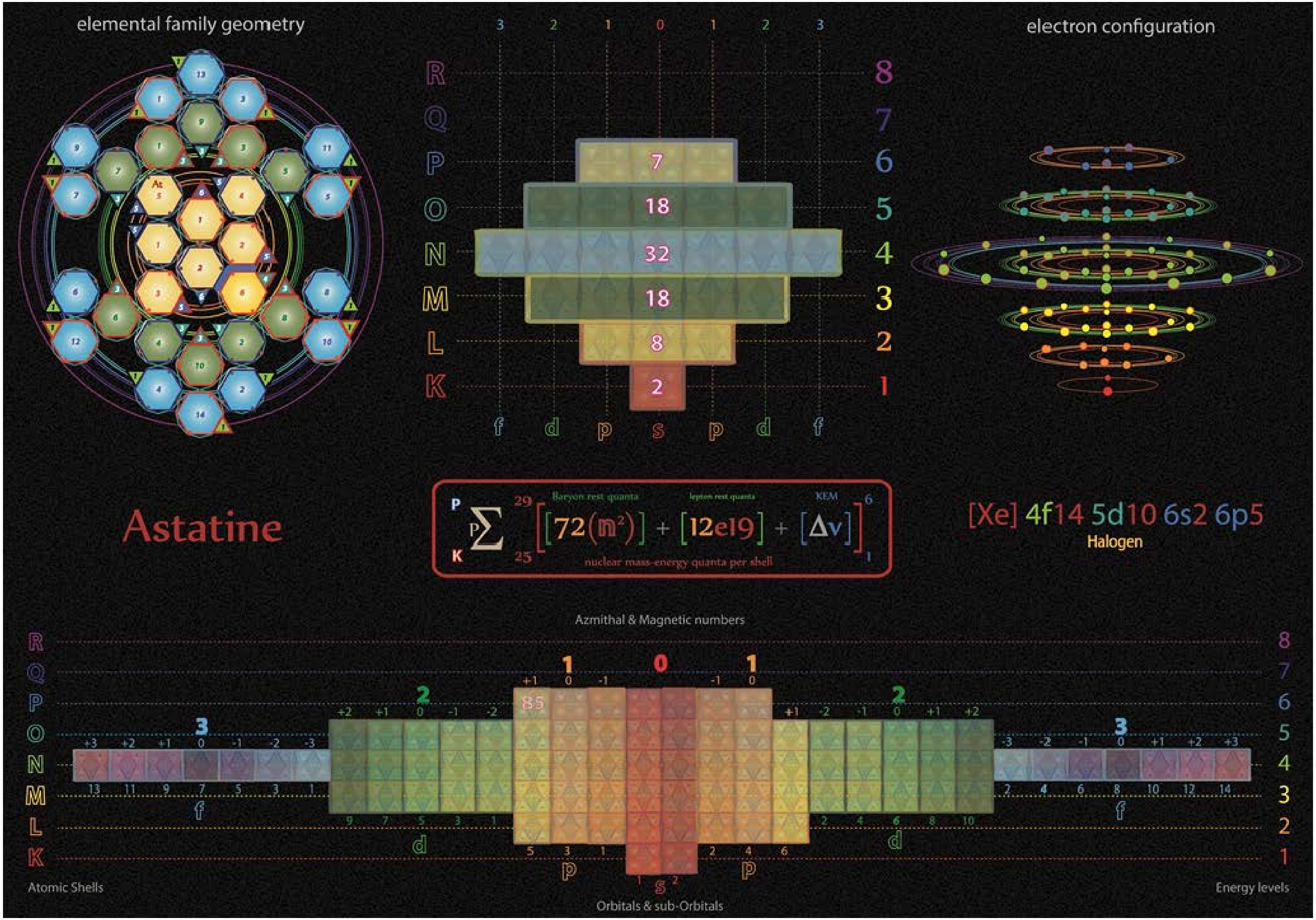
Tetryonics 53.82 - Lead atomic config



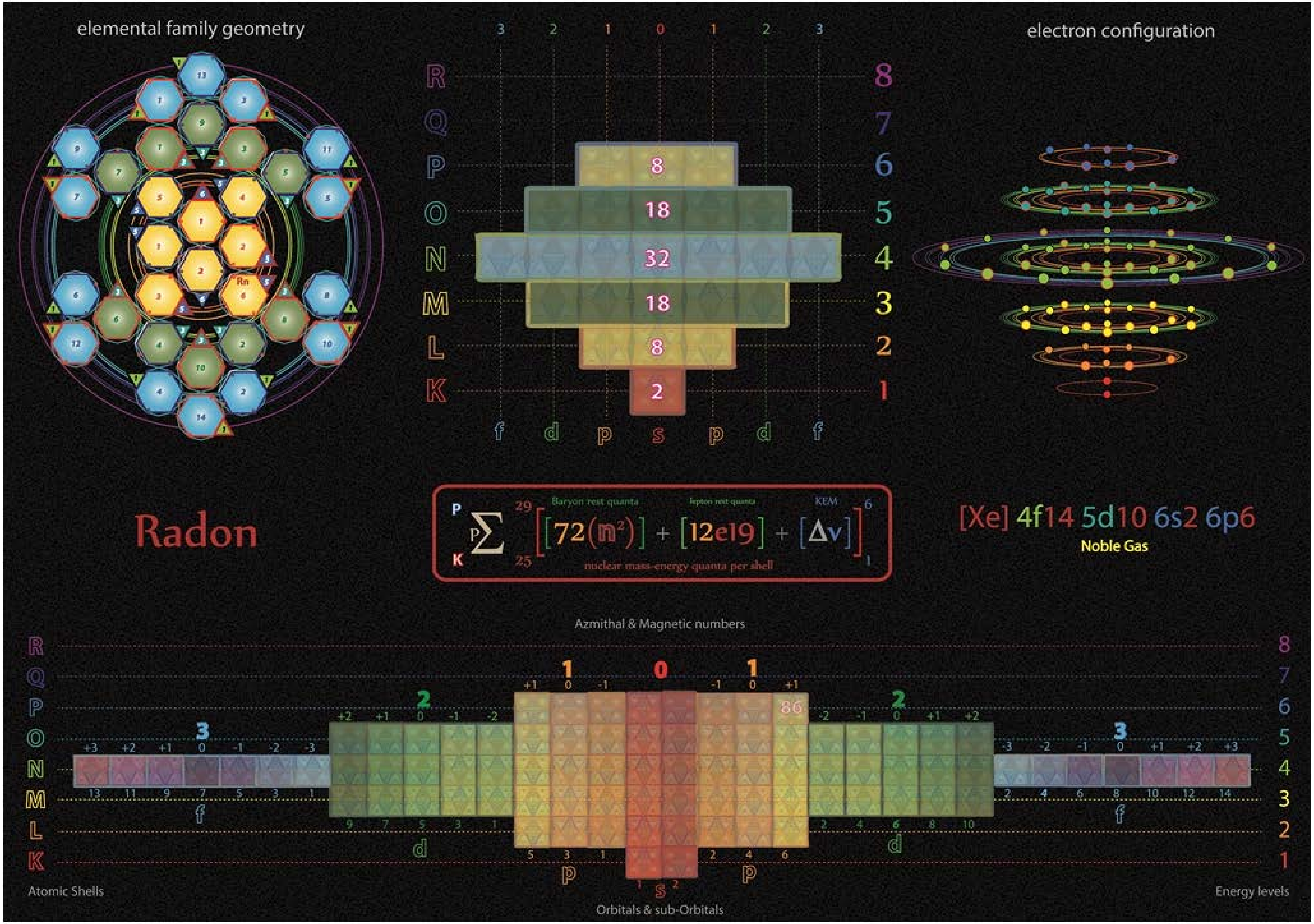
Tetryonics 53.83 - Bismuth atomic config



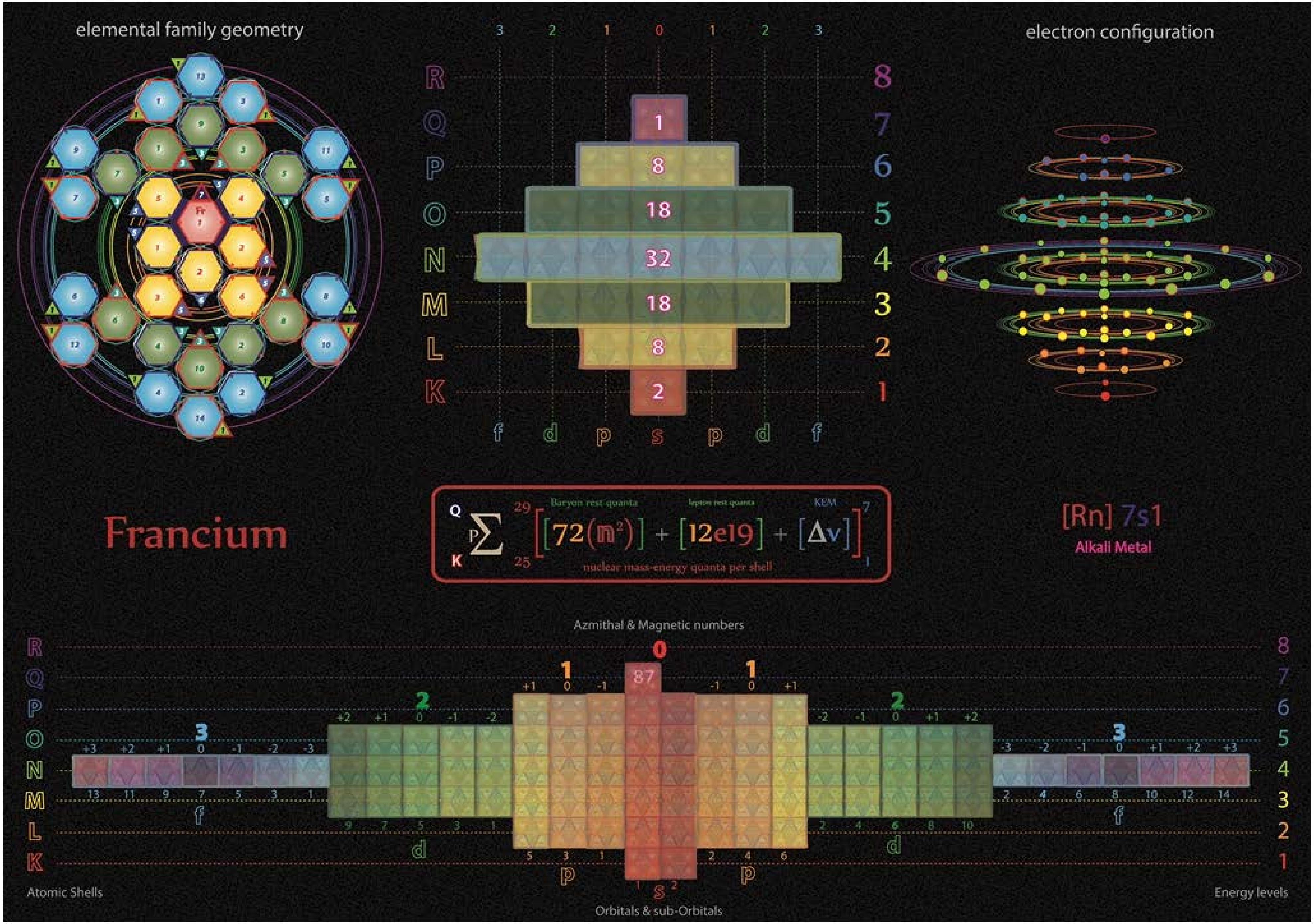
Tetryonics 53.84 - Polonium atomic config



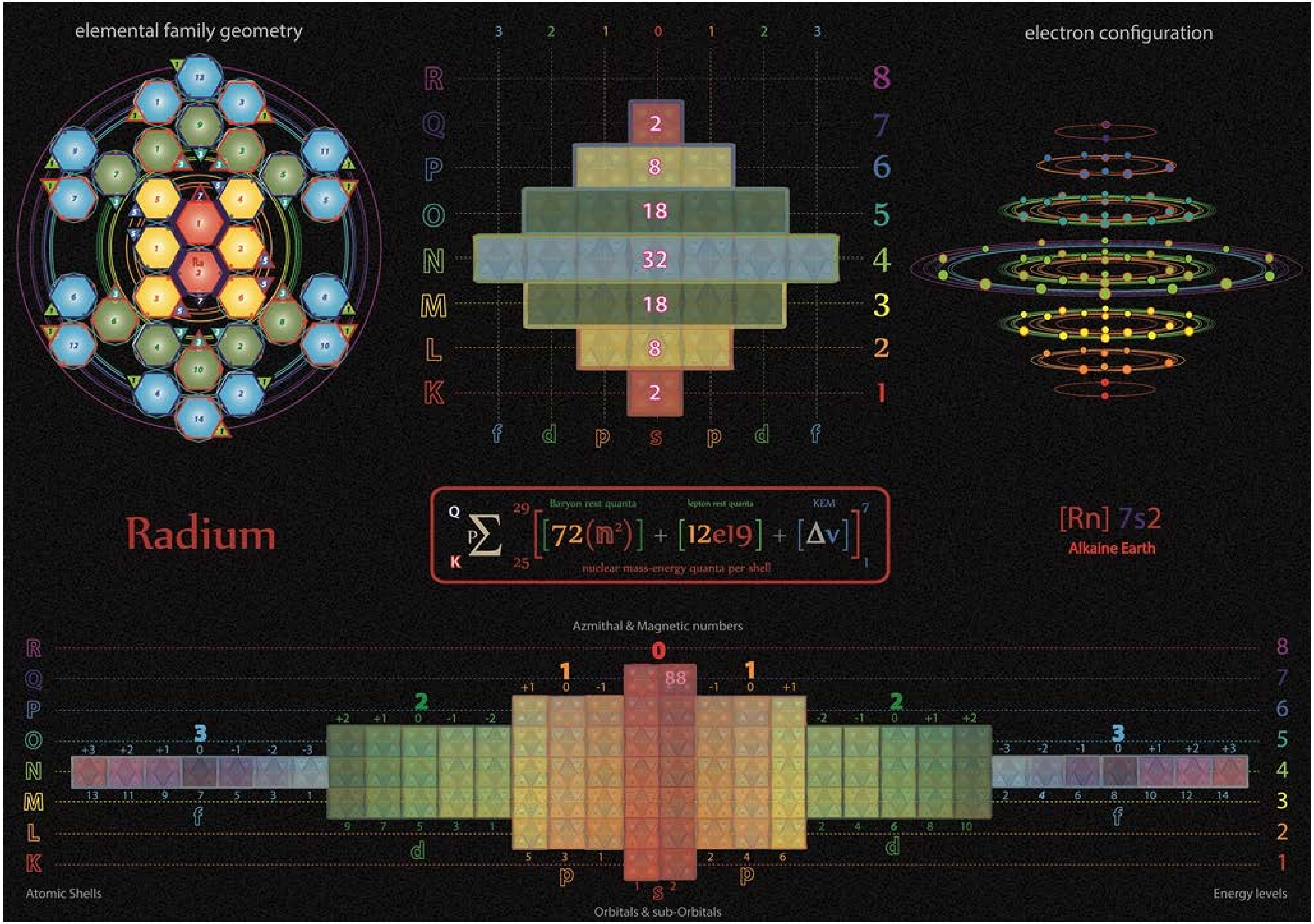
Tetryonics 53.85 - Astatine atomic config

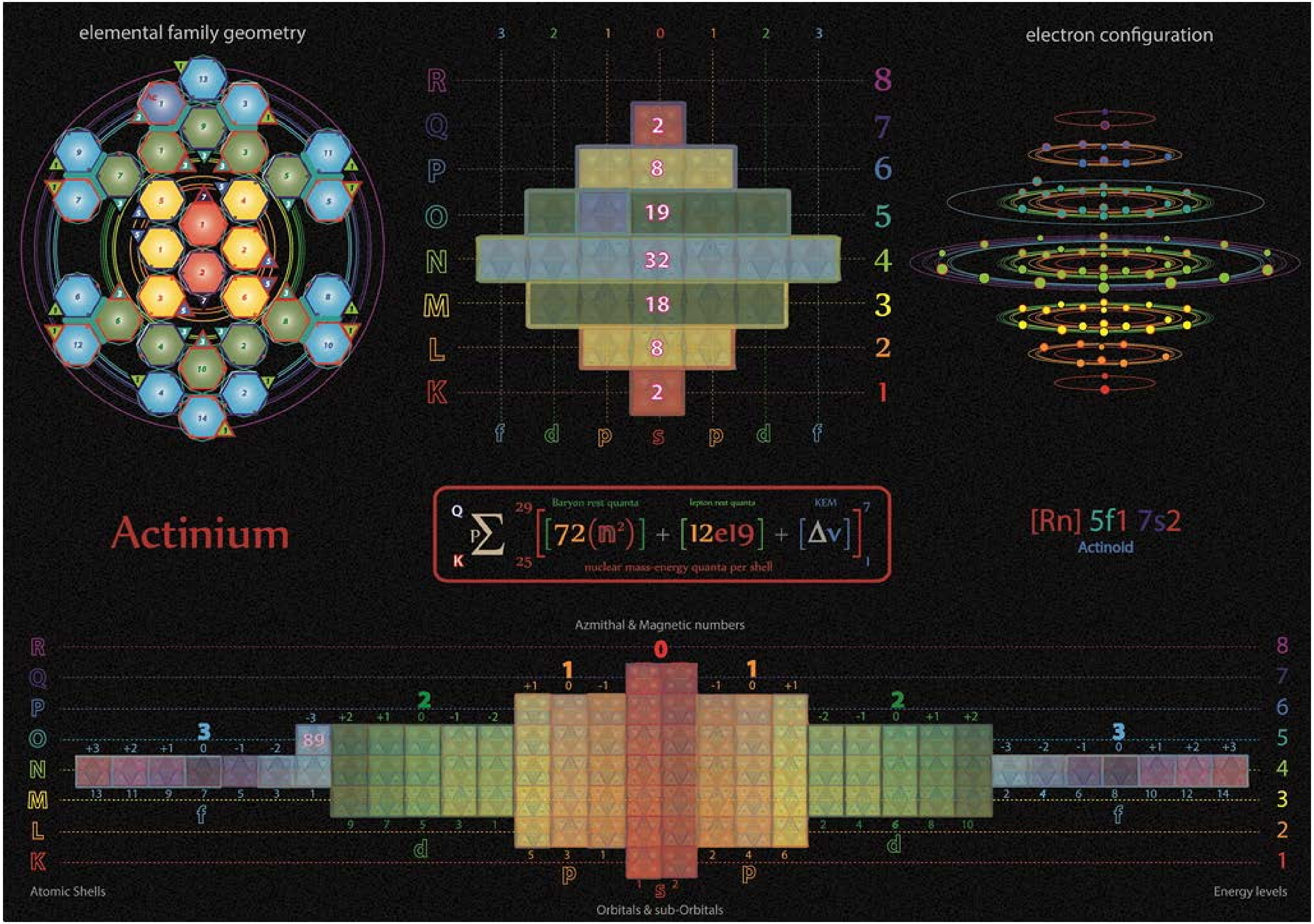


elemental family geometry
electron configuration
Radon
Baryon rest quanta
lepton rest quanta
KEM
[72(n²)] + [12e19] + [Δv]
nuclear mass-energy quanta per shell
[Xe] 4f14 5d10 6s2 6p6
Noble Gas
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
Azmithal & Magnetic numbers
Atomic Shells
Energy levels
Orbitals & sub-Orbitals

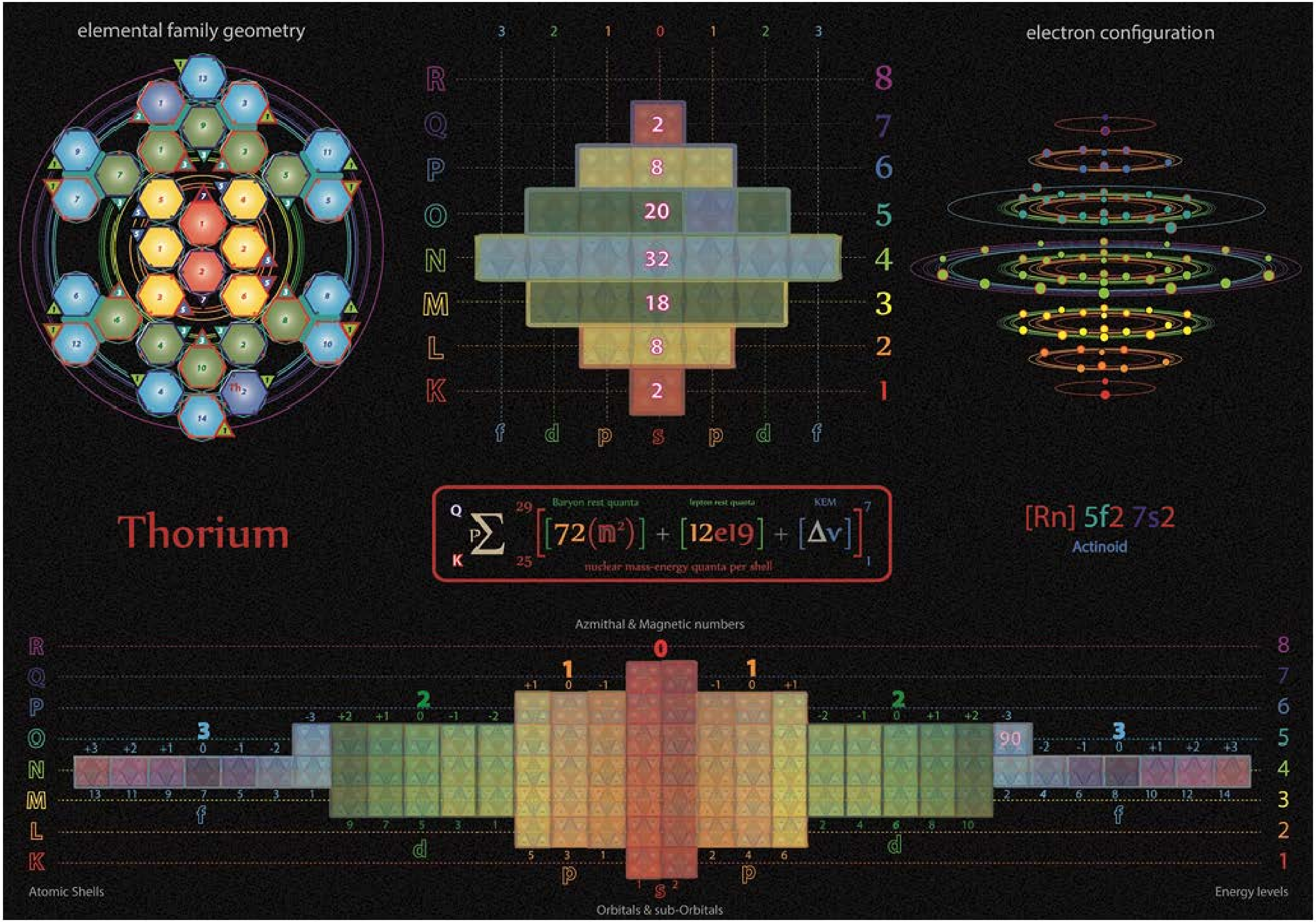


Tetryonics 53.87 - Francium atomic config

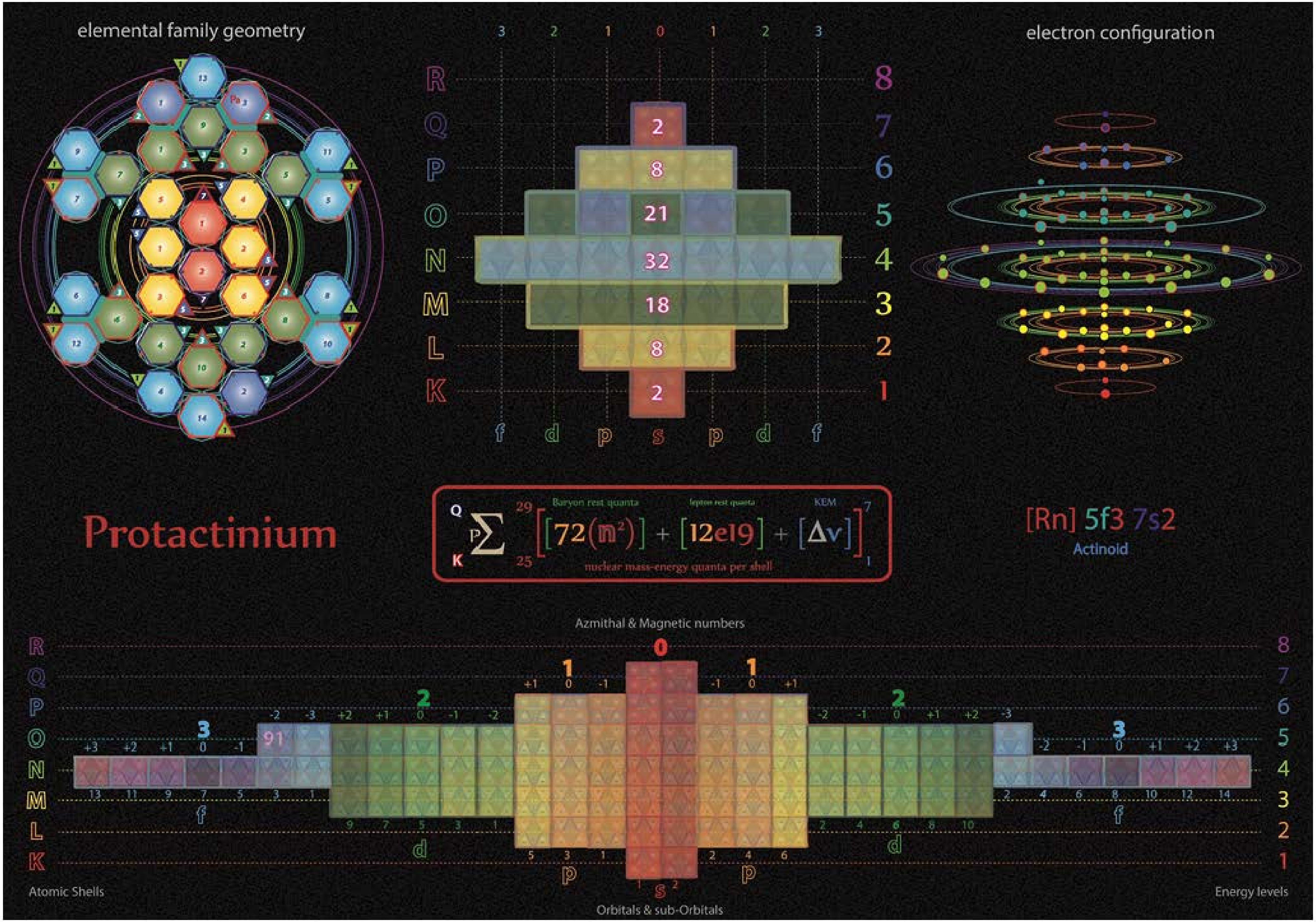

elemental family geometry
electron configuration
R Q P O N M L K
8 7 6 5 4 3 2 1
2
8
18
32
18
8
2
f d p s p d f
Radium
Baryon rest quanta
lepton rest quanta
KEM
[72(m²)] + [12e19] + [Δv]
nuclear mass-energy quanta per shell
[Rn] 7s2
Alkaine Earth
Azmithal & Magnetic numbers
88
Atomic Shells
Energy levels
Orbitals & sub-Orbitals



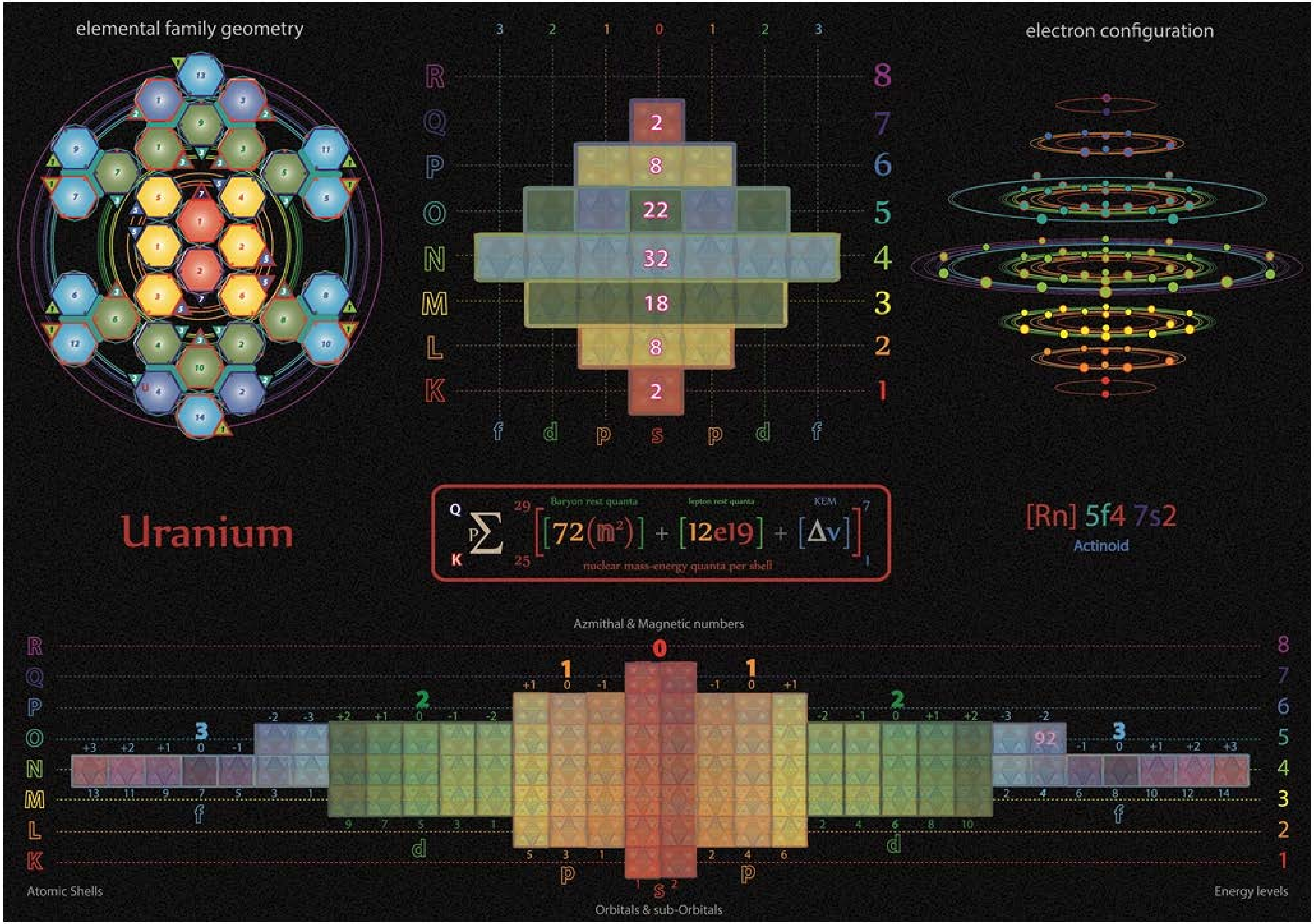
Tetryonics 53.89 - Actinium atomic config



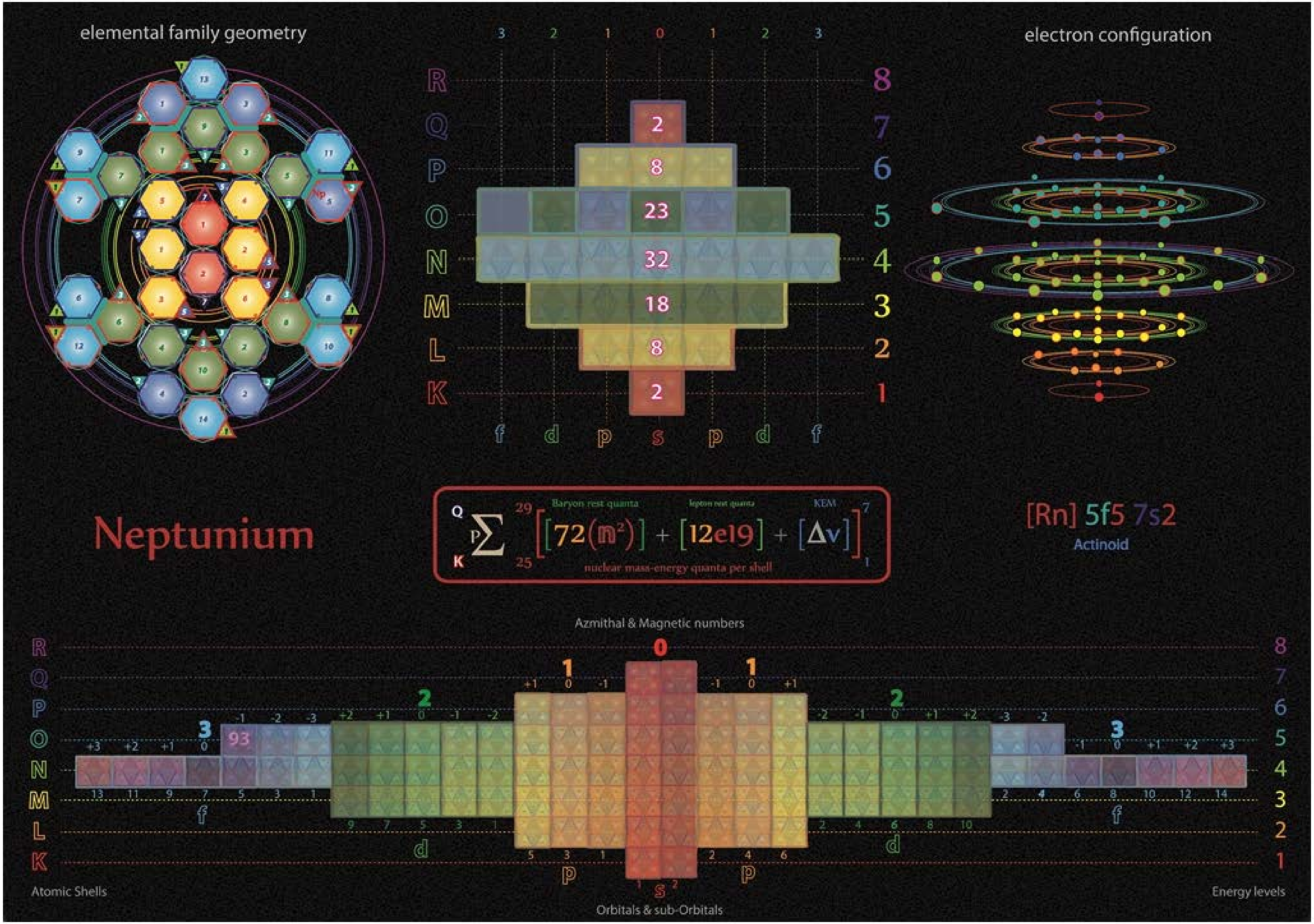
Tetryonics 53.90 - Thorium atomic config



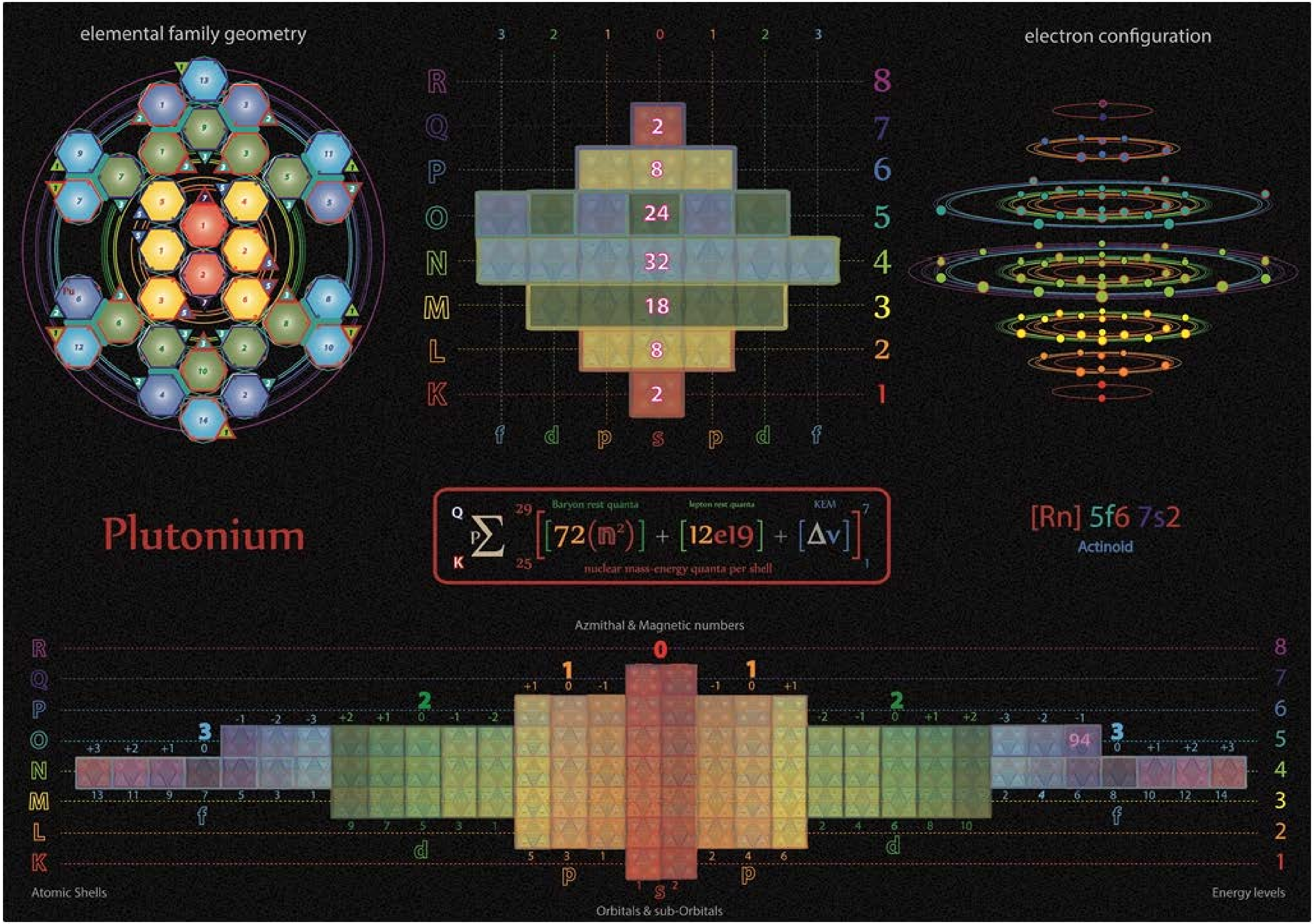
Tetryonics 53.91 - Protactinium atomic config



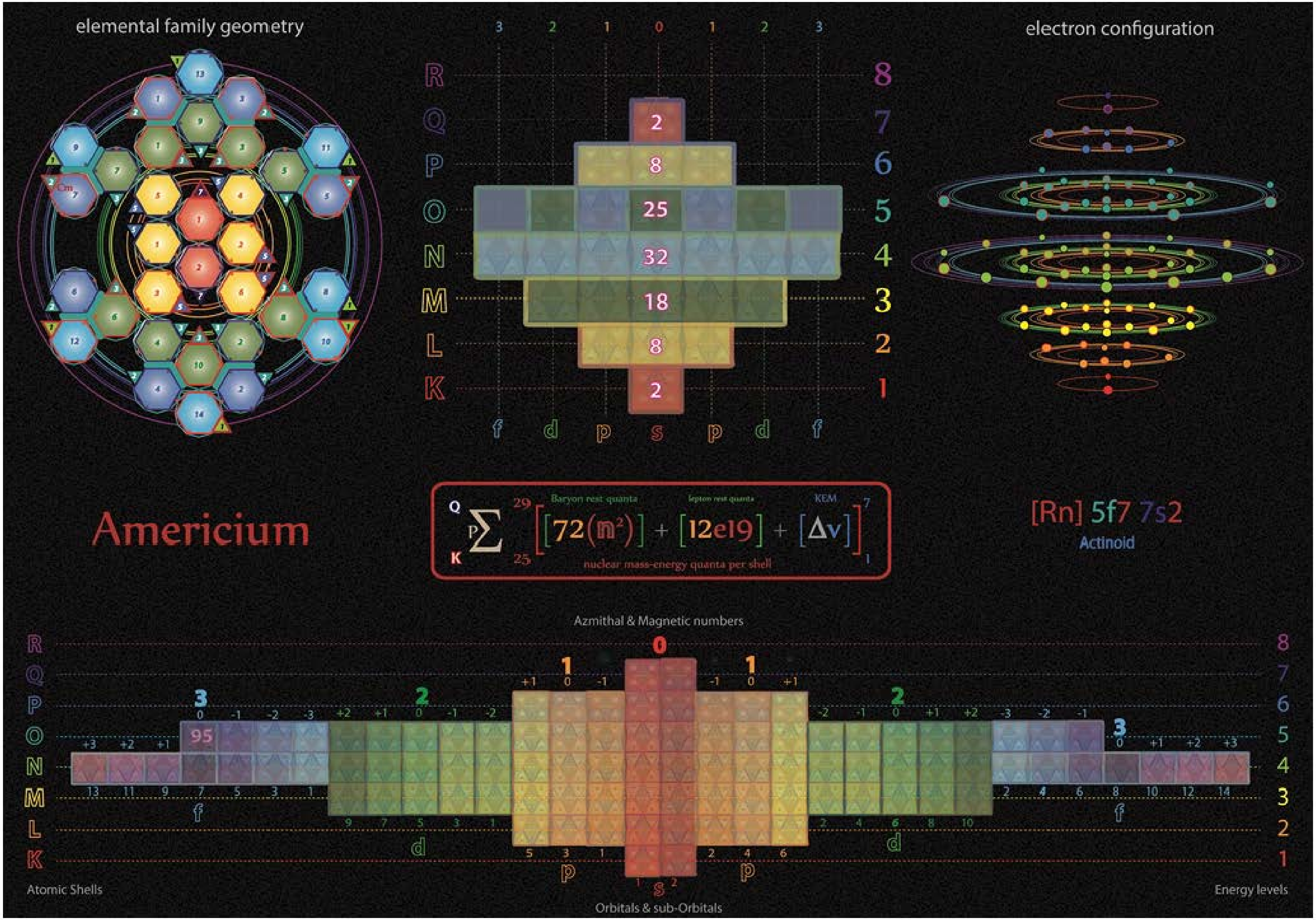
Tetryonics 53.92 - Uranium atomic config



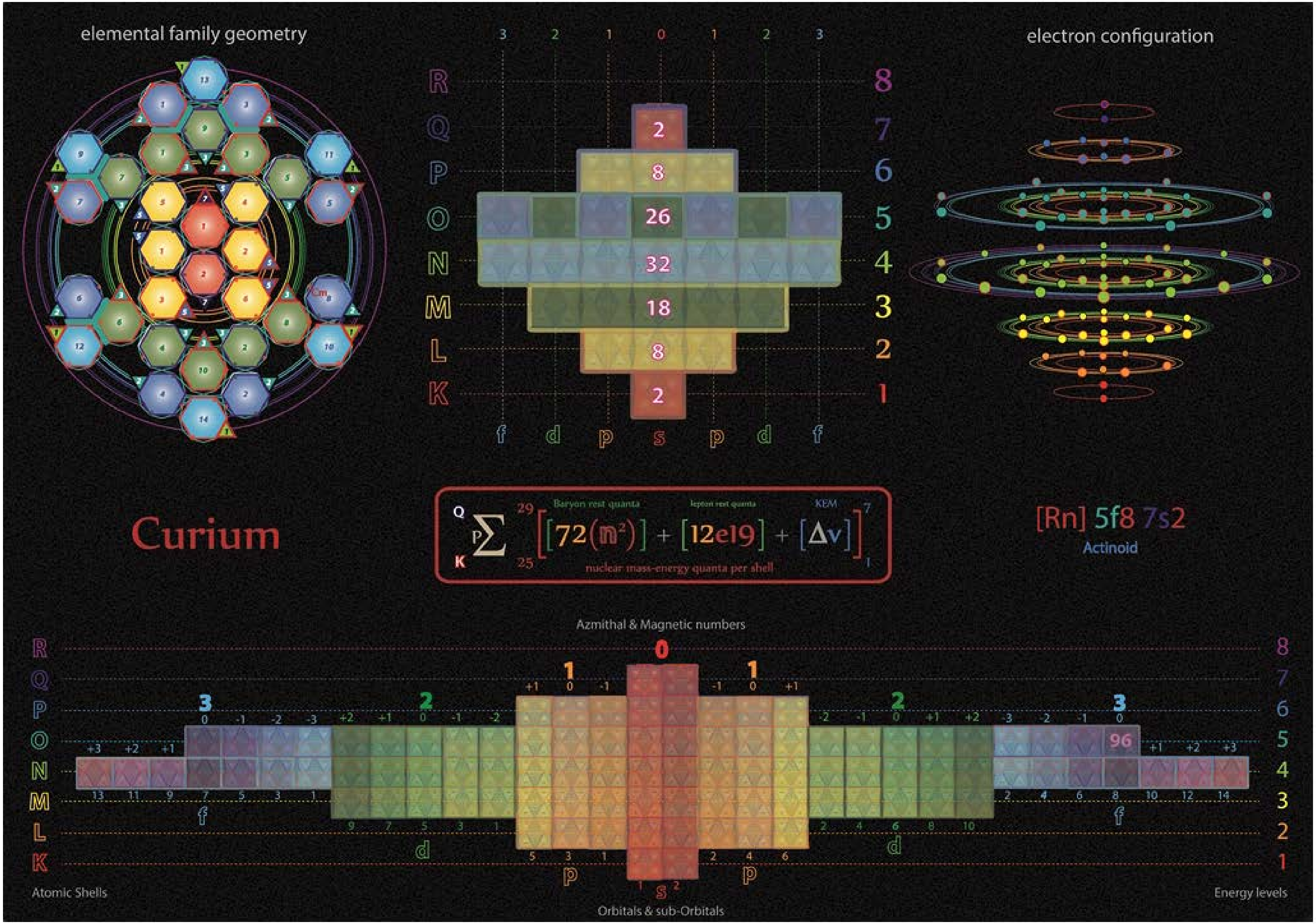
Tetryonics 53.93 - Neptunium atomic config

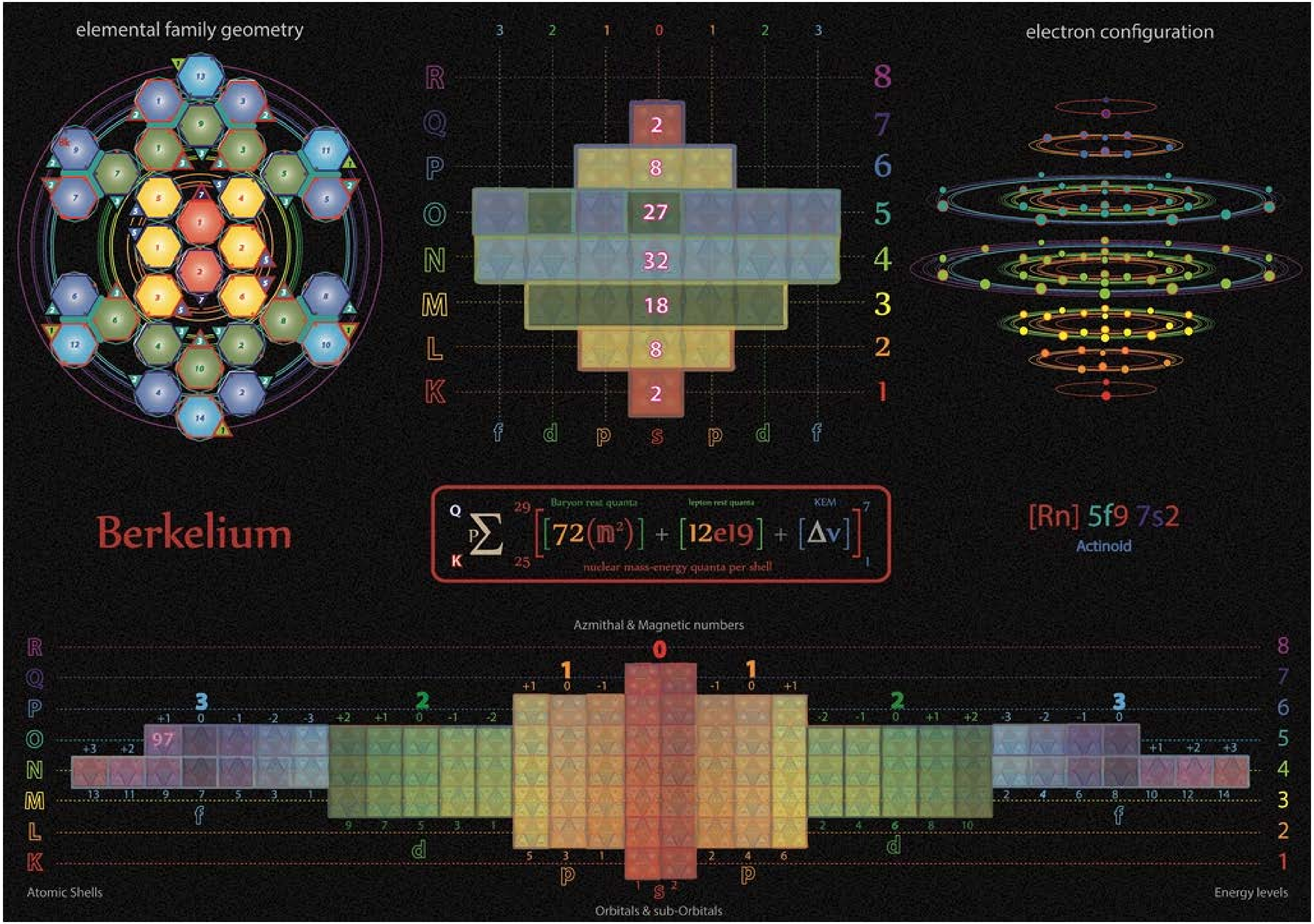


Tetryonics 53.94 - Plutonium atomic config

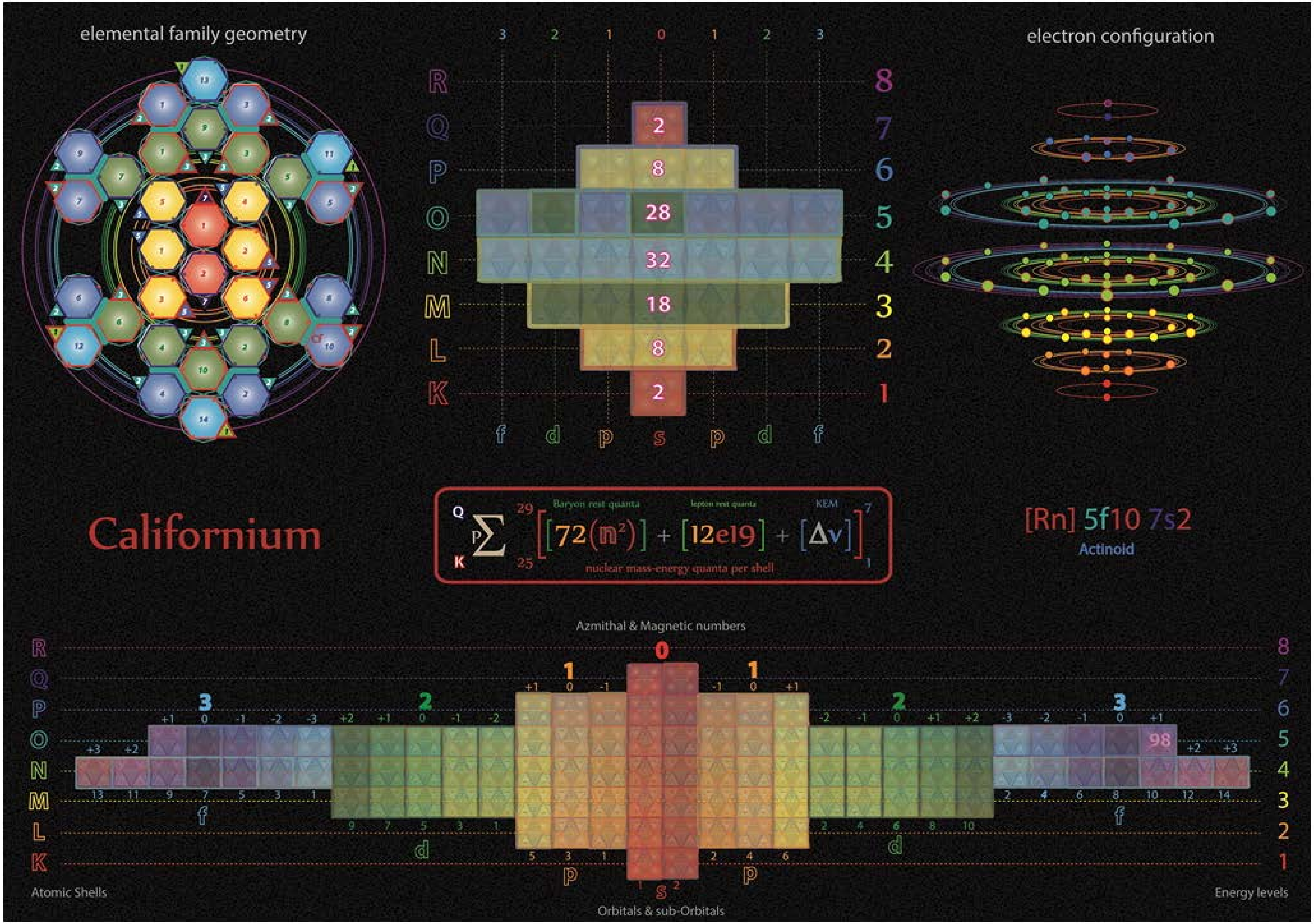


Tetryonics 53.95 - Americium atomic config

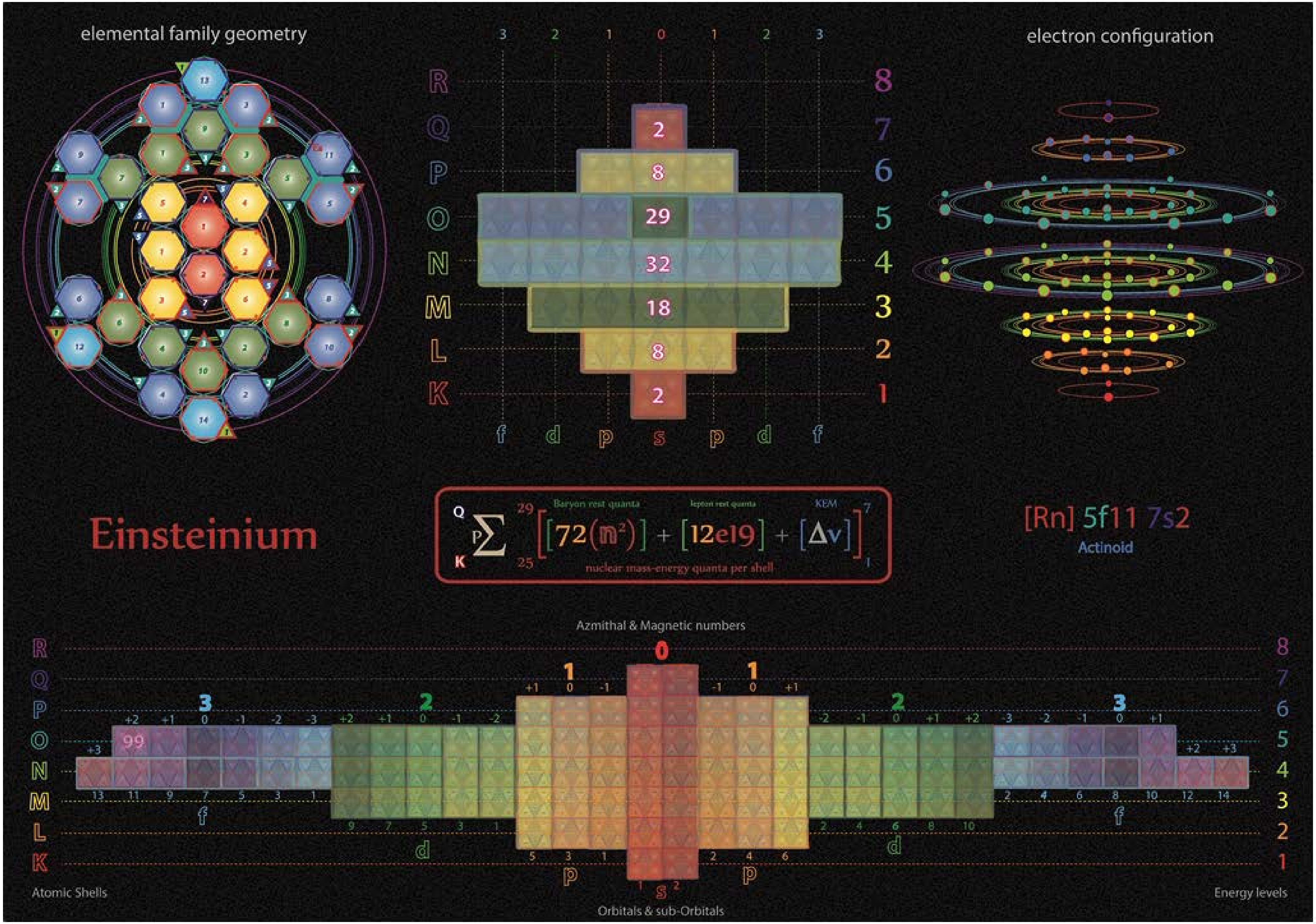

elemental family geometry
electron configuration
Curium
Baryon rest quanta
lepton rest quanta
KEM
nuclear mass-energy quanta per shell
[Rn] 5f8 7s2
Actinoid
Azmithal & Magnetic numbers
Atomic Shells
Energy levels
Orbitals & sub-Orbitals



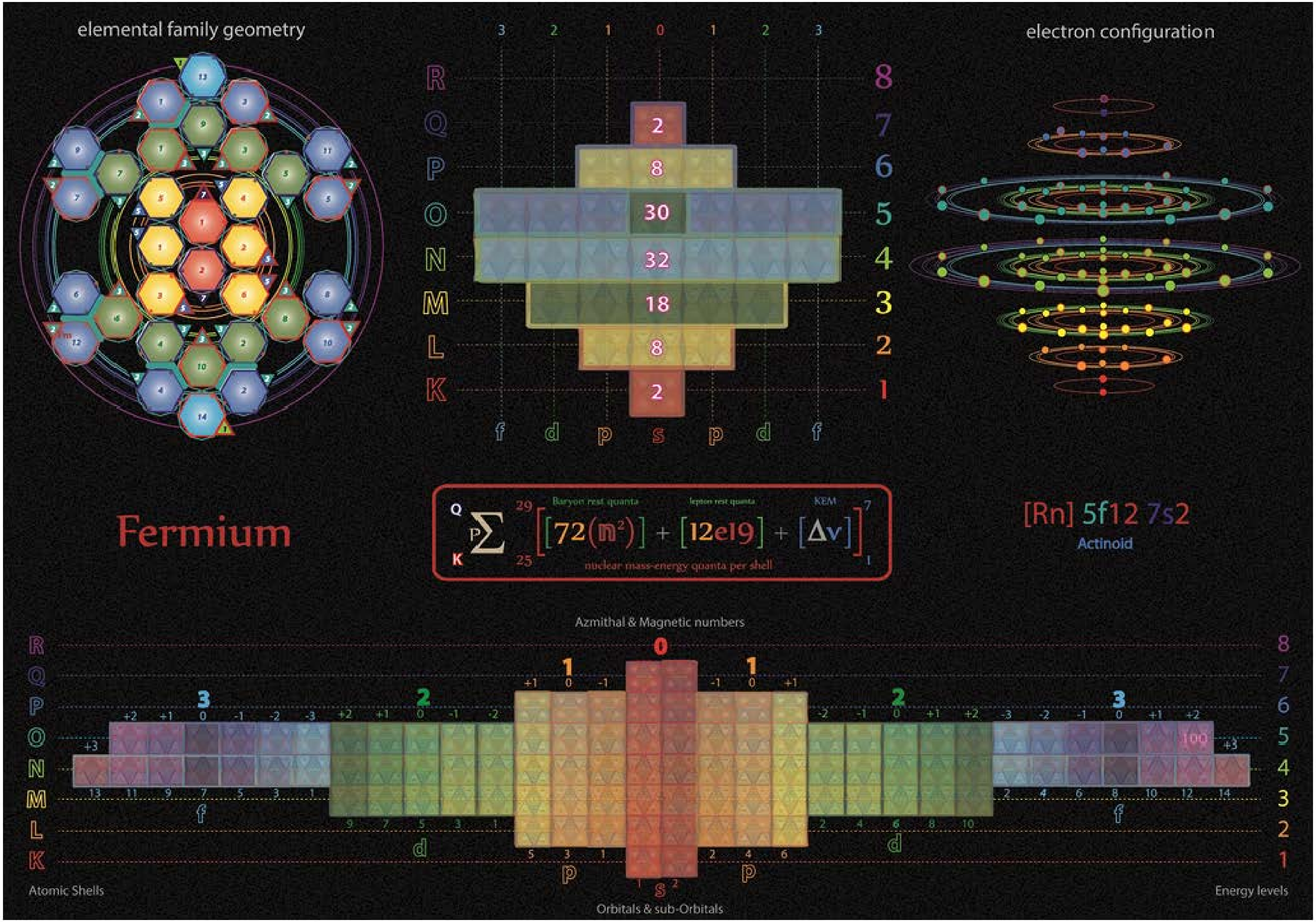
Tetryonics 53.97 - Berkelium atomic config



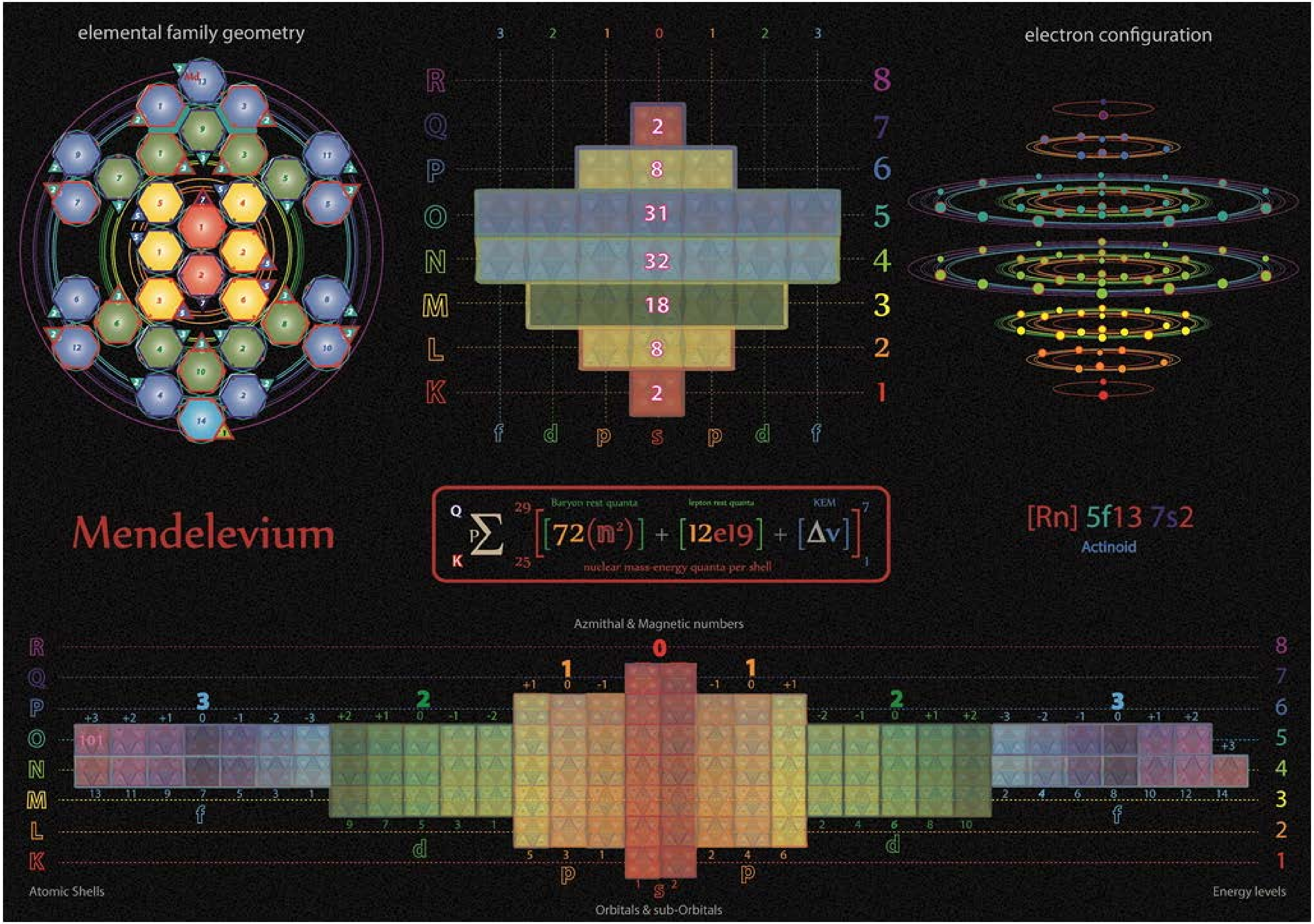
Tetryonics 53.98 - Californium atomic config



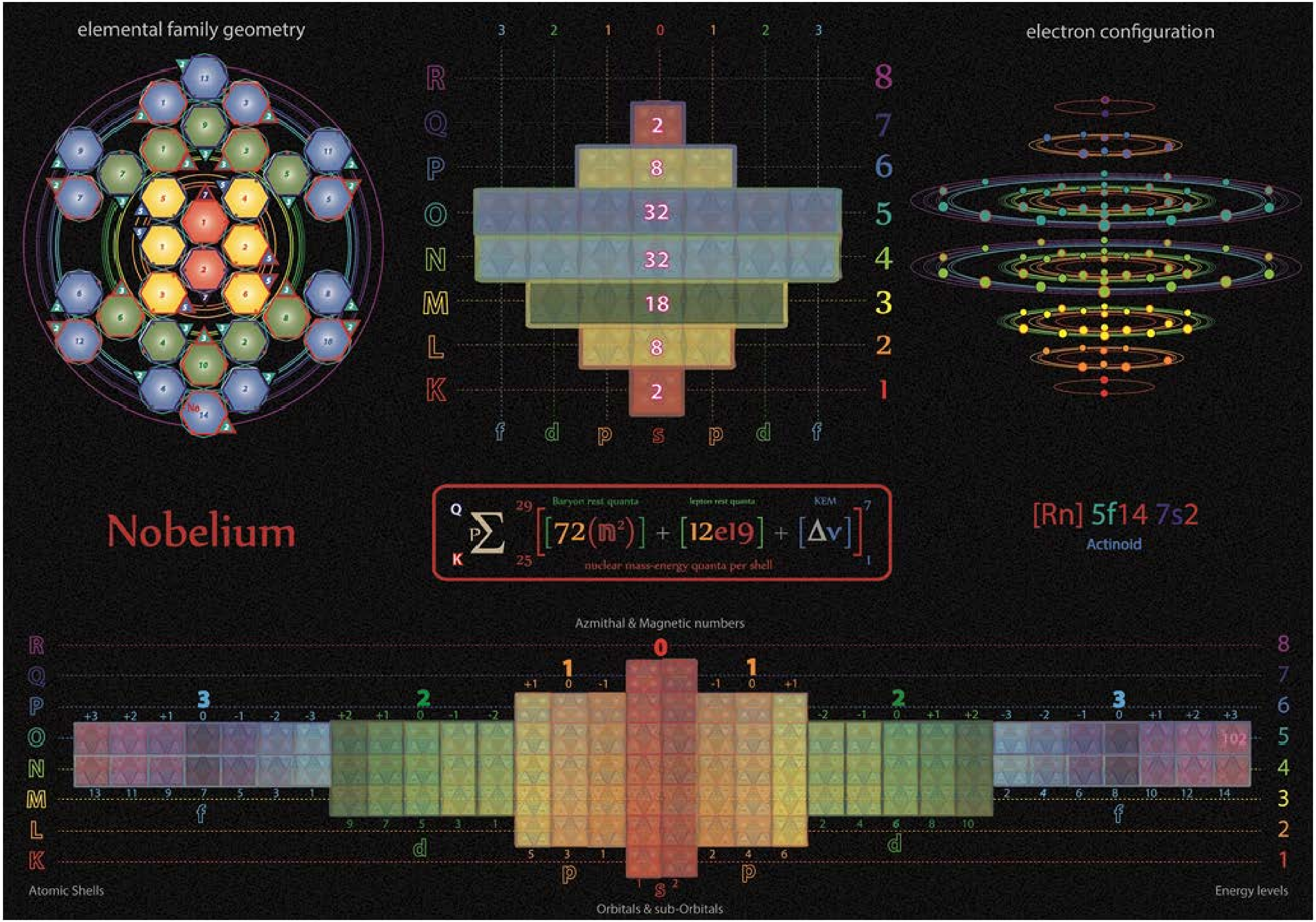
Tetryonics 53.99 - Einsteinium atomic config



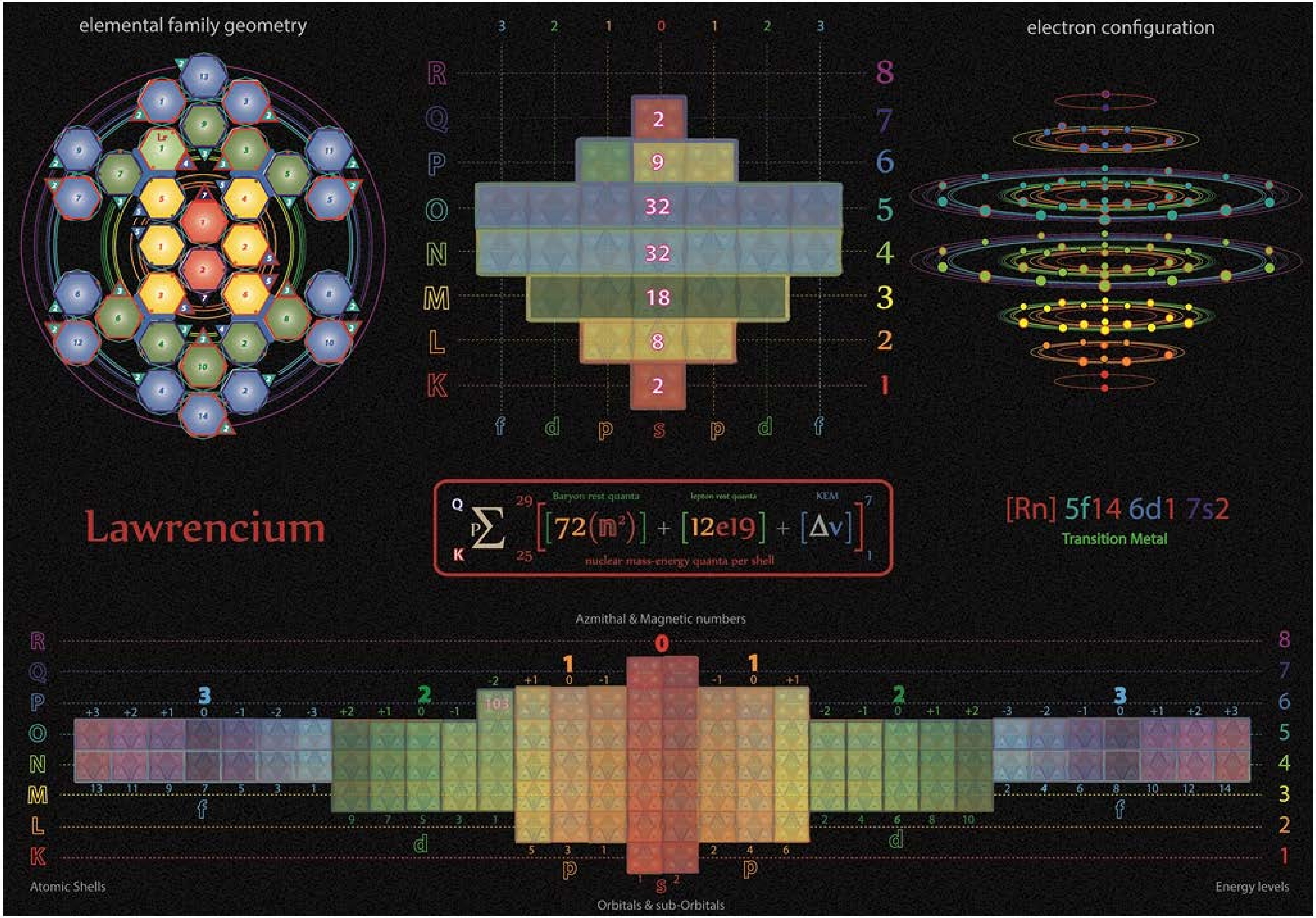
Tetryonics 53.100 - Fermium atomic config



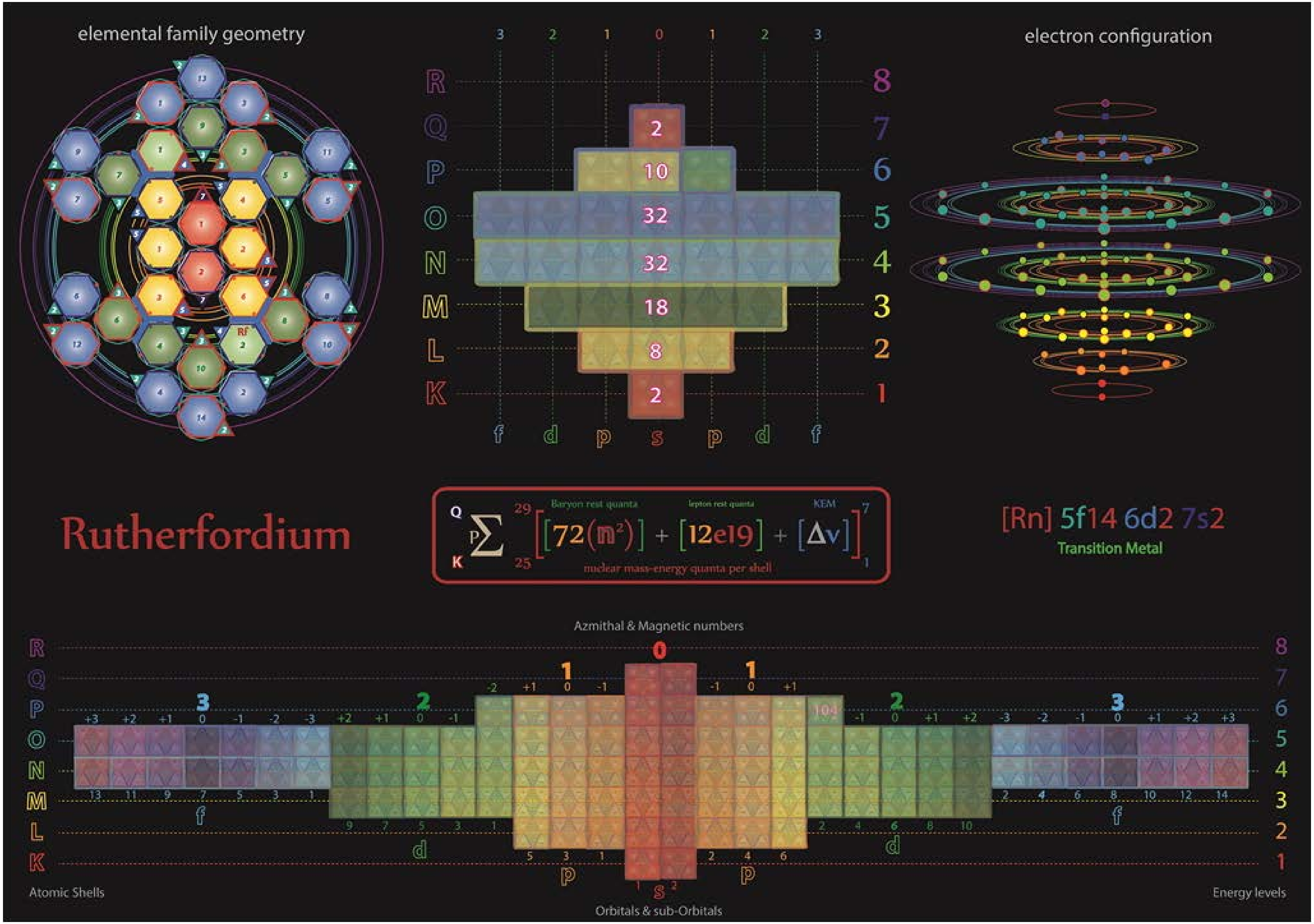
Tetryonics 53.101 - Mendelevium atomic config

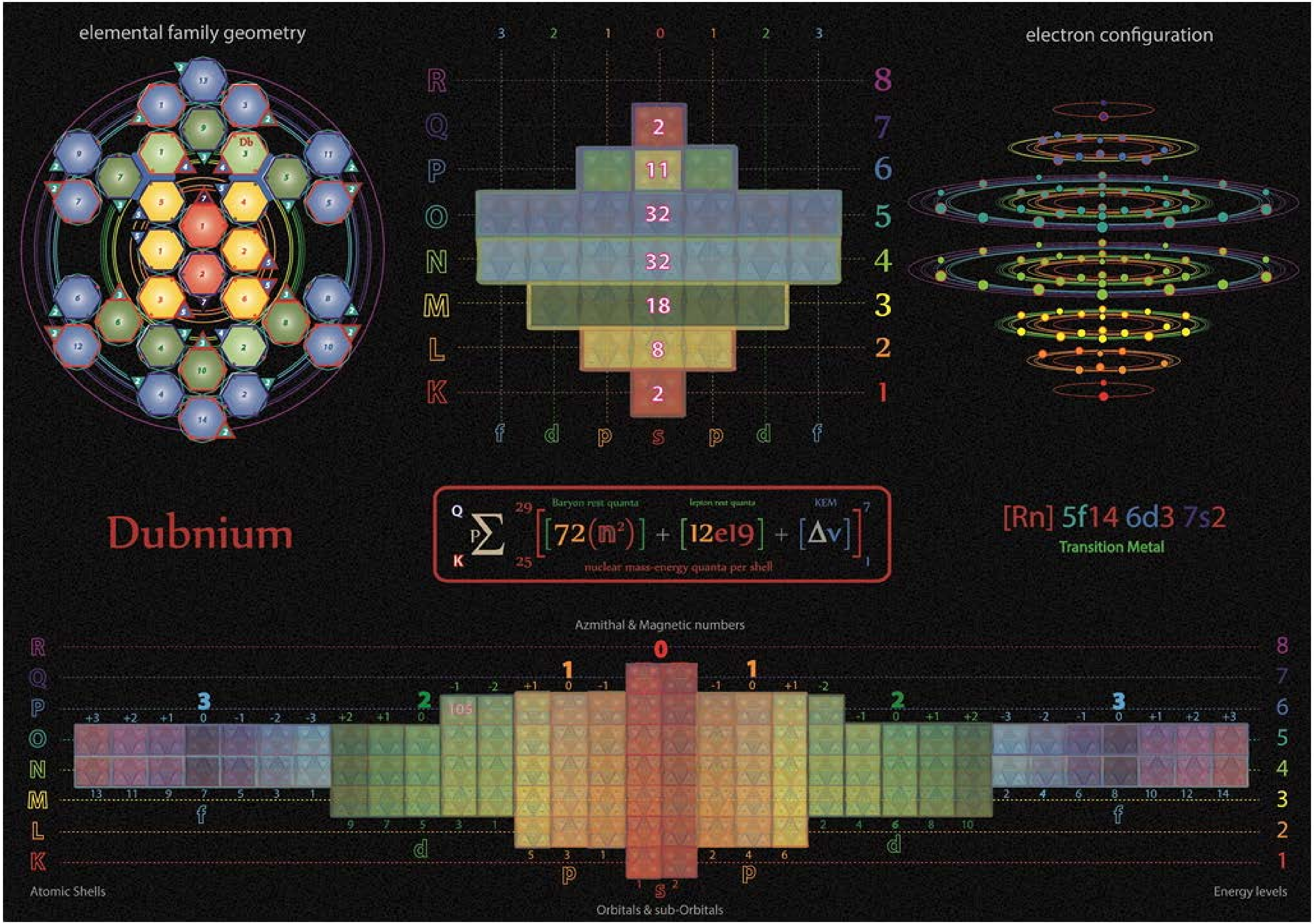


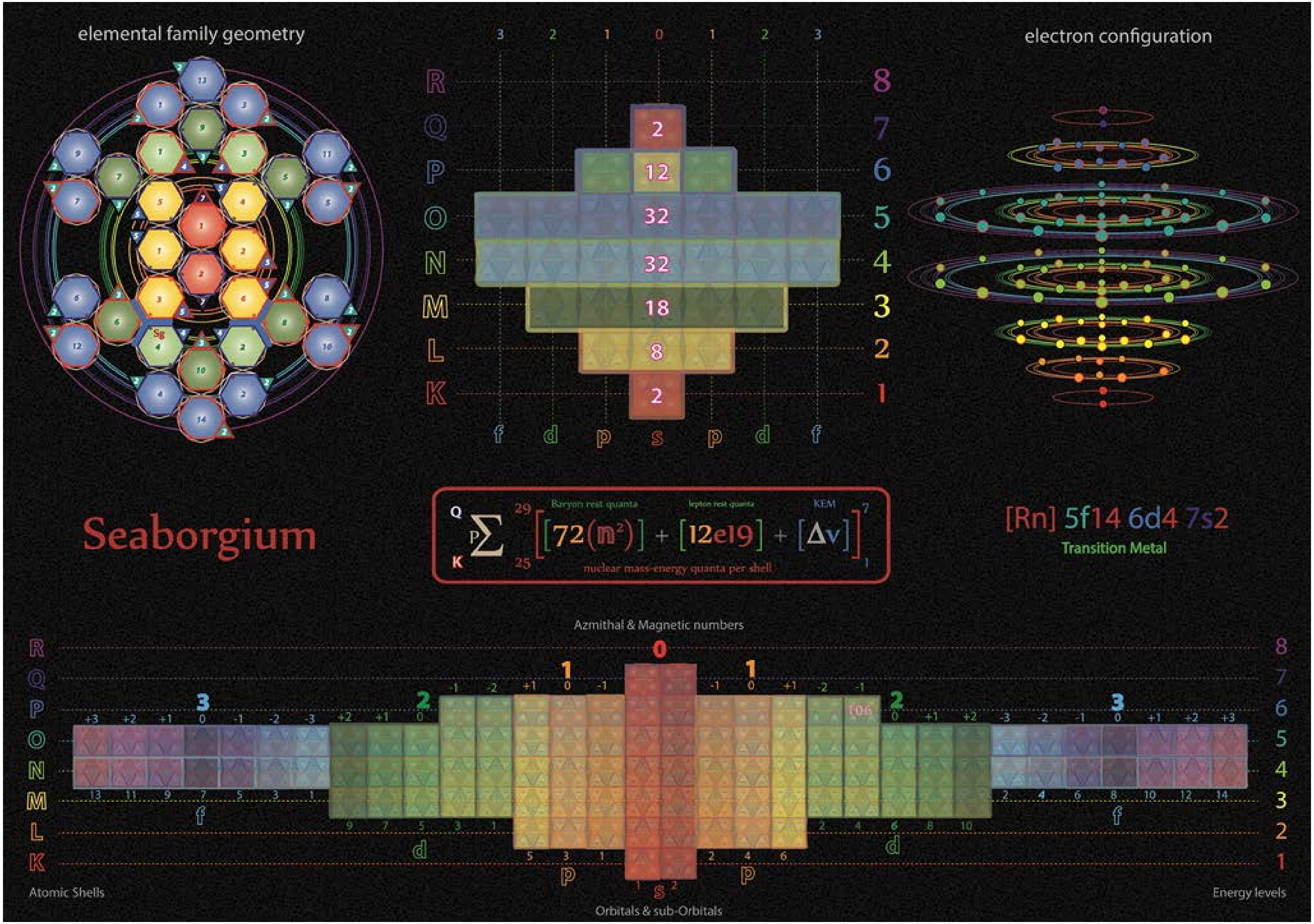
Tetryonics 53.102 - Nobelium atomic config



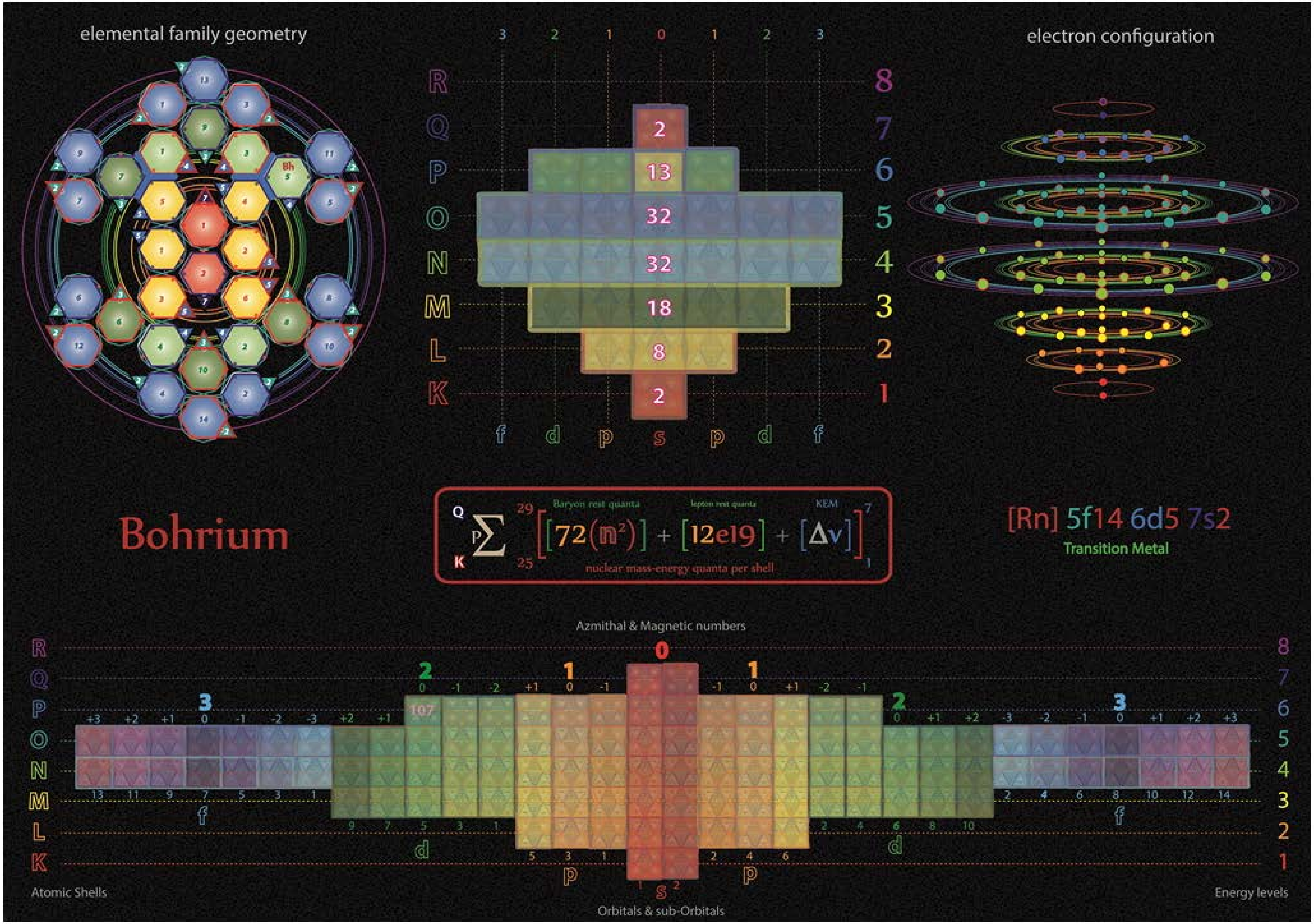
Tetryonics 53.103 - Lawrencium atomic config


elemental family geometry
electron configuration
R Q P O N M L K
8 7 6 5 4 3 2 1
f d p s p d f
2 10 32 32 18 8 2
Rutherfordium
Baryon rest quanta
lepton rest quanta
KEM
nuclear mass-energy quanta per shell
[Rn] 5f14 6d2 7s2
Transition Metal
Azmithal & Magnetic numbers
Atomic Shells
Energy levels
Orbitals & sub-Orbitals

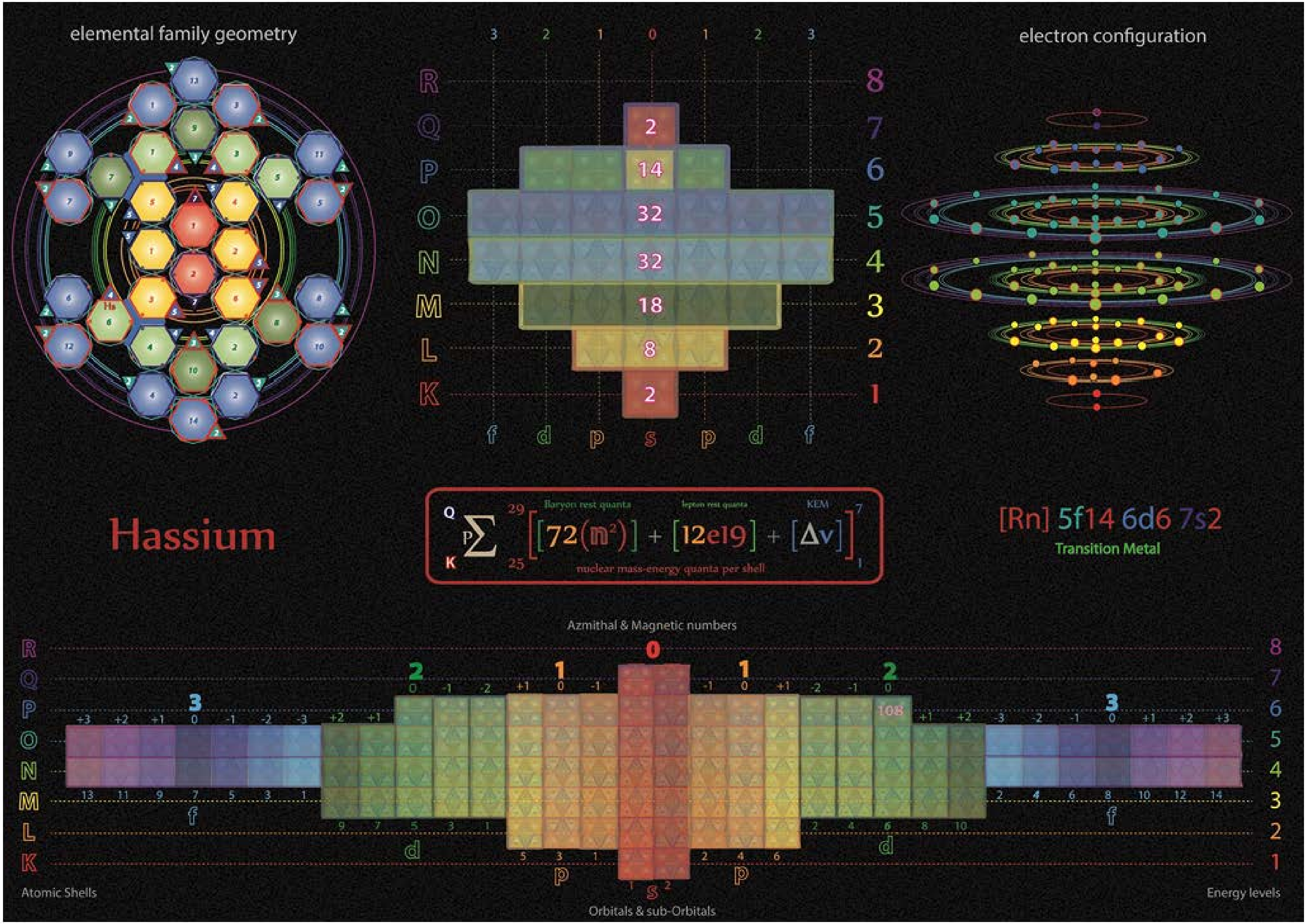

elemental family geometry
Db
R Q P O N M L K
8 7 6 5 4 3 2 1
2
11
32
32
18
8
2
f d p s p d f
electron configuration
Dubnium
Baryon rest quanta
lepton rest quanta
KEM
[72(n²)] + [12e19] + [Δv]
nuclear mass-energy quanta per shell
[Rn] 5f14 6d3 7s2
Transition Metal
Azmithal & Magnetic numbers
105
Atomic Shells
Energy levels
Orbitals & sub-Orbitals



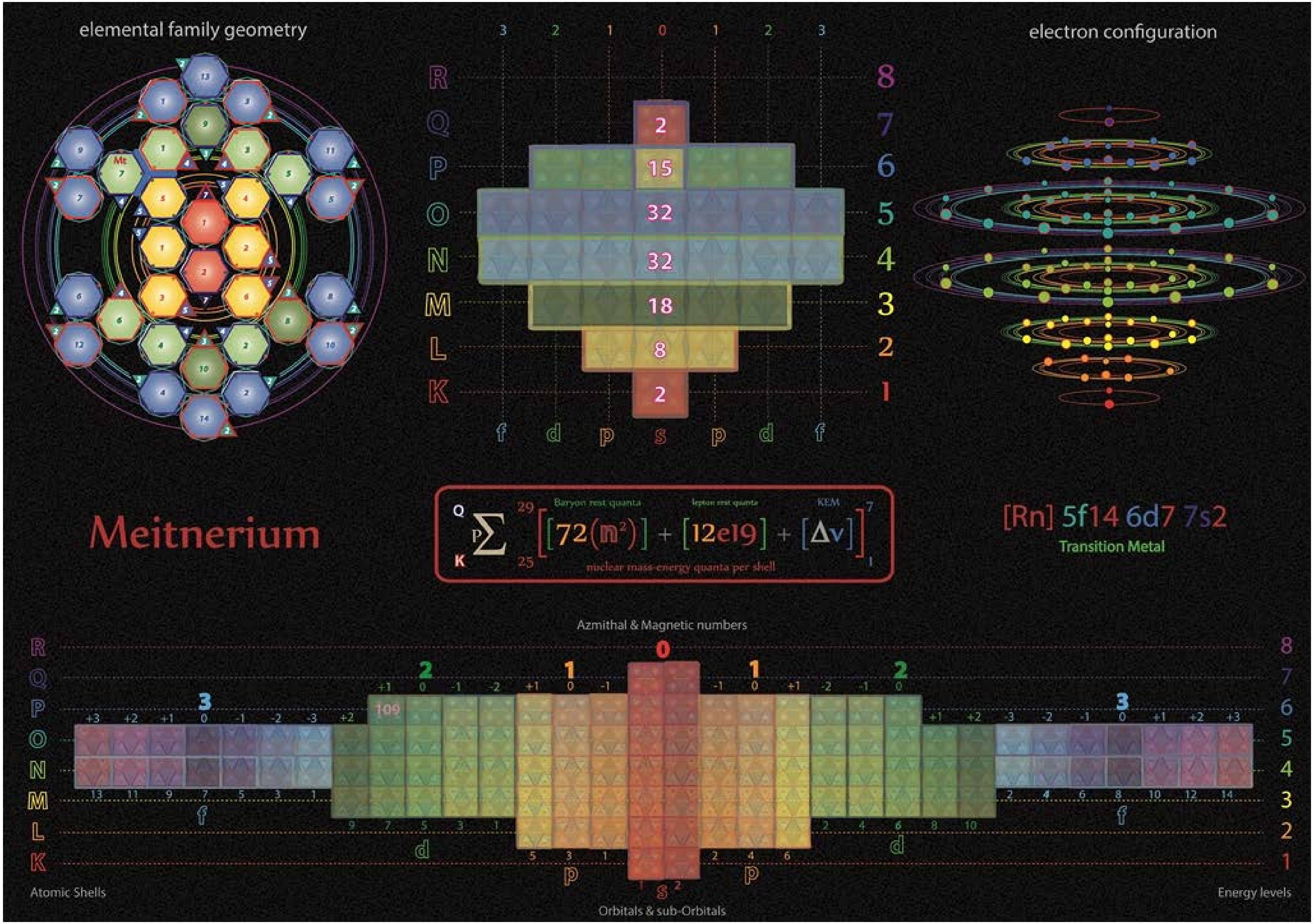
Tetryonics 53.106 - Seaborgium atomic config



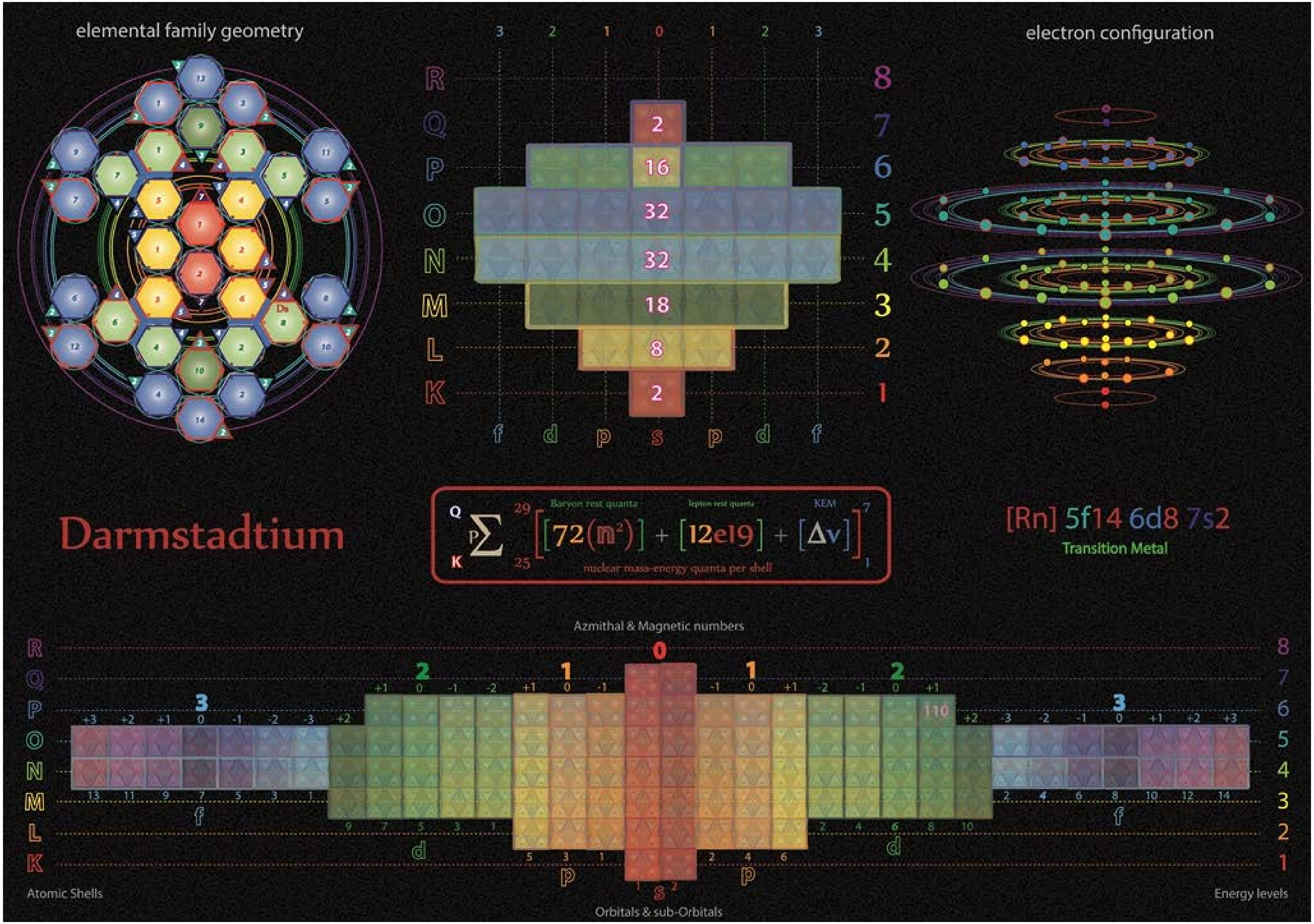
Tetryonics 53.107 - Bohrium atomic config



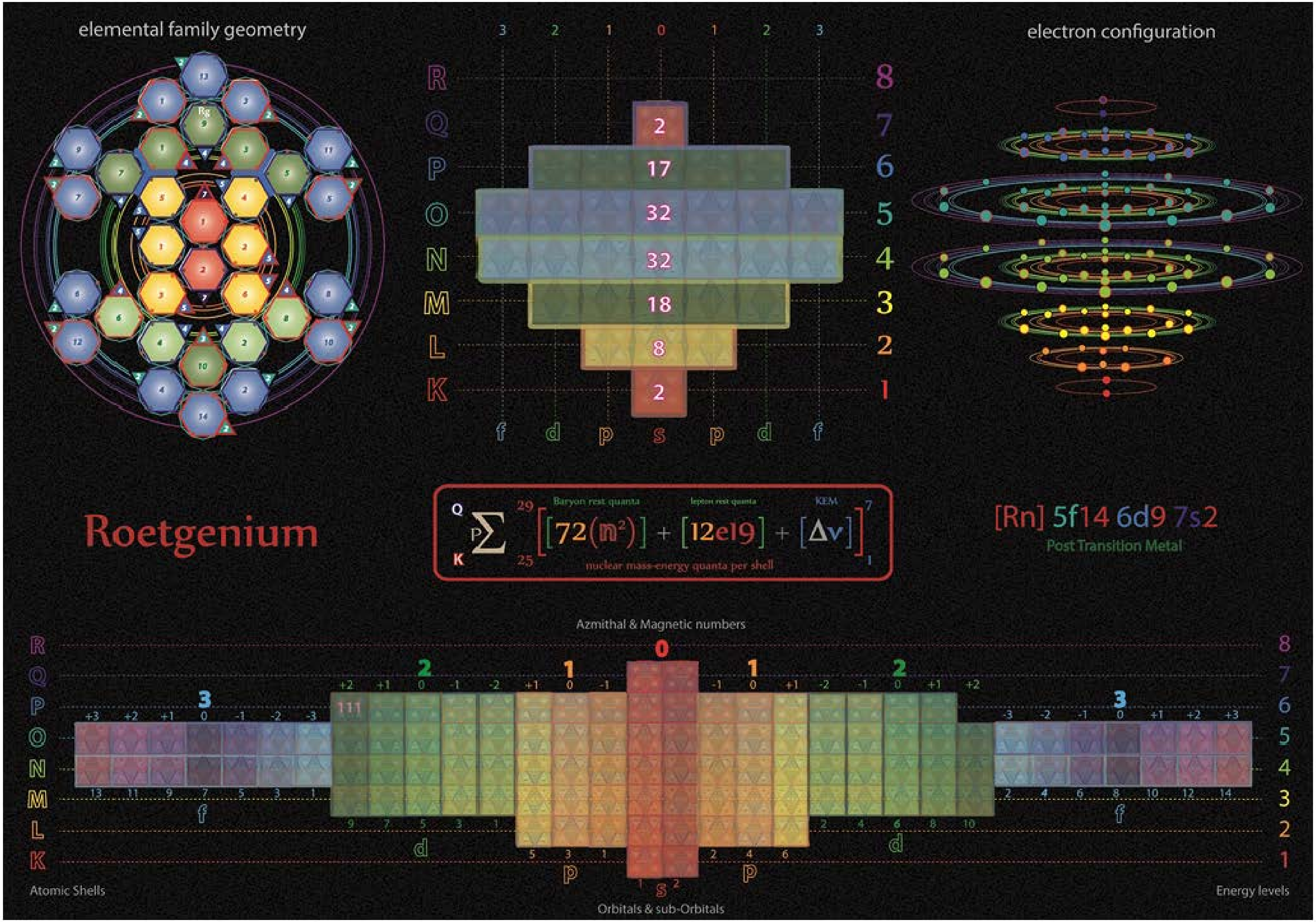
Tetryonics 53.108 - Hassium atomic config



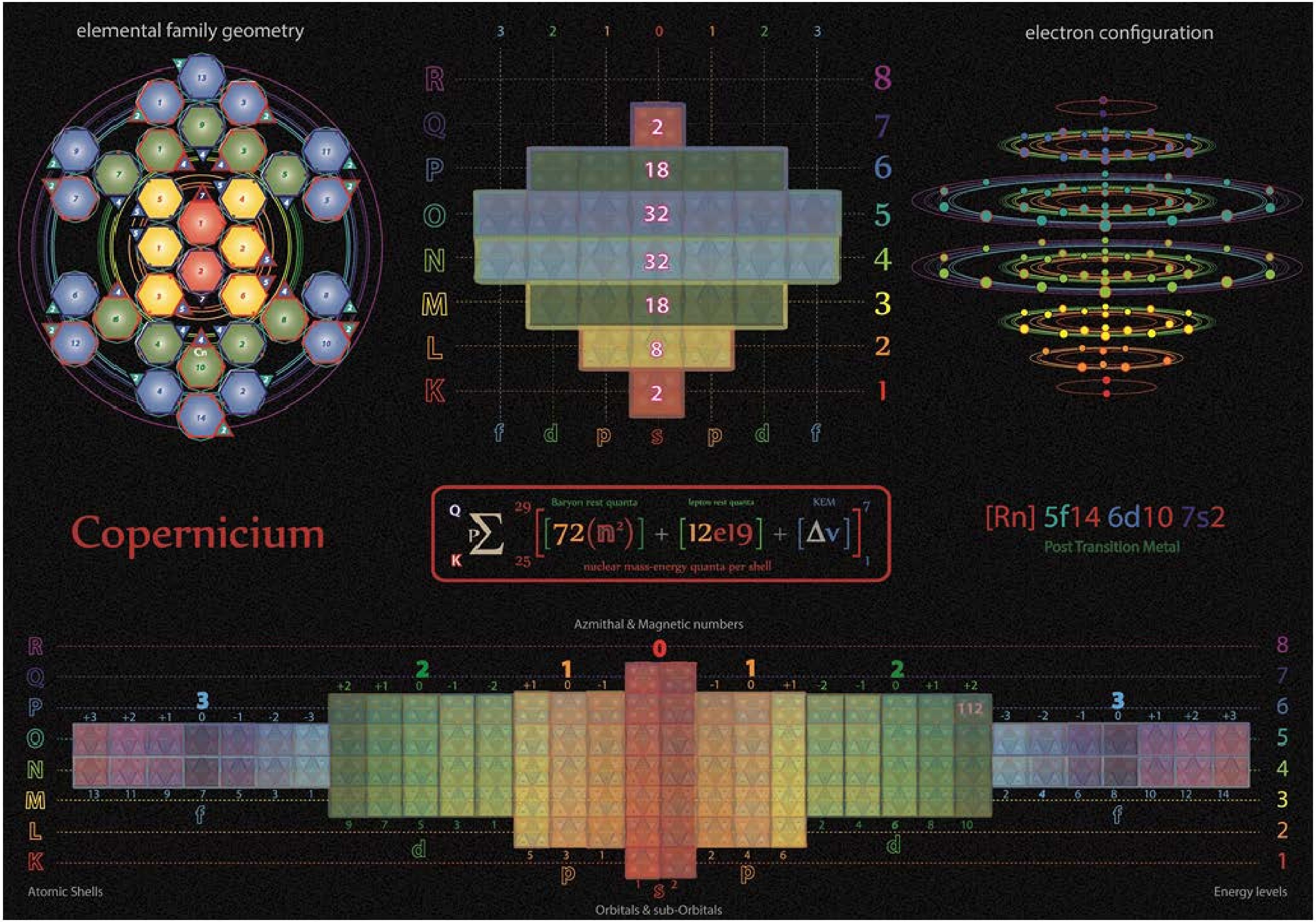
Tetryonics 53.109 - Meitnerium atomic config



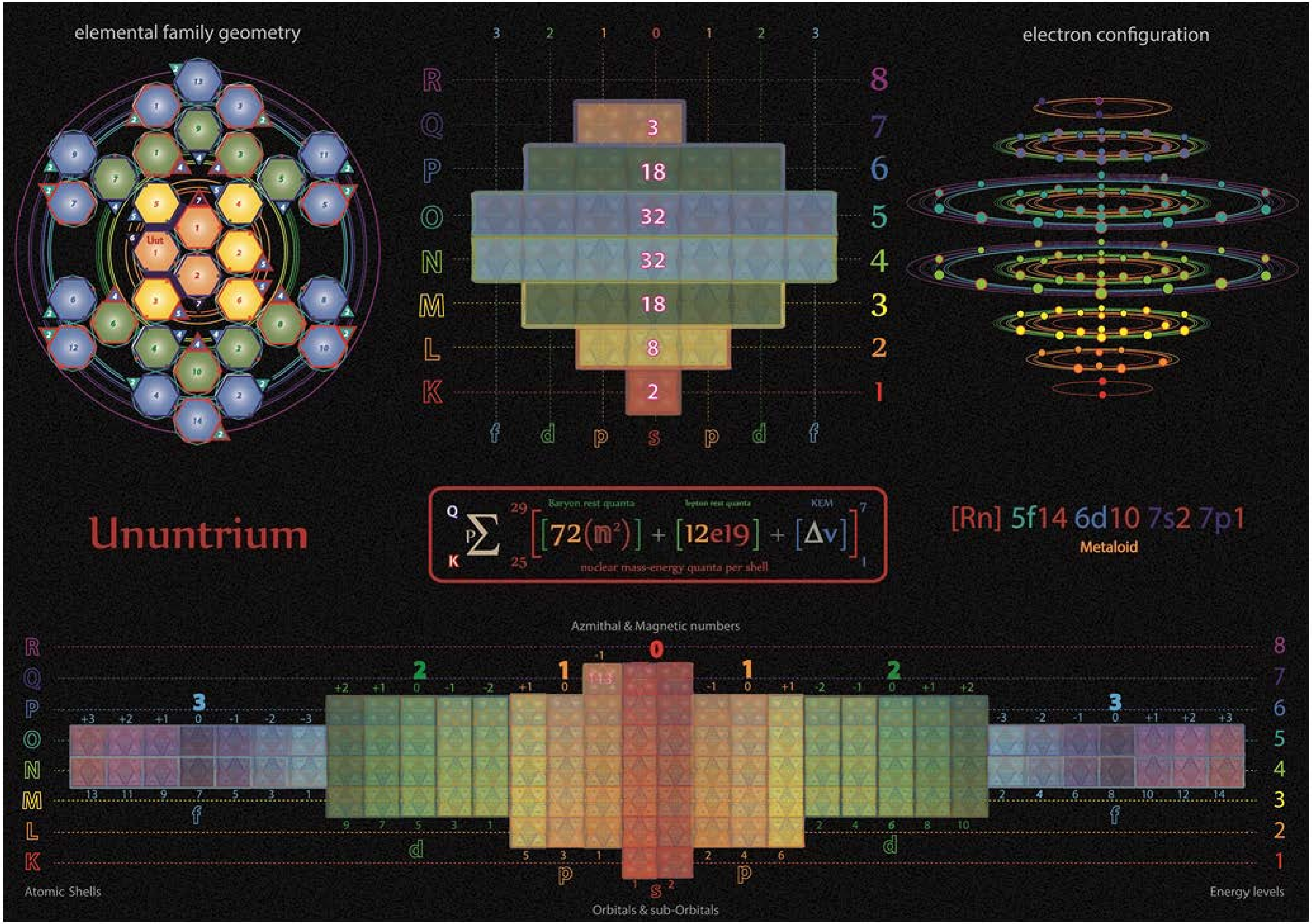
Tetryonics 53.110 - Darmstadtium atomic config



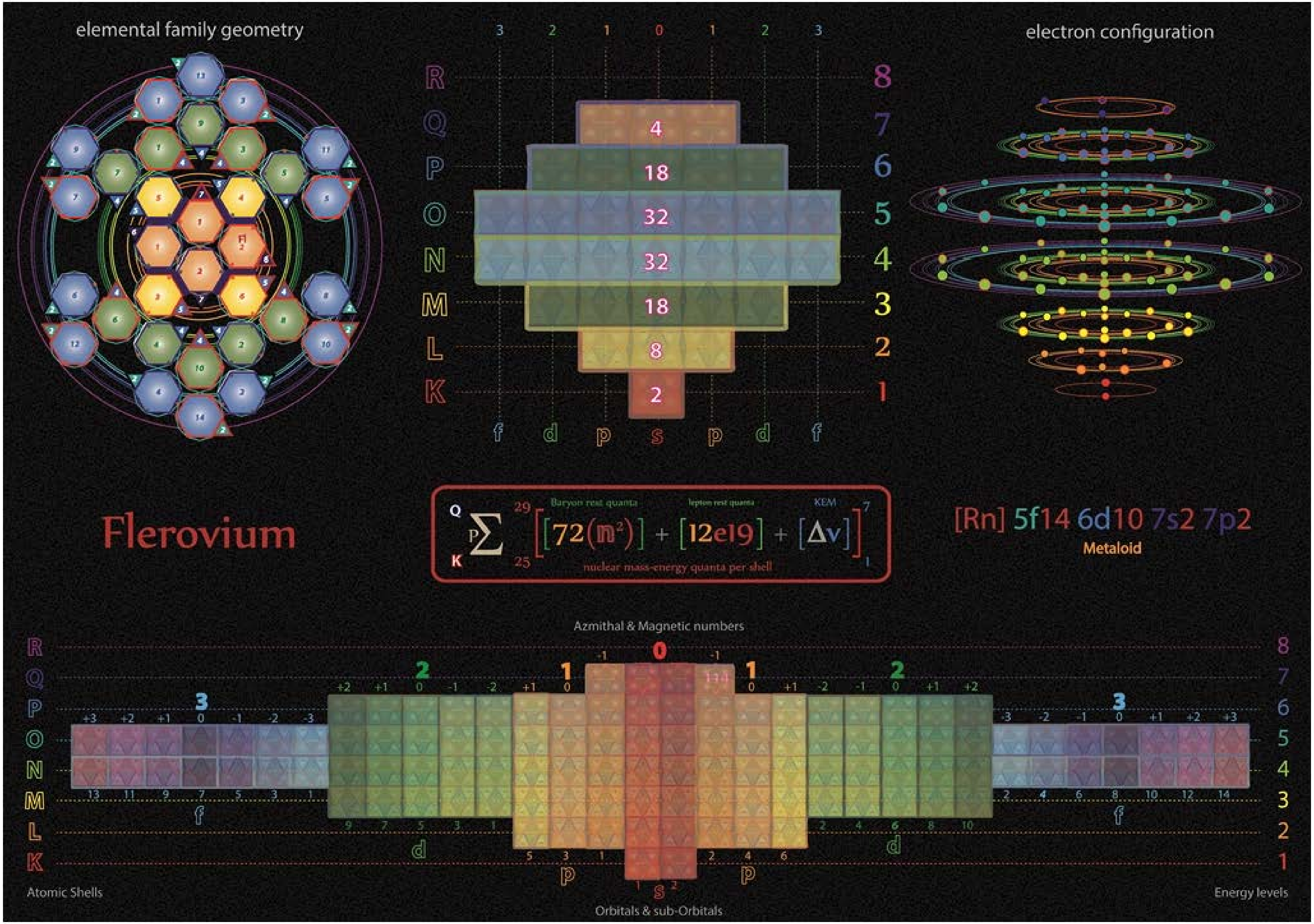
Tetryonics 53.111 - Roetgenium atomic config



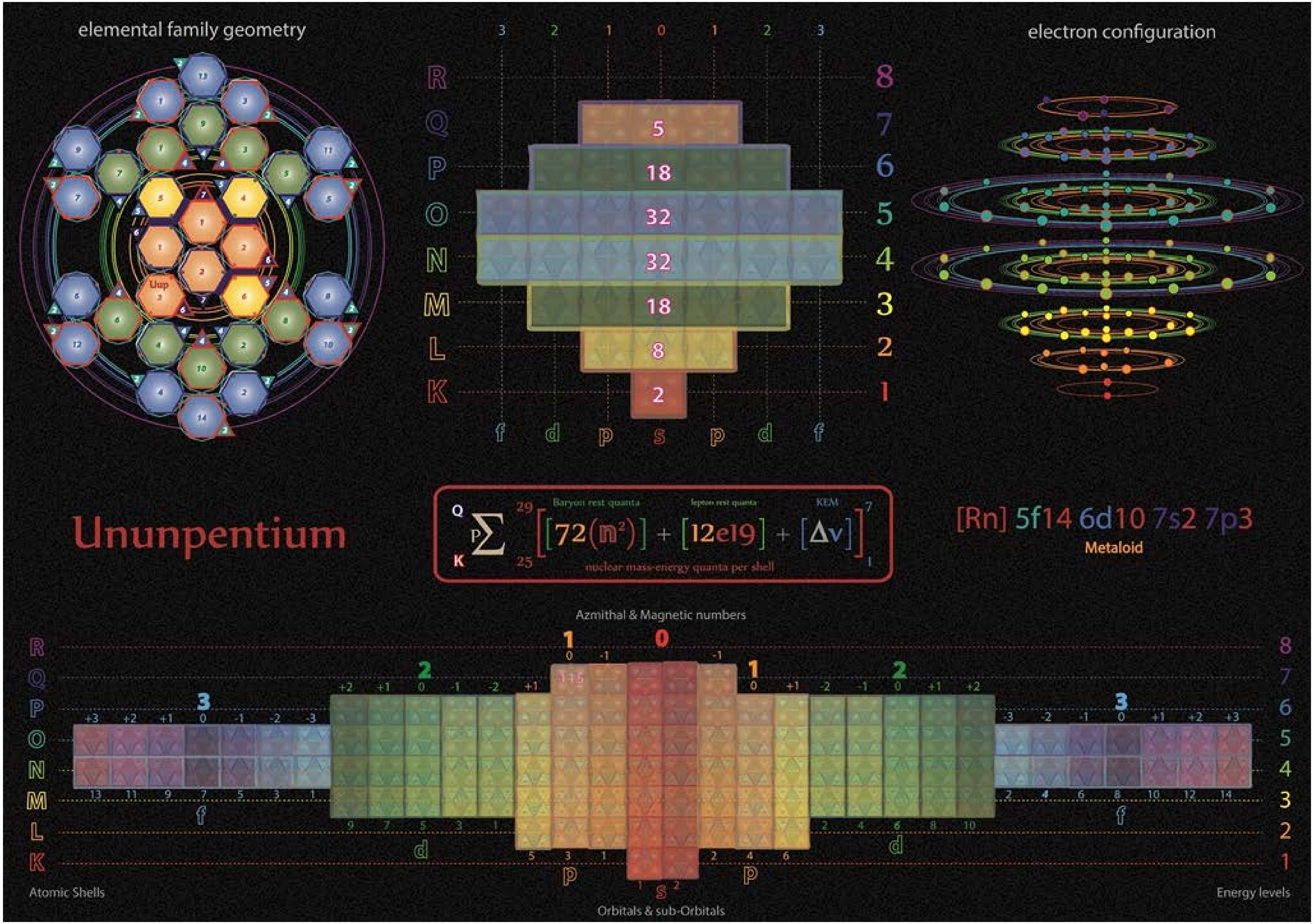
Tetryonics 53.112 - Copernicium atomic config



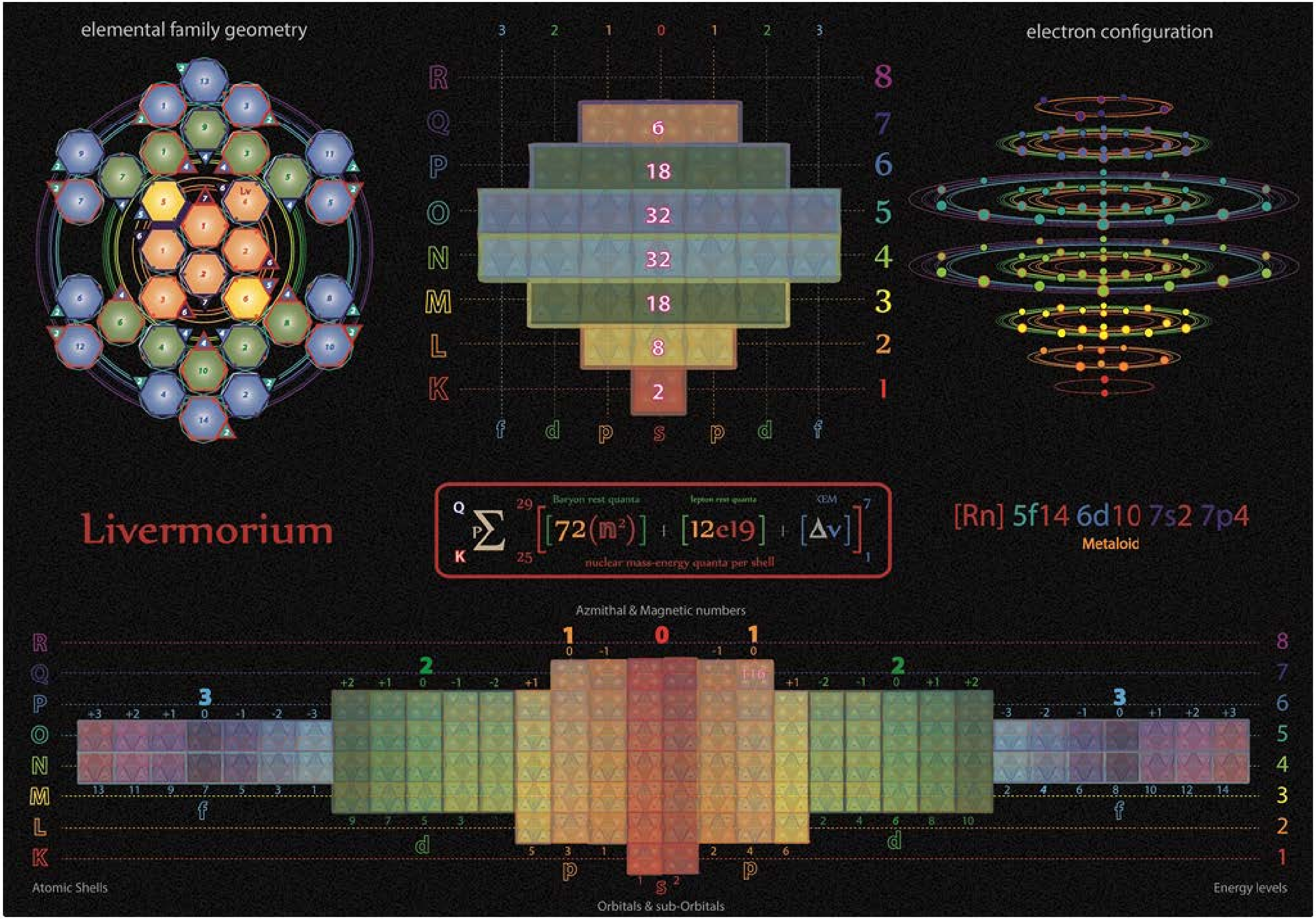
Tetryonics 53.113 - Ununtrium atomic config



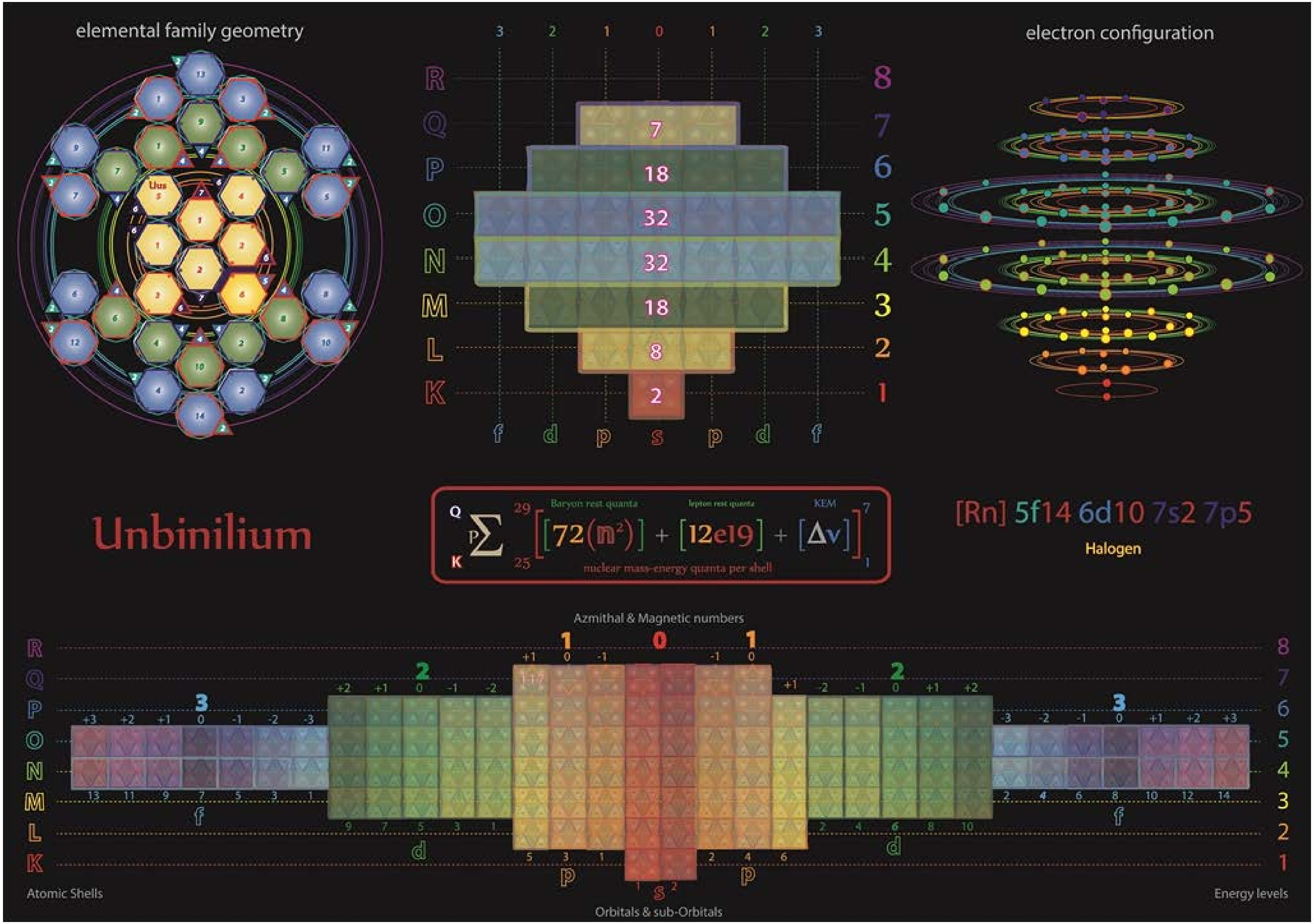
Tetryonics 53.114 - Flerovium atomic config



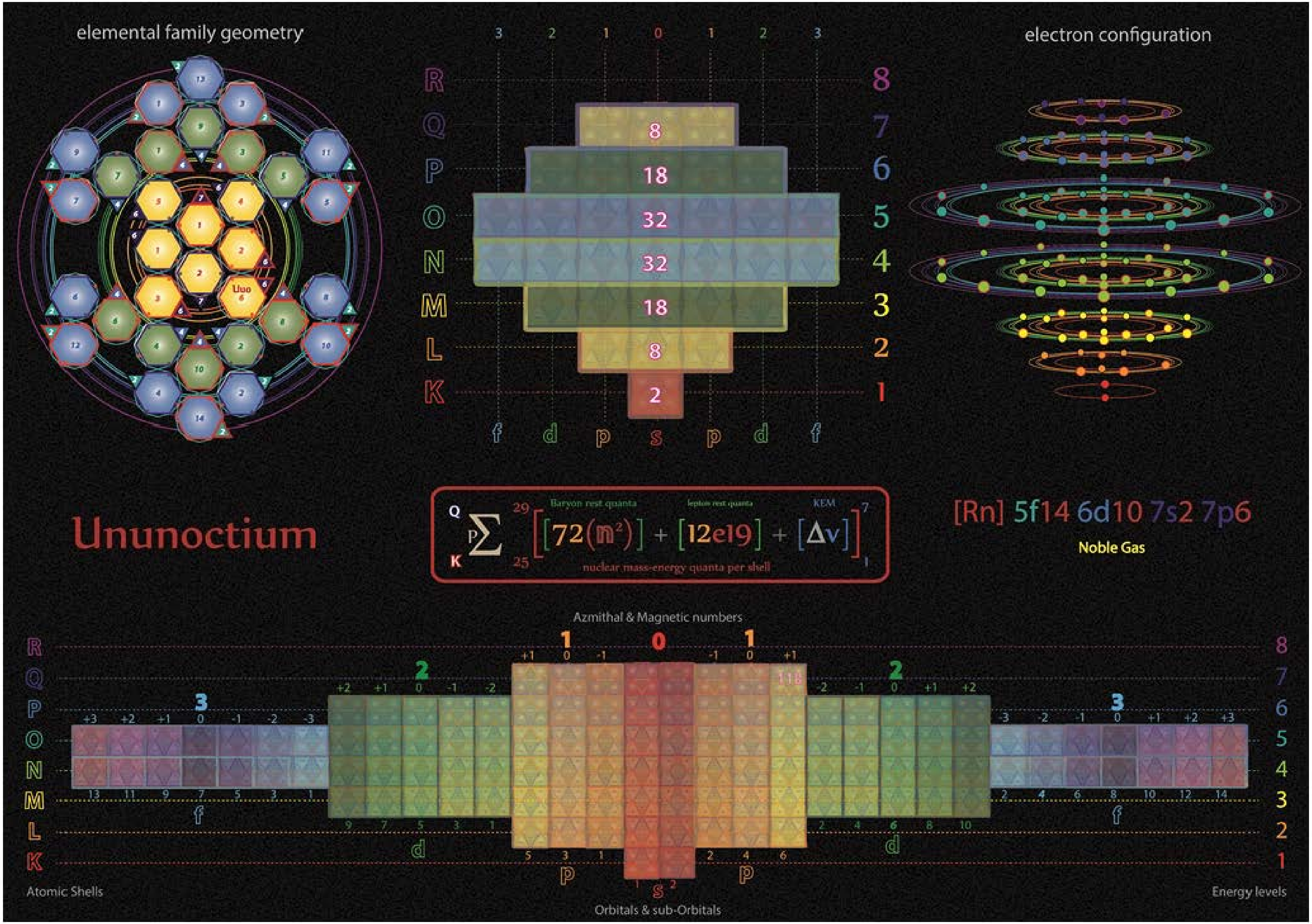
Tetryonics 53.115 - Ununpentium atomic config



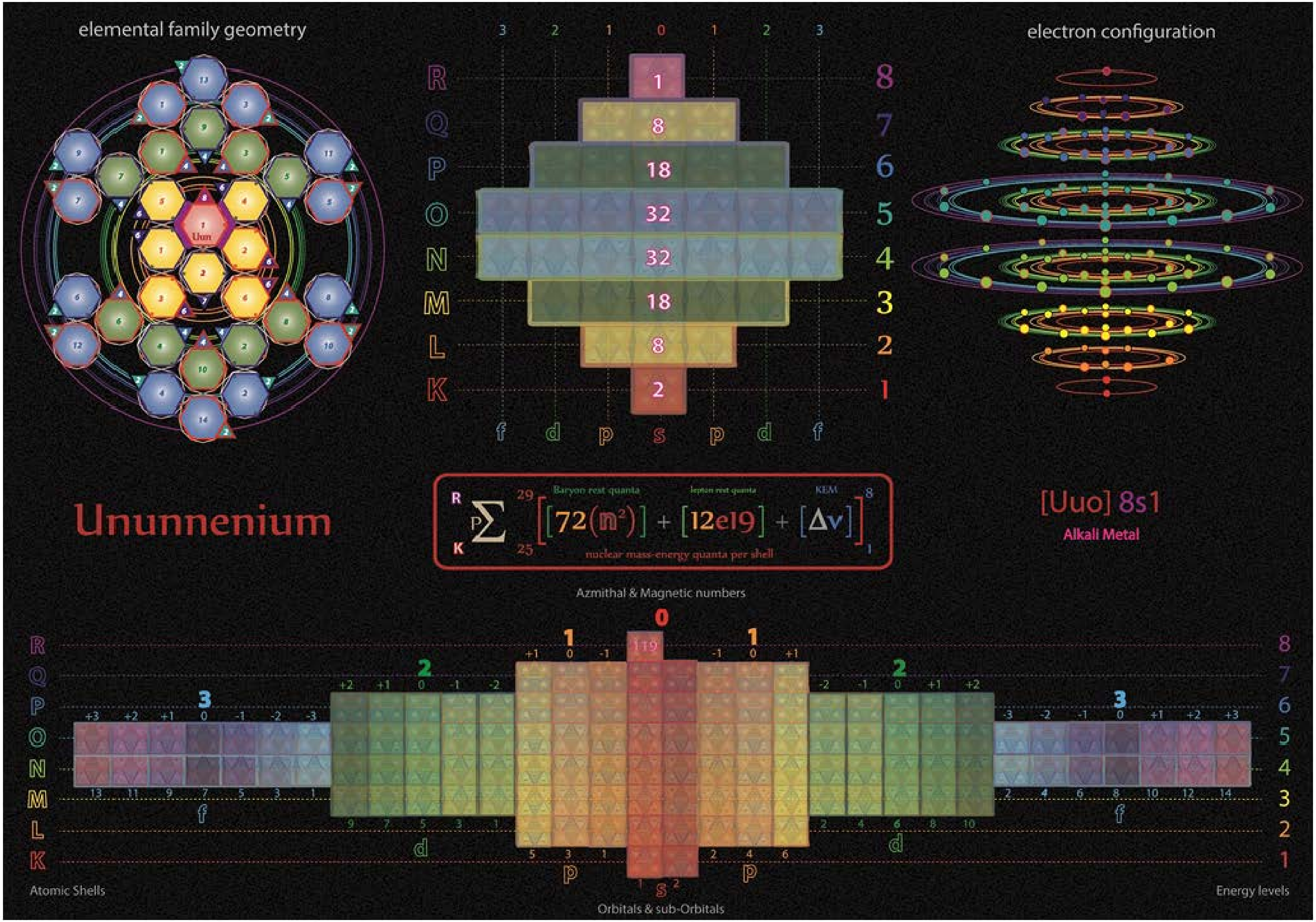
Tetryonics 53.116 - Livermorium atomic config



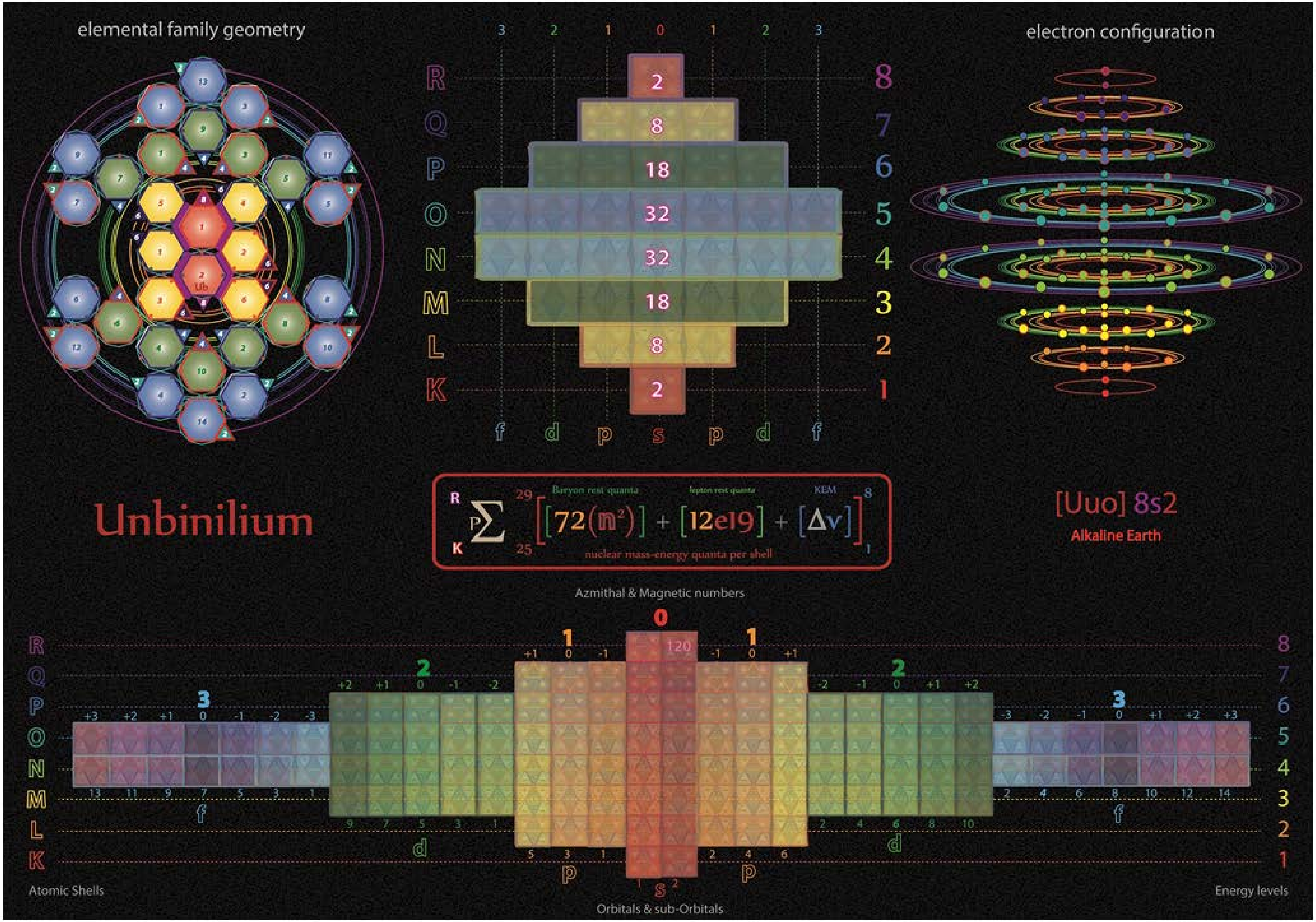
Tetryonics 53.117 - Ununseptium atomic config

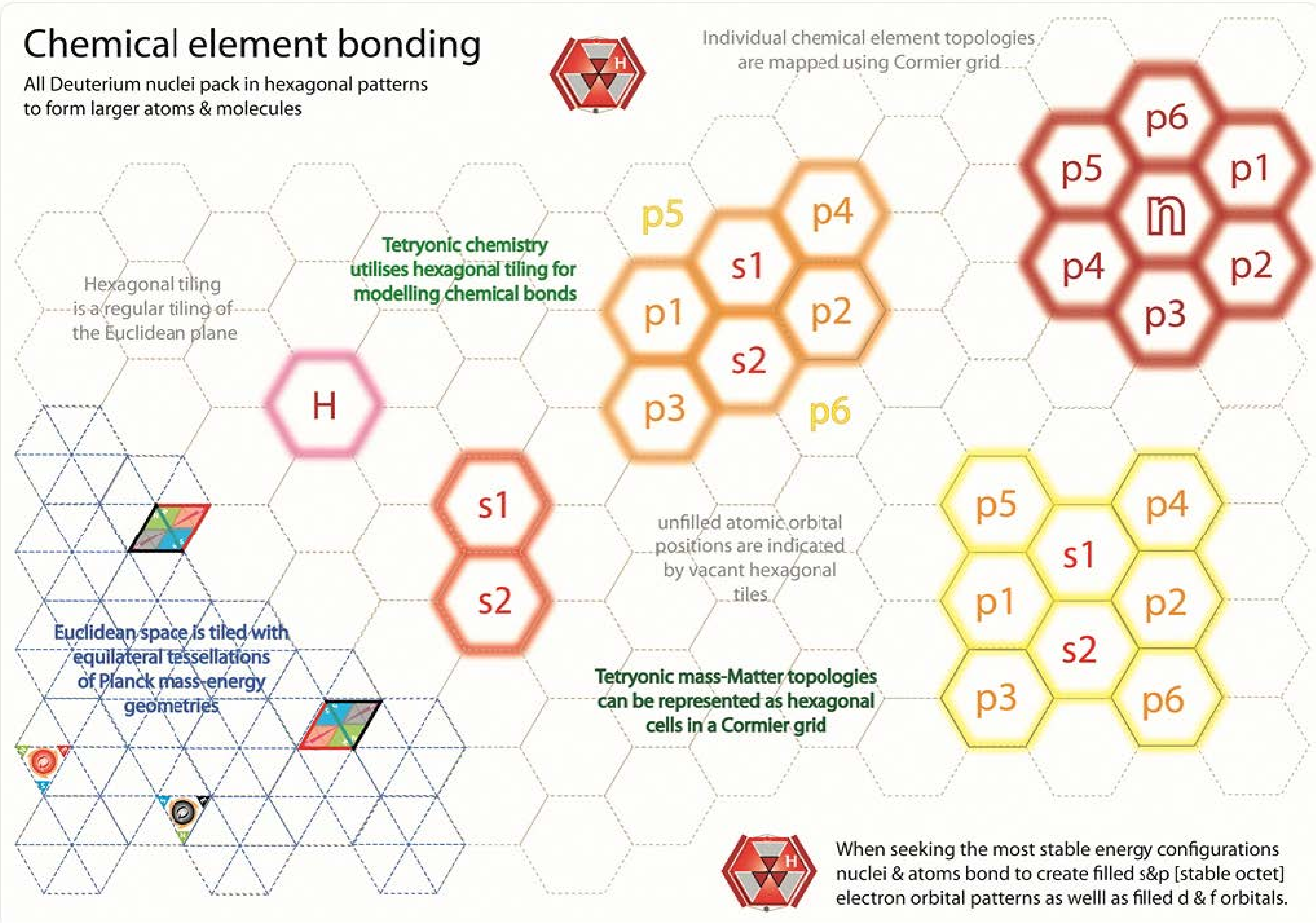


elemental family geometry
electron configuration
Ununoctium
[Rn] 5f14 6d10 7s2 7p6
Noble Gas
Baryon rest quanta
lepton rest quanta
KEM
nuclear mass-energy quanta per shell
Azmithal & Magnetic numbers
Atomic Shells
Energy levels
Orbitals & sub-Orbitals

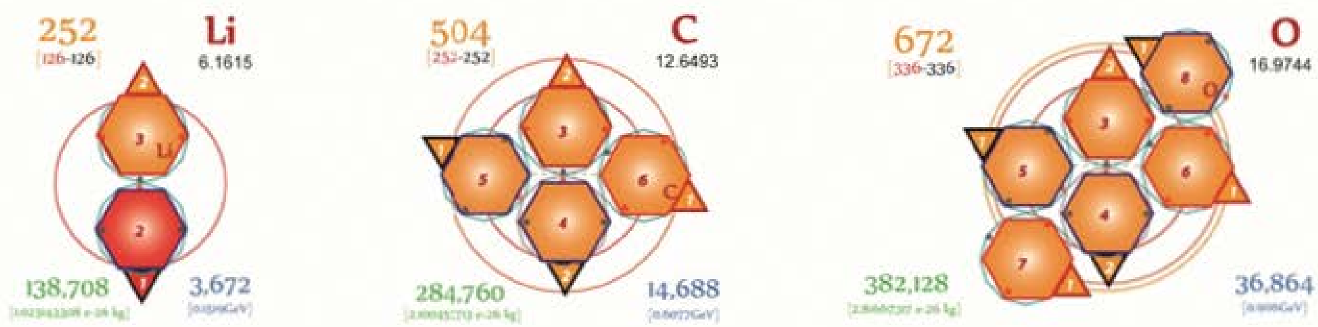


Tetryonics 53.119 - Ununnenium atomic config


elemental family geometry
electron configuration
Unbinilium
[Uuo] 8s2
Alkaline Earth
Baryon rest quanta
lepton rest quanta
KEM
[72(m²)] + [12e19] + [Δv]
nuclear mass-energy quanta per shell
Azmithal & Magnetic numbers
Atomic Shells
Energy levels
Orbitals & sub-Orbitals


Chemical element bonding
All Deuterium nuclei pack in hexagonal patterns
to form larger atoms & molecules
Individual chemical element topologies
are mapped using Cormier grid
Hexagonal tiling
is a regular tiling of
the Euclidean plane
Tetryonic chemistry
utilises hexagonal tiling for
modelling chemical bonds
H
s1
s2
p5
p4
s1
p1
p2
s2
p3
p6
p6
p5
p1
n
p4
p2
p3
unfilled atomic orbital
positions are indicated
by vacant hexagonal
tiles
Euclidean space is tiled with
equilateral tessellations
of Planck mass-energy
geometries
Tetryonic mass-Matter topologies
can be represented as hexagonal
cells in a Cormier grid
p5
p4
s1
p1
p2
s2
p3
p6
When seeking the most stable energy configurations
nuclei & atoms bond to create filled s&p [stable octet]
electron orbital patterns as welll as filled d & f orbitals.

Periodic Table Atomic configurations



Allotropes are different structural forms of the same element and can exhibit quite different physical properties and chemical behaviours

Lithium

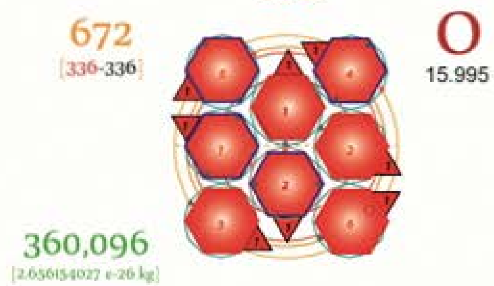
Allotropes

The Periodic Table, although useful in identifying Elements via their atomic and quantum numbers, does not reflect all the charged topologes that Deuterium nuclei can form as they combine.

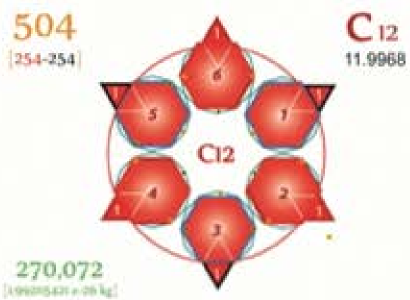
Various atomic configurations with the same Tetryonic charge, but differing in their final mass-Matter topologies and properties can be formed - they are the Allotropes

Some of the more plentiful chemical elements form this way

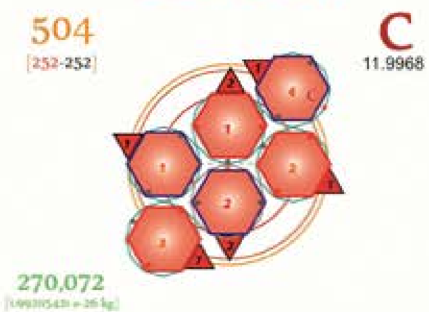
Oxygen



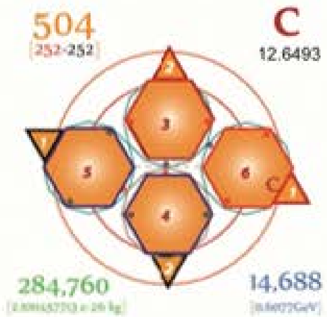
Carbon



6 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1



6 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1

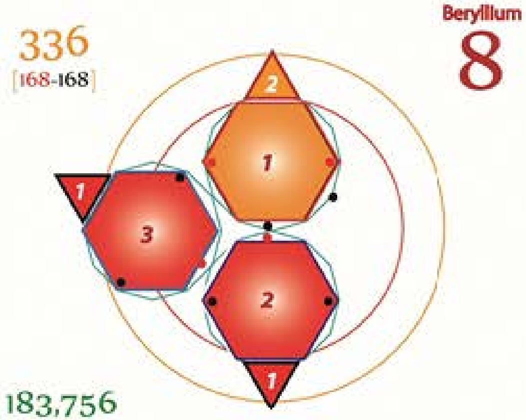


6 [Protons [24-12] Neutrons [18-18] electrons [0-12]] m1-2

Allotropes are elements created from the same number of Deuterium nuclei as periodic elements but possess a differing mass-Matter topology

Q

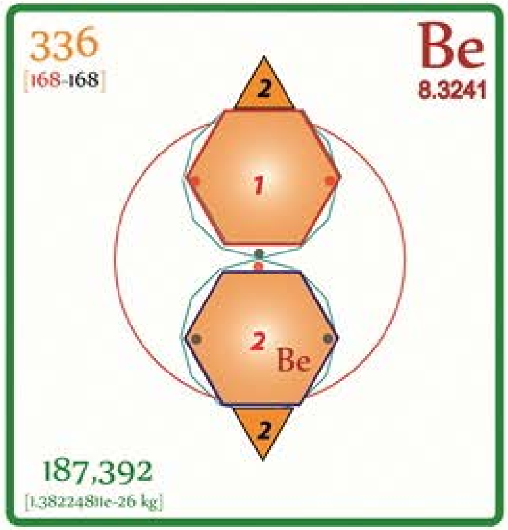
same component charge



different Matter geometries

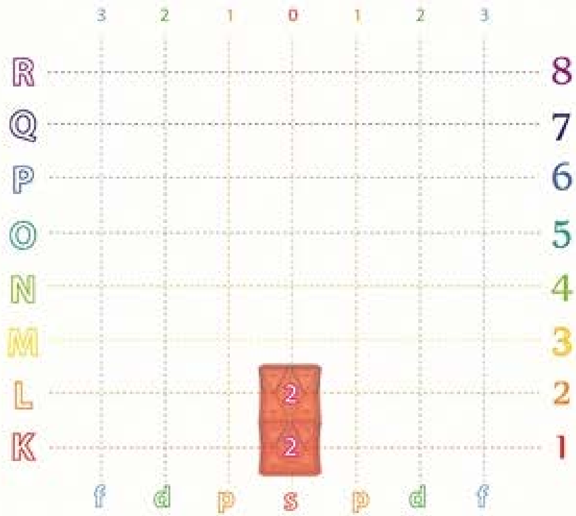
M

The varying material geometries allows what is the same chemical element to possess vastly different bonding points and chemical attributes

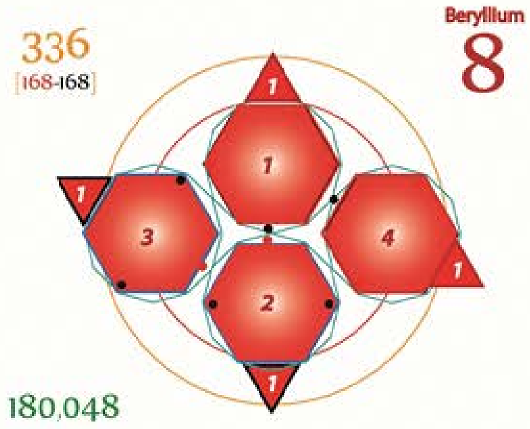


Allotropic geometries

[charge vs Matter]

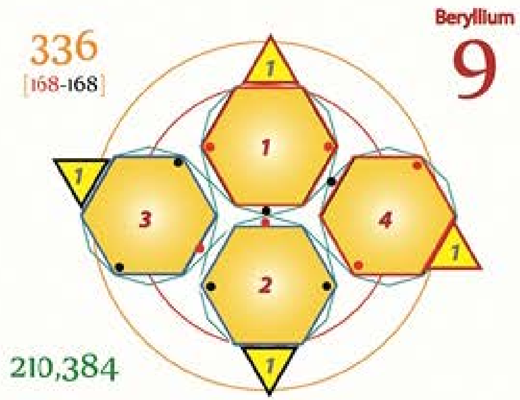


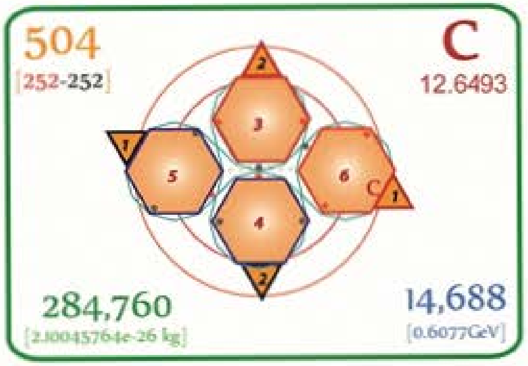
Some element allotropes have different Matter topologies that persist in different phases



Allotropes vs. Isotopes

Isotopes are elementary atoms with the same number of nuclei, but with differing energy levels, resulting in different mass-energies





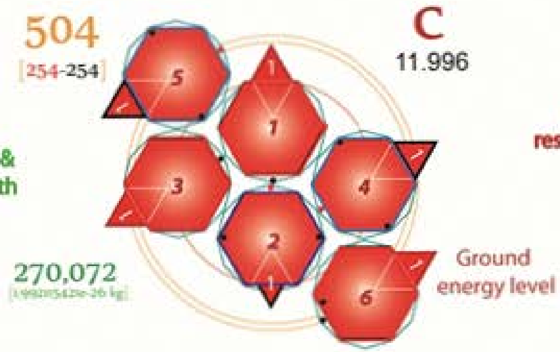
Carbon Allotropes

Carbon is capable of forming many allotropes due to its valency.

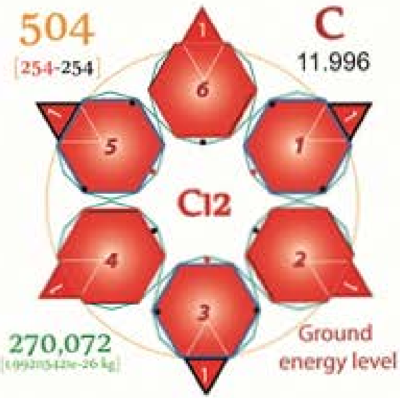
Well known forms of carbon include:

Carbon
Diamond
Graphite
Graphene
Amorphous carbon
Buckminsterfullerenes
Carbon nanotubes
Glassy carbon
atomic & diatomic carbon

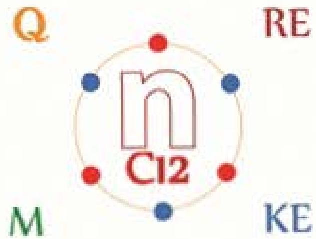
Tetryonic theory affords us the ability to model the charged mass-energy geometries & 3D Matter topologies of each element along with its bonding points



It also allows for the calculation of the molar rest mass-energy geometry of any Matter topology



Graphene has a unique p orbital arrangement of its electrons

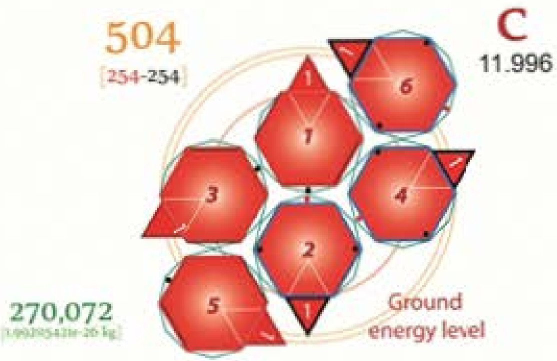


Electron Configuration

[n] p6

Shell			Molar meM	Nuclei per shell
R	8	446,976	19.855	6
Q	7	418,680	18.598	6
P	6	391,392	17.385	6
O	5	365,112	16.218	6
N	4	339,840	15.095	6
M	3	315,576	14.018	6
L	2	292,320	12.985	6
K	1	270,072	11.996	6

energy level

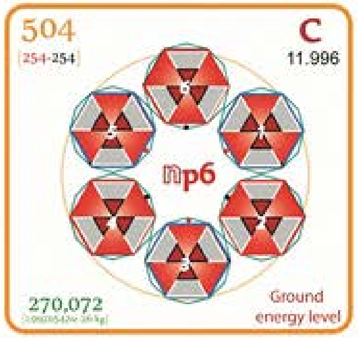


Carbon-14, a radioactive isotope of carbon with a half-life of 5,730 years, is used to find the age of formerly living things through a process known as radiocarbon dating.

In 1961 the international unions of physicists and chemists agreed to use the mass of the isotope carbon-12 as the basis for atomic weight.

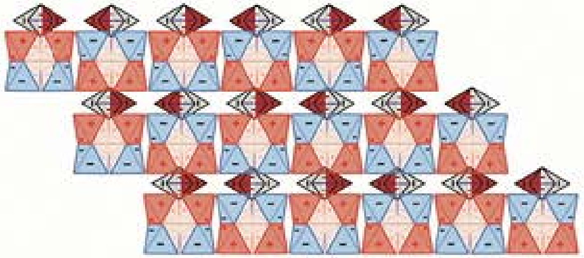
There are nearly ten million known carbon compounds and an entire branch of chemistry, known as organic chemistry, is devoted to their study.

Graphene

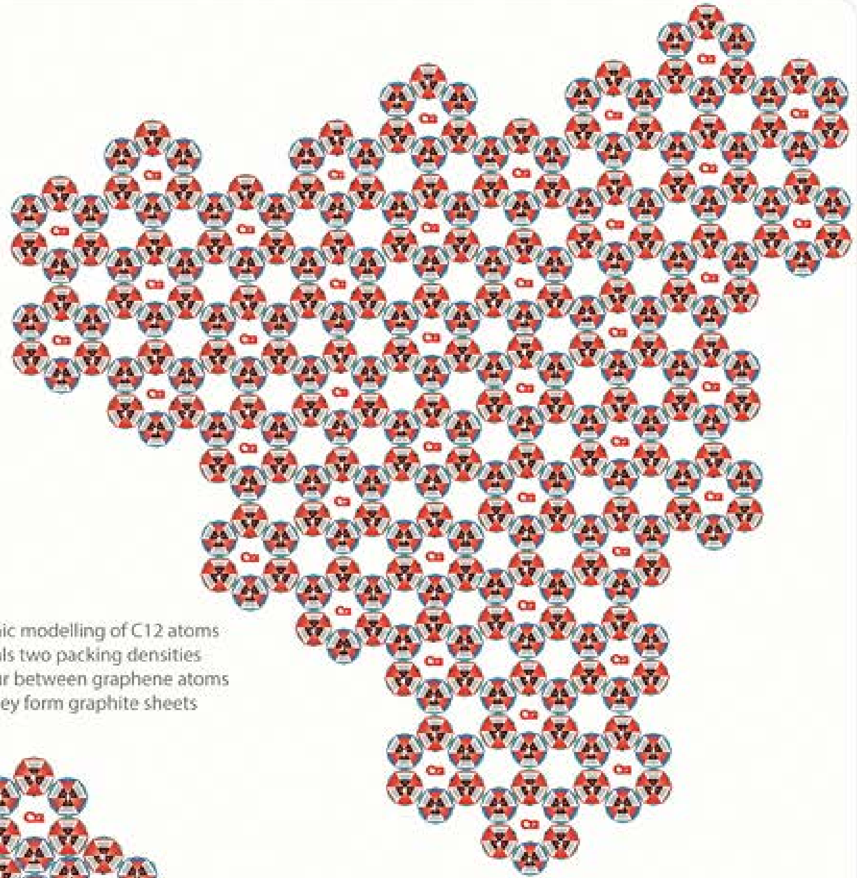


Graphene is also an allotrope of carbon.

Its structure is one-atom-thick planar sheets of sp2-bonded carbon atoms that are densely packed in a honeycomb crystal lattice



Graphite electrons can act as atomic bearings between the planar sheets of graphene

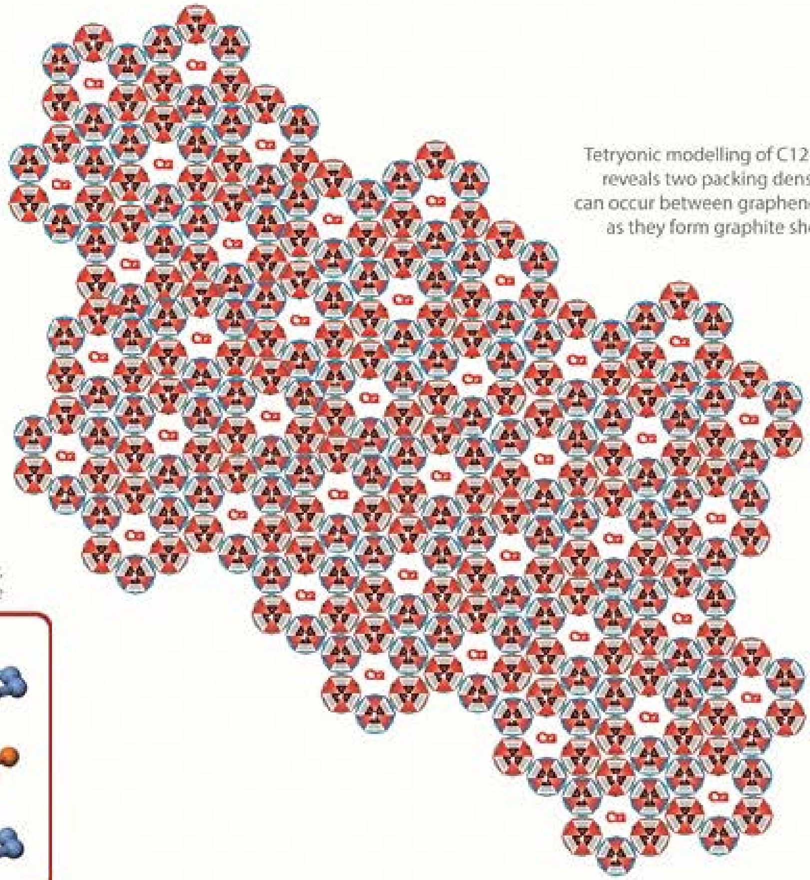


Graphite

The mineral graphite is an allotrope of carbon.

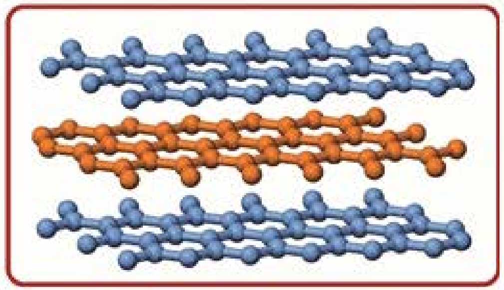
Unlike periodic table carbon [diamond], graphite is an electrical conductor, a semi-metal.

And Graphite is the most stable form of carbon under standard conditions.

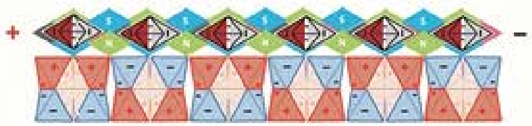


Tetryonic modelling of C12 atoms reveals two packing densities can occur between graphene atoms as they form graphite sheets

Graphite has a layered, planar structure. In each layer, the carbon atoms are arranged in a hexagonal lattice



Unlike periodic carbon where electrons are tightly bound, graphite is highly conductive, with electrical energy being propagated via the electrons & their KEM fields



Graphene electrons are loosley bound to the top of the Deuterium nuclei

Carbon Nanotubes

Carbon nanotubes (CNTs) are allotropes of carbon with a cylindrical nanostructure.

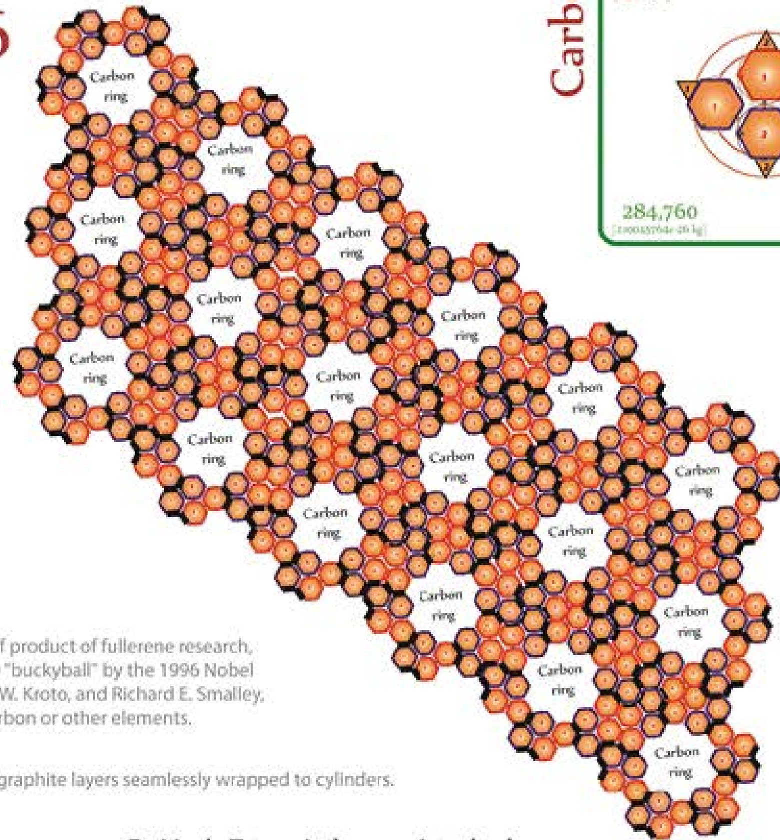
Large molecules consisting only of carbon, known as buckminsterfullerenes, or buckyballs, have recently been discovered and are currently the subject of much scientific interest.

A single buckyball consists of 60 or 70 carbon atoms (C60 or C70) linked together in a structure that looks like a soccer ball.

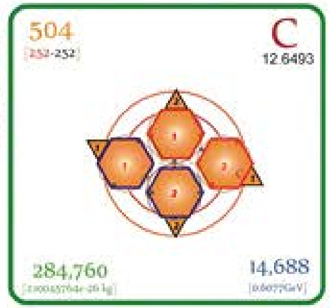
They can trap other atoms within their framework, appear to be capable of withstanding great pressures and have magnetic and superconductive properties.

They can be thought of as a sheet of graphite (a hexagonal lattice of carbon) rolled into a cylinder.

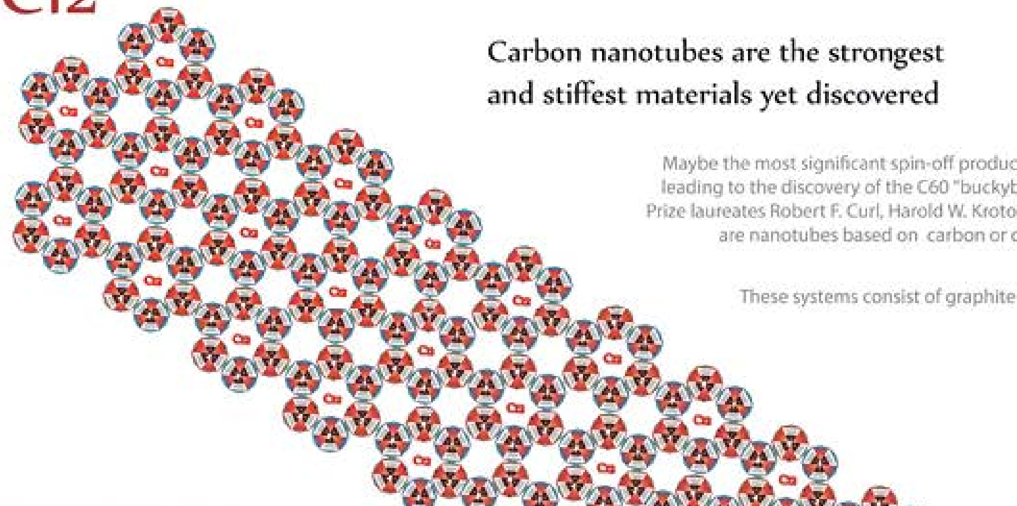
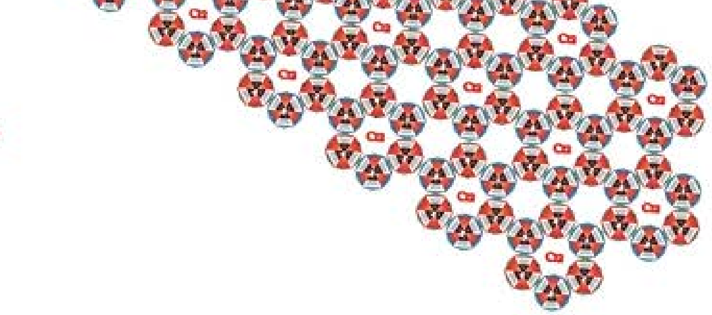
C36



Carbyne



C12

Carbon nanotubes are the strongest and stiffest materials yet discovered

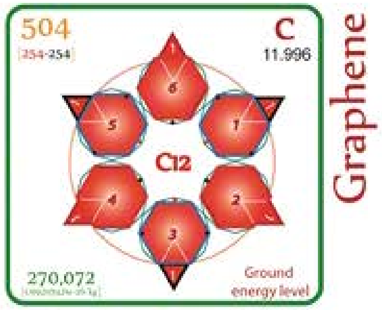
Maybe the most significant spin-off product of fullerene research, leading to the discovery of the C60 "buckyball" by the 1996 Nobel Prize laureates Robert F. Curl, Harold W. Kroto, and Richard E. Smalley, are nanotubes based on carbon or other elements.

These systems consist of graphite layers seamlessly wrapped to cylinders.

Excitingly, Tetryonic theory points clearly to the possibility that organo-carbon nanotubes can be created.

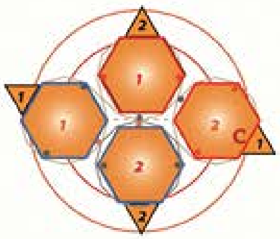
Where C36 periodic carbon could be used insetad of conventional C12 graphene atoms

Carbyne

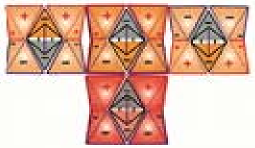


C60

Nanotubes are members of the fullerene structural family, which also includes the spherical buckyballs, and the ends of a nanotube may be capped with a hemisphere of the buckyball structure.

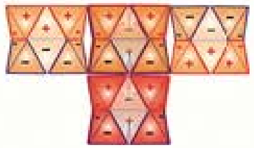


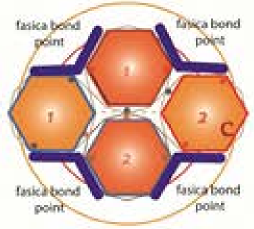
Periodic [C6] Carbon



Diamonds

are a metastable allotrope of carbon,
where the carbon atoms are arranged in
cubic crystal structure called a diamond lattice.

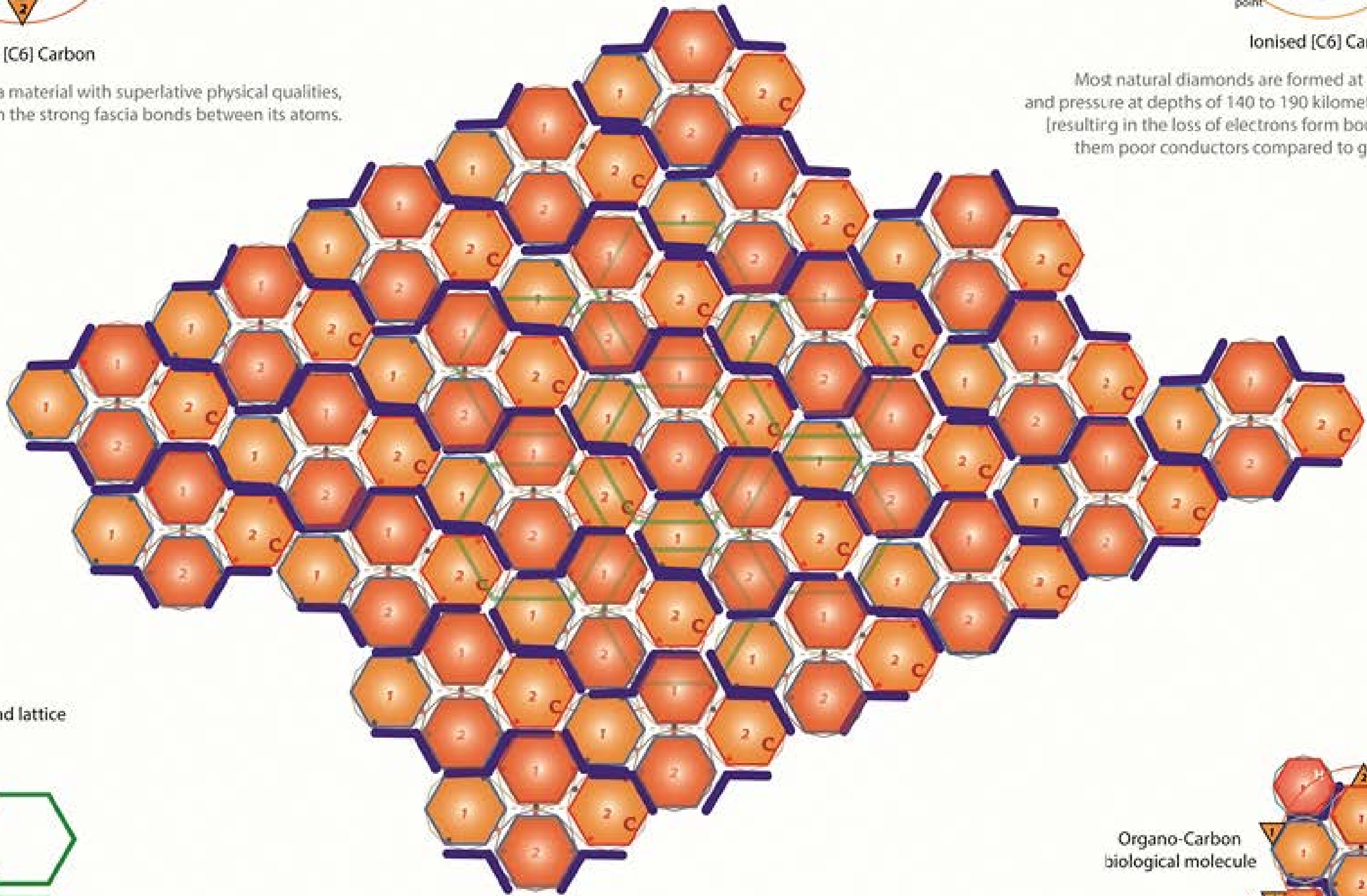




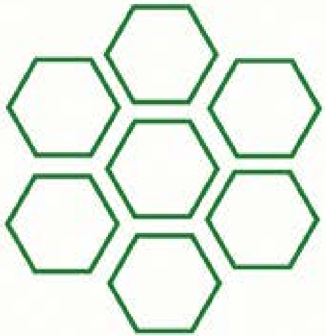
Ionised [C6] Carbon

Diamonds are renowned as a material with superlative physical qualities, most of which originate from the strong fascia bonds between its atoms.

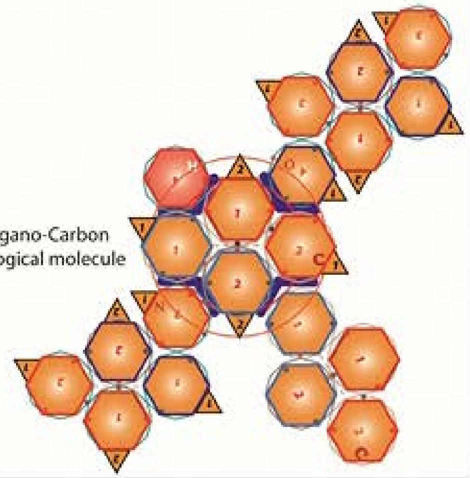
Most natural diamonds are formed at high temperature and pressure at depths of 140 to 190 kilometers in the Earth's mantle [resulting in the loss of electrons form bound positions, making them poor conductors compared to grahphene atoms].



filled n[C7] Carbon diamond lattice

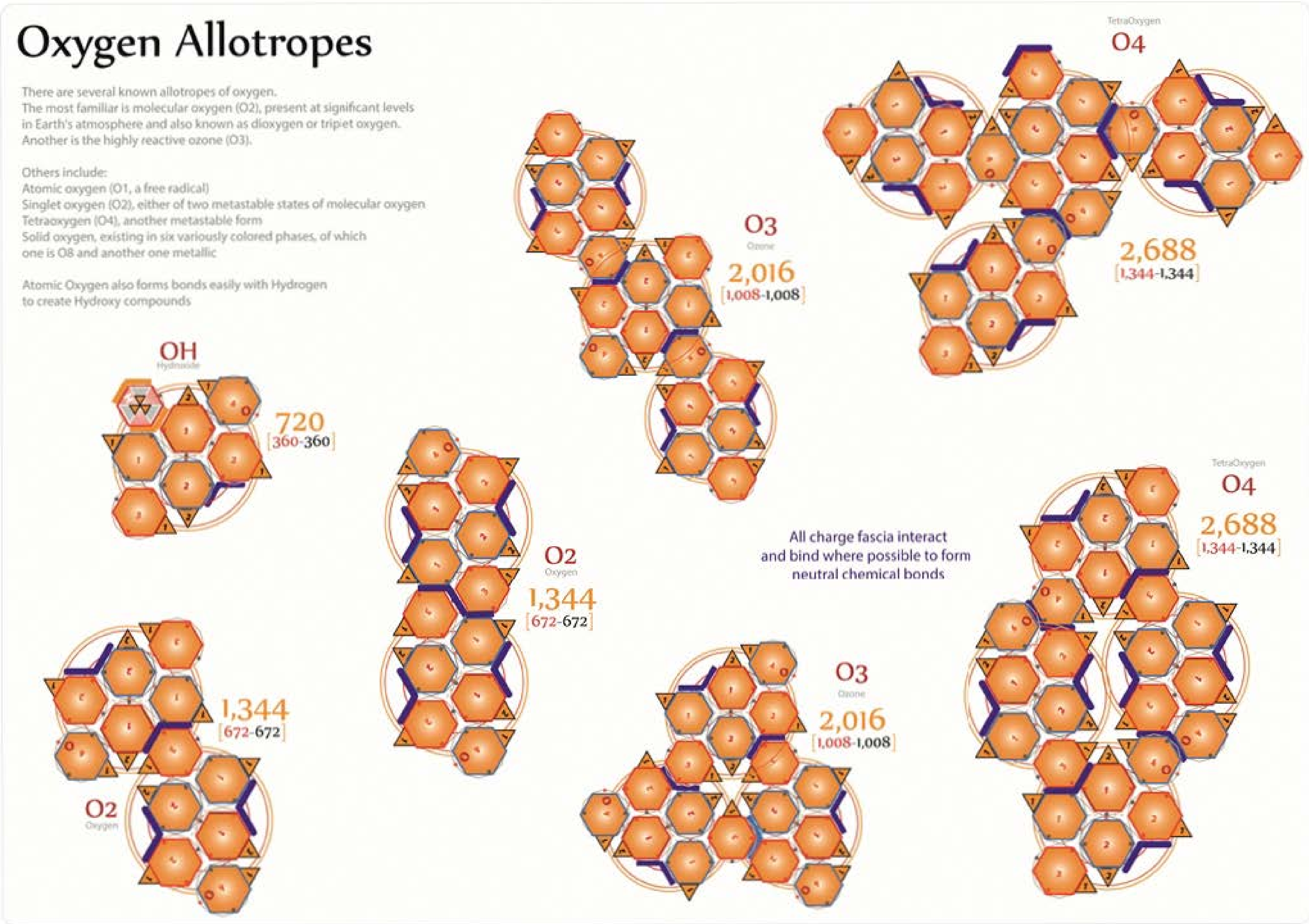


Organo-Carbon biological molecule



The chemical bonds that hold the carbon atoms in diamonds together are stronger than those in graphite.

In diamonds, the bonds form an inflexible three-dimensional lattice, whereas in graphite, the atoms are tightly bonded into sheets, which can slide easily over one another, making the overall structure weaker



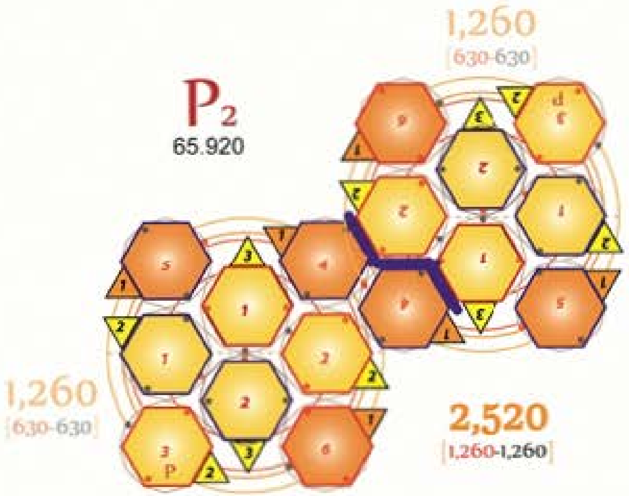
Tetryonics 54.08 - Oxygen allotropes

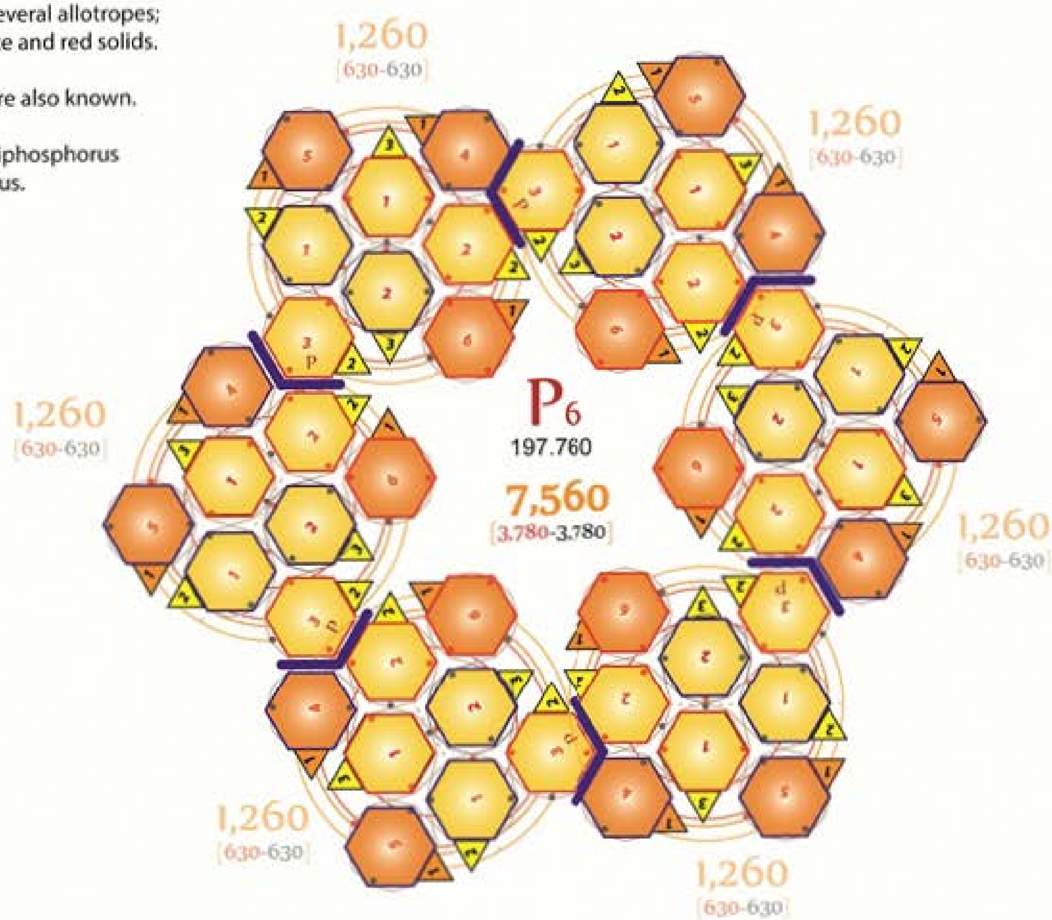
Phosphor Allotropes

Elemental phosphorus can exist in several allotropes; the most common of which are white and red solids.

Solid violet and black allotropes are also known.

Gaseous phosphorus exists as diphosphorus and atomic phosphorus.



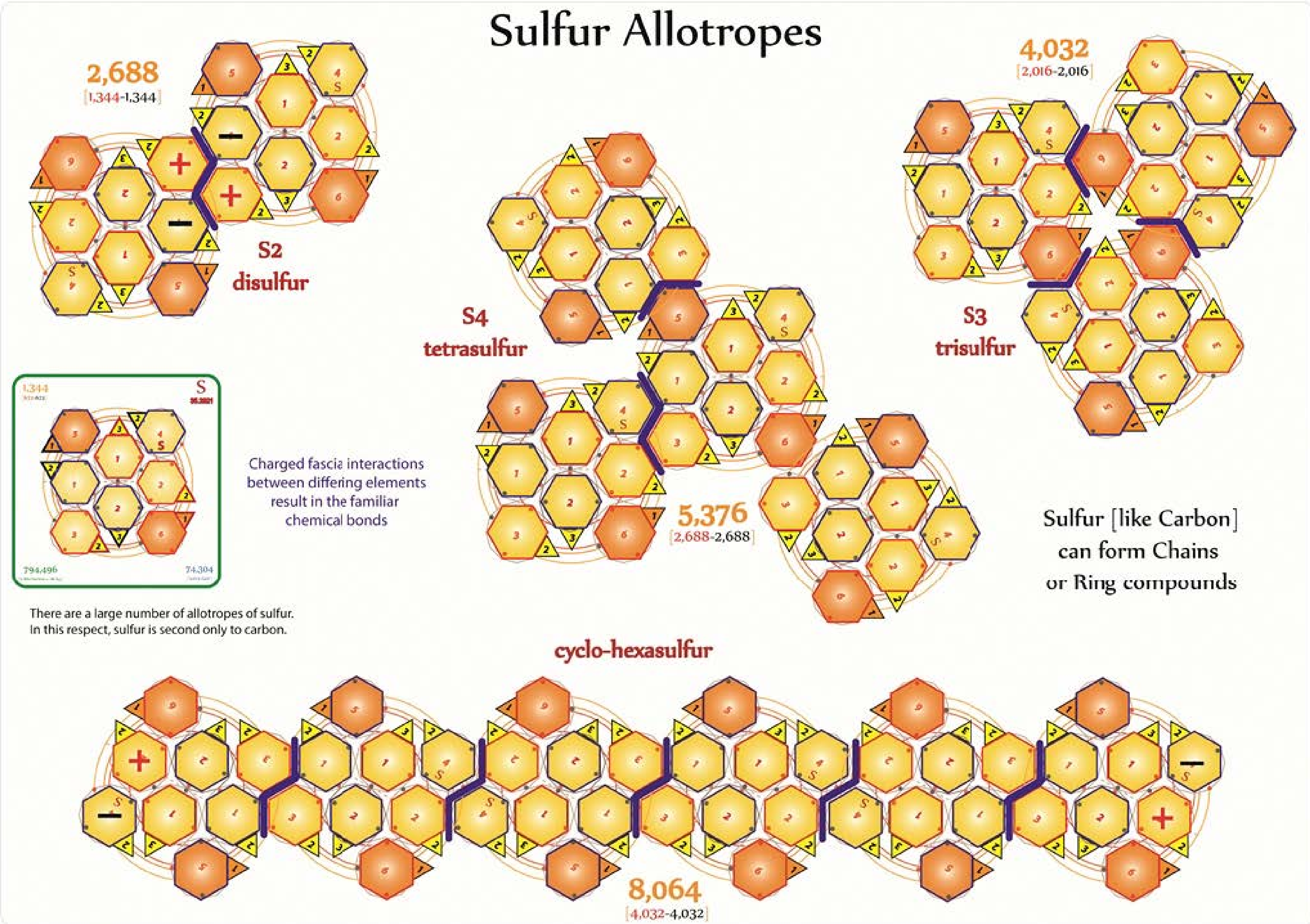


The diphosphorus allotrope (P2) can be obtained normally only under extreme conditions (for example, from P4 at 1100 kelvin).

Nevertheless, some advancements were obtained in generating the diatomic molecule in homogenous solution, under normal conditions with the use by some transition metal complexes (based on for example tungsten and niobium).

Black phosphorus is the thermodynamically stable form of phosphorus at room temperature and pressure. It is obtained by heating white phosphorus under high pressures (12,000 atmospheres).

In appearance, properties and structure it is very like graphite, being black and flaky, a conductor of electricity, and having puckered sheets of linked atoms



Tetryonics 54.10 - Sulfur allotrope

Isotopes

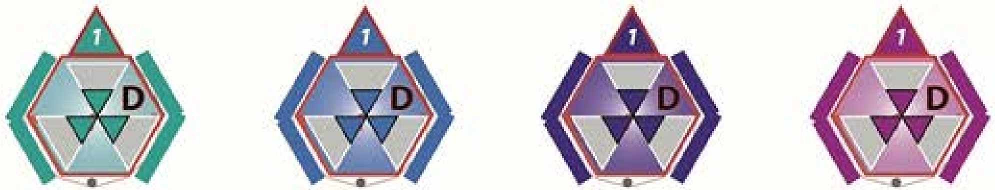
In addition to forming varying allotropic elements

Atoms can also absorb energy directly and create numerous elemental isotopes as a result of their differing nuclear energy levels

Deuterium nuclei with bound photo-electrons form quantum-scale synchronous converters

Element			1	2	3	4	5	6	7	8
0	Hydrogen		22,512	24,384	26,352	28,416	30,576	32,832	35,184	37,632
1	Deuterium		45,012	48,720	52,596	56,640	60,852	65,232	69,780	74,496
2	Helium		90,024	97,440	105,192	113,280	121,704	130,464	139,560	148,992
3	Lithium		135,036	146,160	157,788	169,920	182,556	195,696	209,340	223,488
4	Berylium		180,048	194,880	210,384	226,560	243,408	260,928	279,120	297,984
5	Boron		225,060	243,600	262,980	283,200	304,260	326,160	348,900	372,480
6	Carbon		270,072	292,320	315,576	339,840	365,112	391,392	418,680	446,976
7	Nitrogen		315,084	341,040	368,172	396,480	425,964	456,624	488,460	521,472
8	Oxygen		360,096	389,760	420,768	453,120	486,816	521,856	558,240	595,968
9	Fluorine		405,108	438,480	473,364	509,760	547,668	587,088	628,020	670,464
10	Neon		450,120	487,200	525,960	566,400	608,520	652,320	697,800	744,960
11	Sodium		495,132	535,920	578,556	623,040	669,372	717,552	767,580	819,456
12	Magnesium		540,144	584,640	631,152	679,680	730,224	782,784	837,360	893,952
13	Aluminium		585,156	633,360	683,748	736,320	791,076	848,016	907,140	968,448
14	Silicon		630,168	682,080	736,344	792,960	851,928	913,248	976,920	1,042,944
15	Phosphorus		675,180	730,800	788,940	849,600	912,780	978,480	1,046,700	1,117,440
16	Sulfur		720,192	779,520	841,536	906,240	973,632	1,043,712	1,116,480	1,191,936
17	Chlorine		765,204	828,240	894,132	962,880	1,034,484	1,108,944	1,186,260	1,266,432
18	Argon		810,216	876,960	946,728	1,019,520	1,095,336	1,174,176	1,256,040	1,340,928
19	Potassium		855,228	925,680	999,324	1,076,160	1,156,188	1,239,408	1,325,820	1,415,424
20	Calcium		900,240	974,400	1,051,920	1,132,800	1,217,040	1,304,640	1,395,600	1,489,920

It is the increased nucleonic energy levels that creates isotopes (not extra Neutrons within an atomic nucleus)



The energy level of Baryons determines the KEM energies of photo-electrons bound to them

Most isotopes are considered to be radioactive as a result of the nuclei seeking to release excess energy in the form of photons of energy or particles with high kinetic energies

Carbon Isotopes

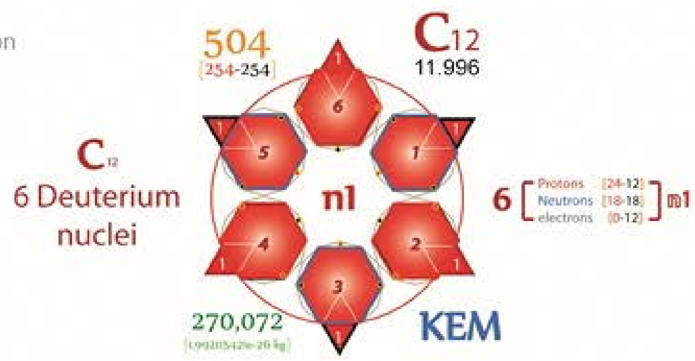
It is widely held in the scientific community that: Carbon-14, 14C, or radiocarbon, is a radioactive isotope of carbon with a nucleus containing 6 protons and 8 neutrons.

It is in fact a nucleus comprised of 6 deuterium nuclei [with 6 Protons, 6 Neutrons & 6 electrons]

The mistaken belief in 'extra' neutrons being present in the nucleus stems from the fact that electrons and protons combine in equal numbers in the atomic nucleus and historically attributing the mass in excess of this as being the result of the mass contribution of 'extra' neutrons

Tetryonics finally corrects this erroneous assumption

Carbon 12-14



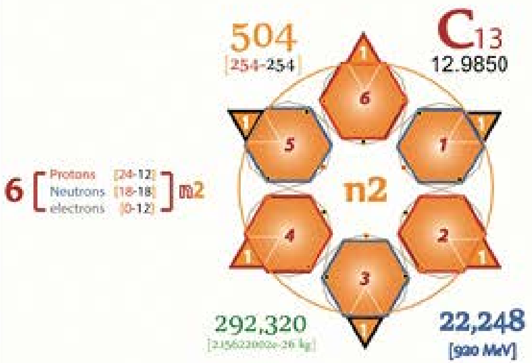
There are NO extra neutrons (in excess of the element's Z#) in the nuclei of atomic isotopes.

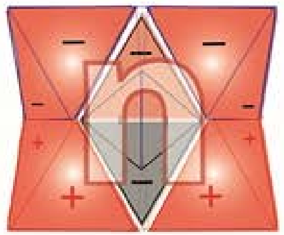
The measured 'excess mass' is the direct result of the raised quantum levels of the Deuterium nuclei that comprise each atomic element

And is compreletely accounted for in Tetryonic theory by calculating for the total rest mass-energies in each elementary Matter topology.

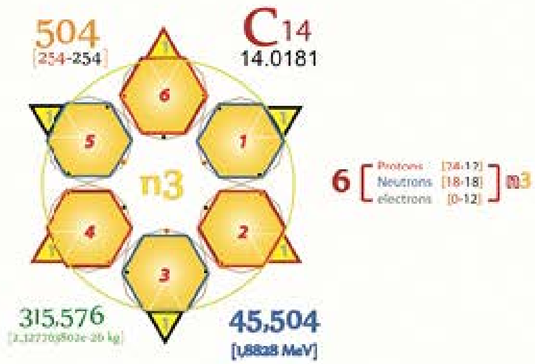
The 'extra' mass historically attrtibuted to neutron numbers above that of the elemental number are now reflected as stored kinetic 'chemical' energies as they always were.

ALL elements & isotopes have equal numbers of Protons, electrons & Neutrons



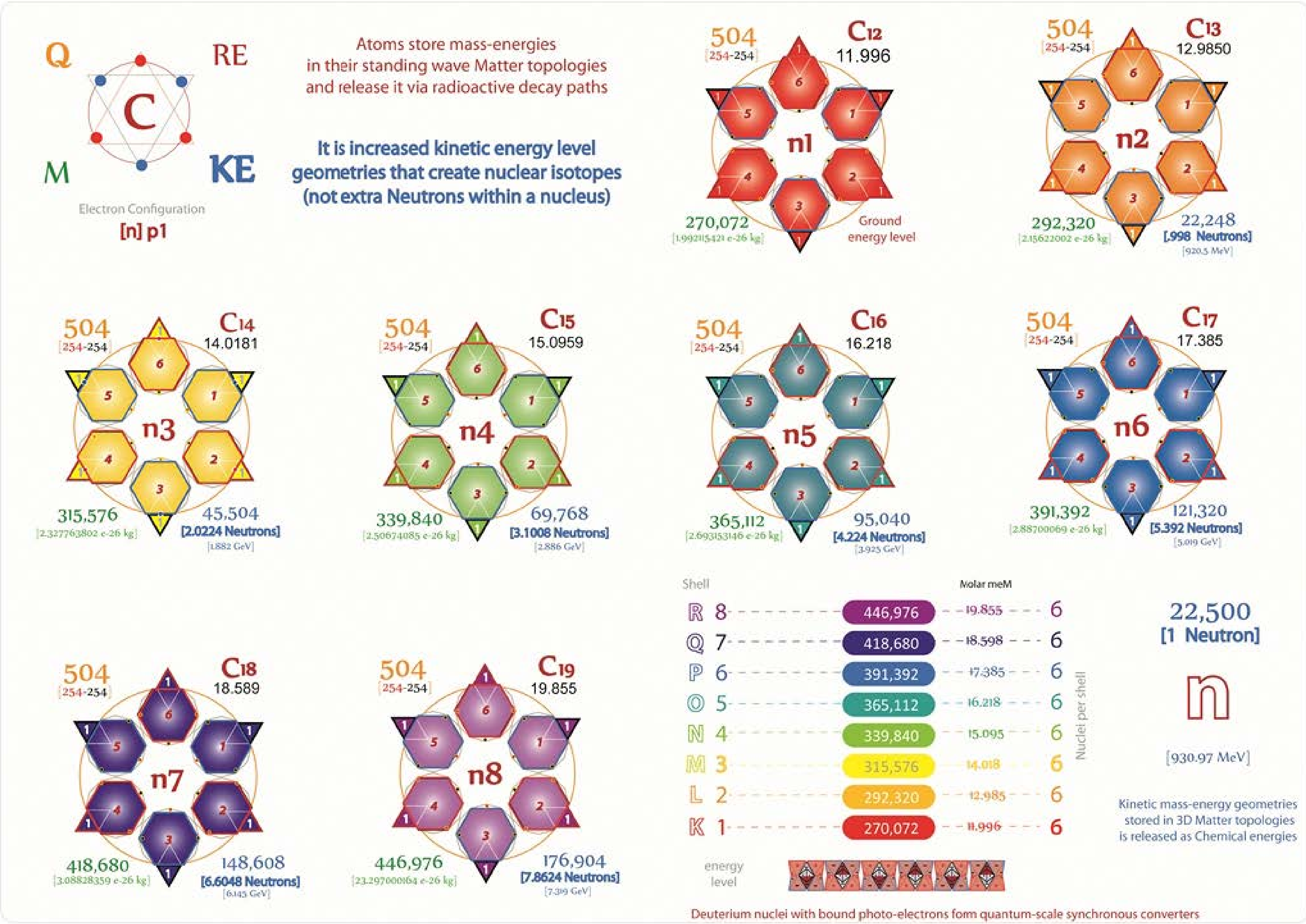


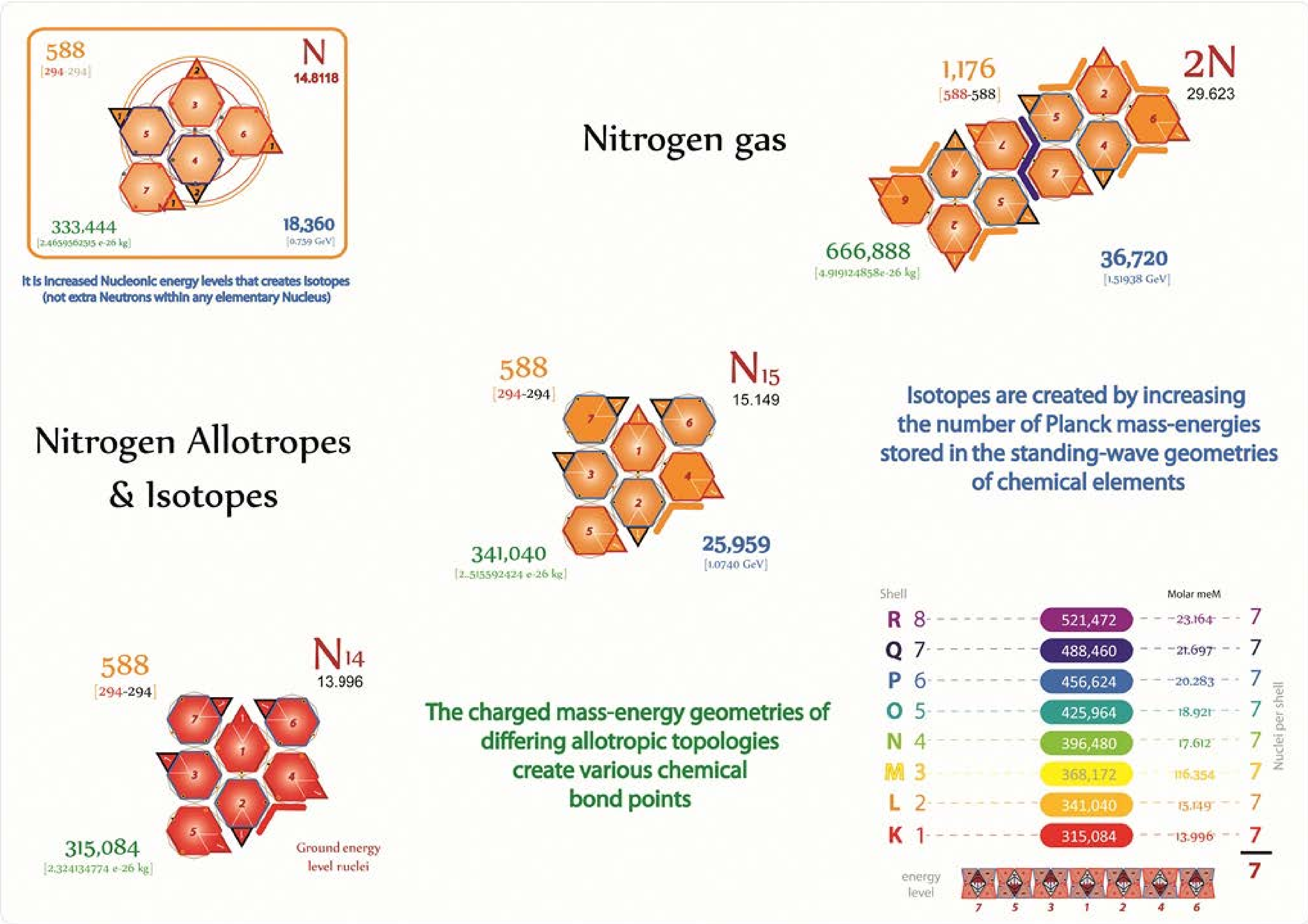
Quantum levels of atomic nuclei contribute to the molar mass [Isotopes are higher energy nuclei]

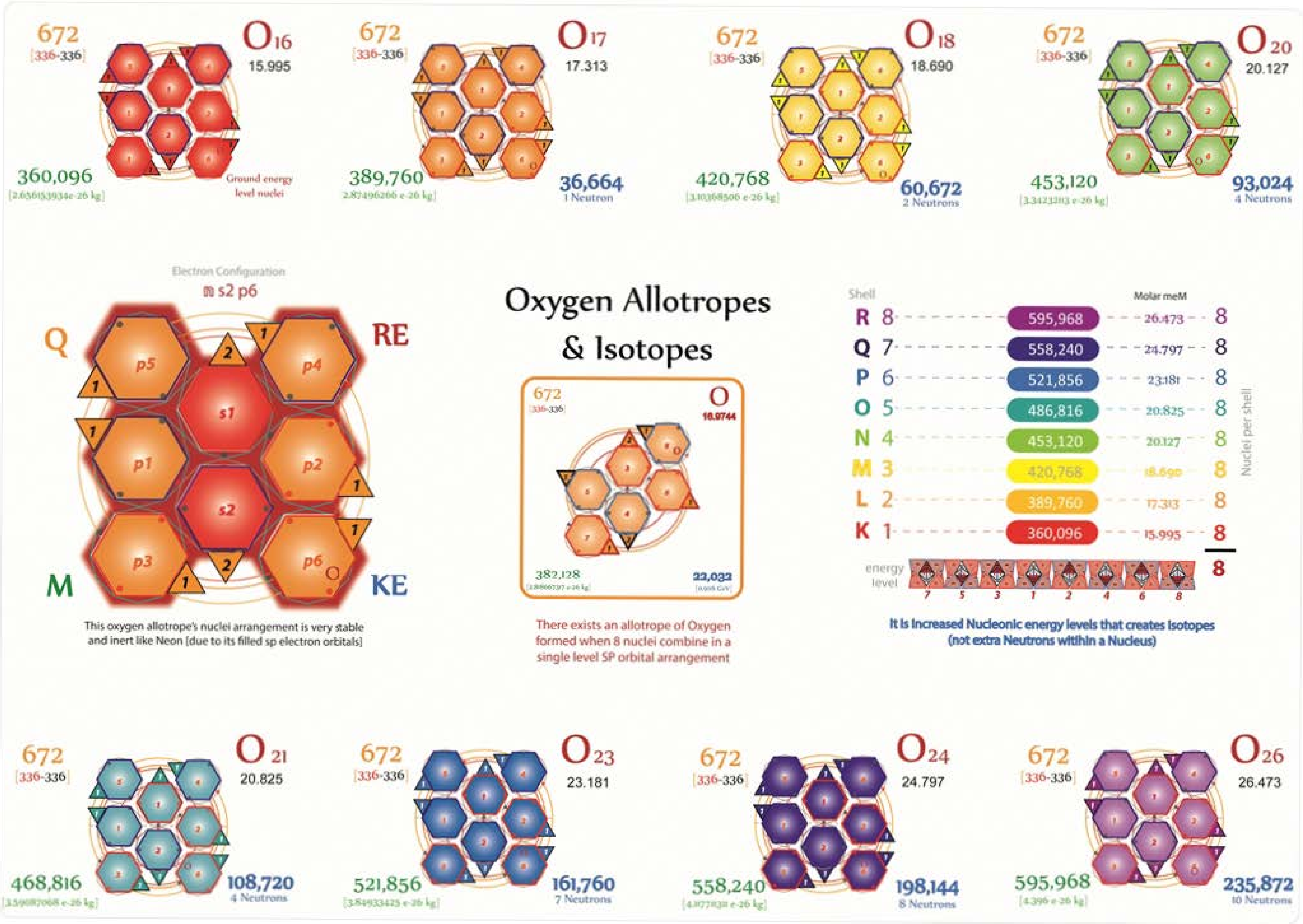


	n1	n2	n3	n4	n5	n6	n7	n8
C12	270,072	292,320	315,576	339,840	365,112	391,392	418,680	446,976
KEM diff	0	22,248	45,504	69,768	95,040	121,320	148,608	176,904
neutron #		.98	2.0	3.1	4.2	5.4	6.6	7.8

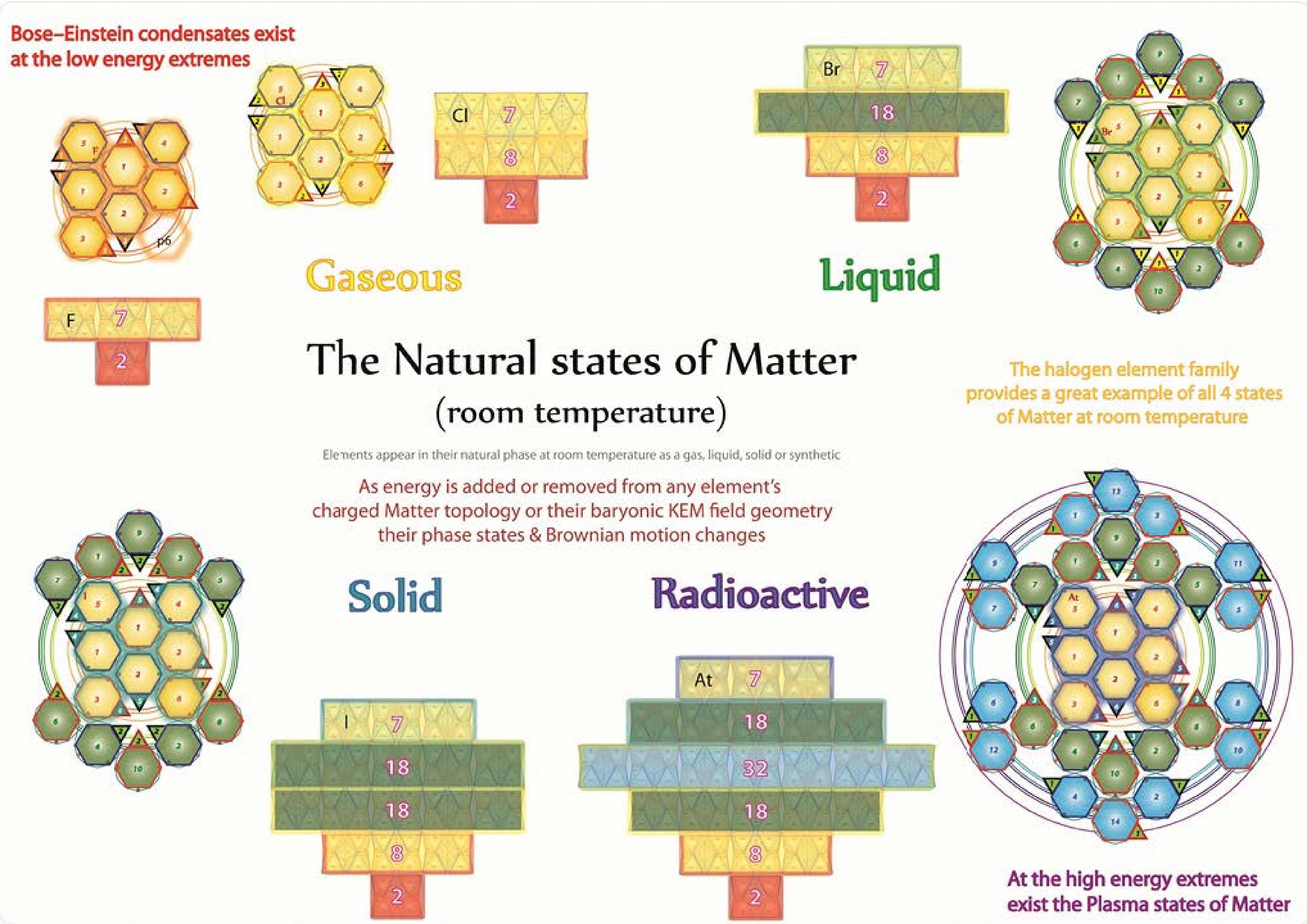
This applies equally to all atomic nuclei


Q
RE
C
M
KE
Electron Configuration
[n] p1
Atoms store mass-energies
in their standing wave Matter topologies
and release it via radioactive decay paths
It is increased kinetic energy level
geometries that create nuclear isotopes
(not extra Neutrons within a nucleus)
504
[254-254]
C12
11.996
n1
270,072
[1.99211542 e-26 kg]
Ground
energy level
504
[254-254]
C13
12.9850
n2
292,320
[2.15622002 e-26 kg]
22,248
[.998 Neutrons]
[920.5 MeV]
504
[254-254]
C14
14.0181
n3
315,576
[2.327763802 e-26 kg]
45,504
[2.0224 Neutrons]
[1.882 GeV]
504
[254-254]
C15
15.0959
n4
339,840
[2.50674085 e-26 kg]
69,768
[3.1008 Neutrons]
[2.886 GeV]
504
[254-254]
C16
16.218
n5
365,112
[2.693153146 e-26 kg]
95,040
[4.224 Neutrons]
[3.925 GeV]
504
[254-254]
C17
17.385
n6
391,392
[2.88700069 e-26 kg]
121,320
[5.392 Neutrons]
[5.019 GeV]
504
[254-254]
C18
18.589
n7
418,680
[3.08828359 e-26 kg]
148,608
[6.6048 Neutrons]
[6.145 GeV]
504
[254-254]
C19
19.855
n8
446,976
[23.297000164 e-26 kg]
176,904
[7.8624 Neutrons]
[7.319 GeV]
Shell
Molar meM
Nuclei per shell
R 8 446,976 19.855 6
Q 7 418,680 18.598 6
P 6 391,392 17.385 6
O 5 365,112 16.218 6
N 4 339,840 15.095 6
M 3 315,576 14.018 6
L 2 292,320 12.985 6
K 1 270,072 11.996 6
energy level
22,500
[1 Neutron]
n
[930.97 MeV]
Kinetic mass-energy geometries
stored in 3D Matter topologies
is released as Chemical energies
Deuterium nuclei with bound photo-electrons fom quantum-scale synchronous converters


588
[294-294]
N
14.8118
333,444
[2.4659362315 e-26 kg]
18,360
[0.759 GeV]
It is increased Nucleonic energy levels that creates Isotopes
(not extra Neutrons within any elementary Nucleus)
Nitrogen gas
1,176
[588-588]
2N
29.623
666,888
[4.919124858e-26 kg]
36,720
[1.51938 GeV]
Nitrogen Allotropes
& Isotopes
588
[294-294]
N15
15.149
341,040
[2.515592424 e-26 kg]
25,959
[1.0740 GeV]
Isotopes are created by increasing
the number of Planck mass-energies
stored in the standing-wave geometries
of chemical elements
588
[294-294]
N14
13.996
315,084
[2.324134774 e-26 kg]
Ground energy
level nuclei
The charged mass-energy geometries of
differing allotropic topologies
create various chemical
bond points
Shell
Molar meM
R 8 521,472 23.164 7
Q 7 488,460 21.697 7
P 6 456,624 20.283 7
O 5 425,964 18.921 7
N 4 396,480 17.612 7
M 3 368,172 16.354 7
L 2 341,040 15.149 7
K 1 315,084 13.996 7
Nuclei per shell
7
energy
level
7 5 3 1 2 4 6



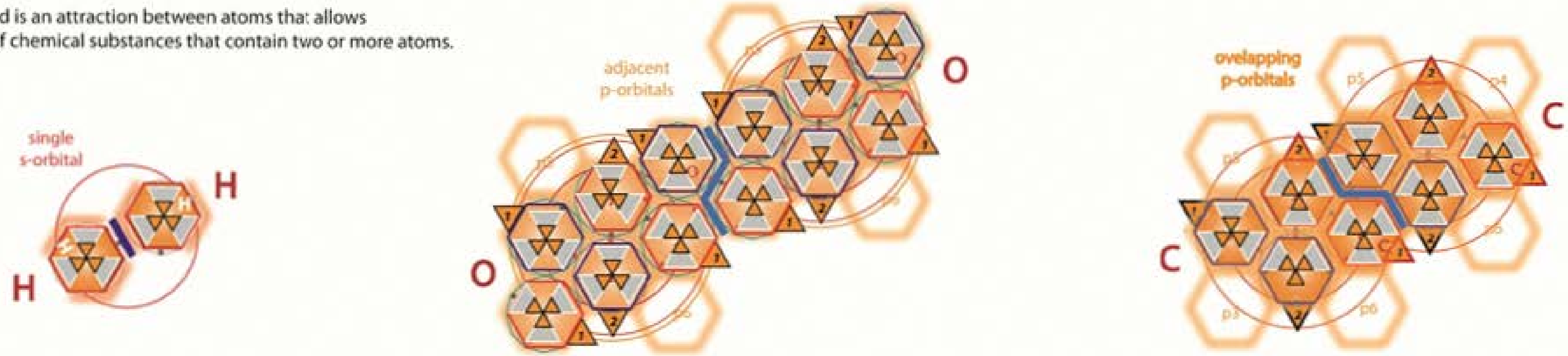
672
[336-336]
O16
15.995
360,096
Ground energy level nuclei
O17
17.313
389,760
36,664
1 Neutron
O18
18.690
420,768
60,672
2 Neutrons
O20
20.127
453,120
93,024
4 Neutrons
Electron Configuration
Q
RE
M
KE
p5
p4
s1
p1
p2
s2
p3
p6
This oxygen allotrope's nuclei arrangement is very stable and inert like Neon [due to its filled sp electron orbitals]
Oxygen Allotropes & Isotopes
382,128
22,032
There exists an allotrope of Oxygen formed when 8 nuclei combine in a single level SP orbital arrangement
Shell
Molar meM
R 8 595,968 26.473 8
Q 7 558,240 24.797 8
P 6 521,856 23.181 8
O 5 486,816 20.825 8
N 4 453,120 20.127 8
M 3 420,768 18.690 8
L 2 389,760 17.313 8
K 1 360,096 15.995 8
8
Nuclei per shell
energy level
It is increased Nucleonic energy levels that creates Isotopes (not extra Neutrons within a Nucleus)
O21
20.825
468,816
108,720
4 Neutrons
O23
23.181
521,856
161,760
7 Neutrons
O24
24.797
558,240
198,144
8 Neutrons
O26
26.473
595,968
235,872
10 Neutrons


Bose–Einstein condensates exist
at the low energy extremes
F 7
2
Cl 7
8
2
Gaseous
Br 7
18
8
2
Liquid
The Natural states of Matter
(room temperature)
Elements appear in their natural phase at room temperature as a gas, liquid, solid or synthetic
As energy is added or removed from any element's
charged Matter topology or their baryonic KEM field geometry
their phase states & Brownian motion changes
The halogen element family
provides a great example of all 4 states
of Matter at room temperature
Solid
I 7
18
18
8
2
Radioactive
At 7
18
32
18
8
2
At the high energy extremes
exist the Plasma states of Matter

Chemical bonds

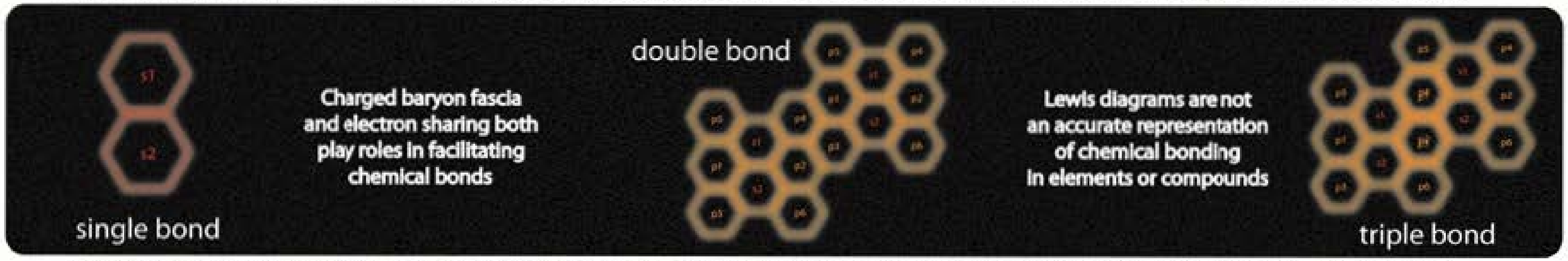
A chemical bond is an attraction between atoms that allows the formation of chemical substances that contain two or more atoms.

Particle charge & Inter-fascia electric interaction provides the foundation of chemical bonds



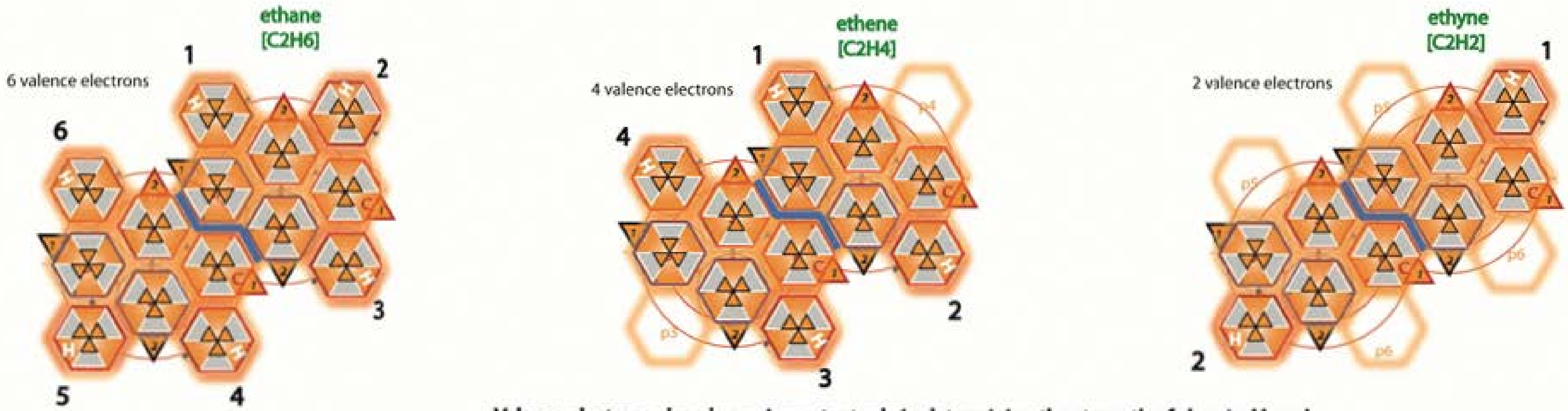
It is usually taught that based on electron sharing principles a single bond contains 2 paired electrons, a double bond has 4 electrons and a triple bond has 6 shared electrons

filled electron shells [weak KEM'cal bonds]

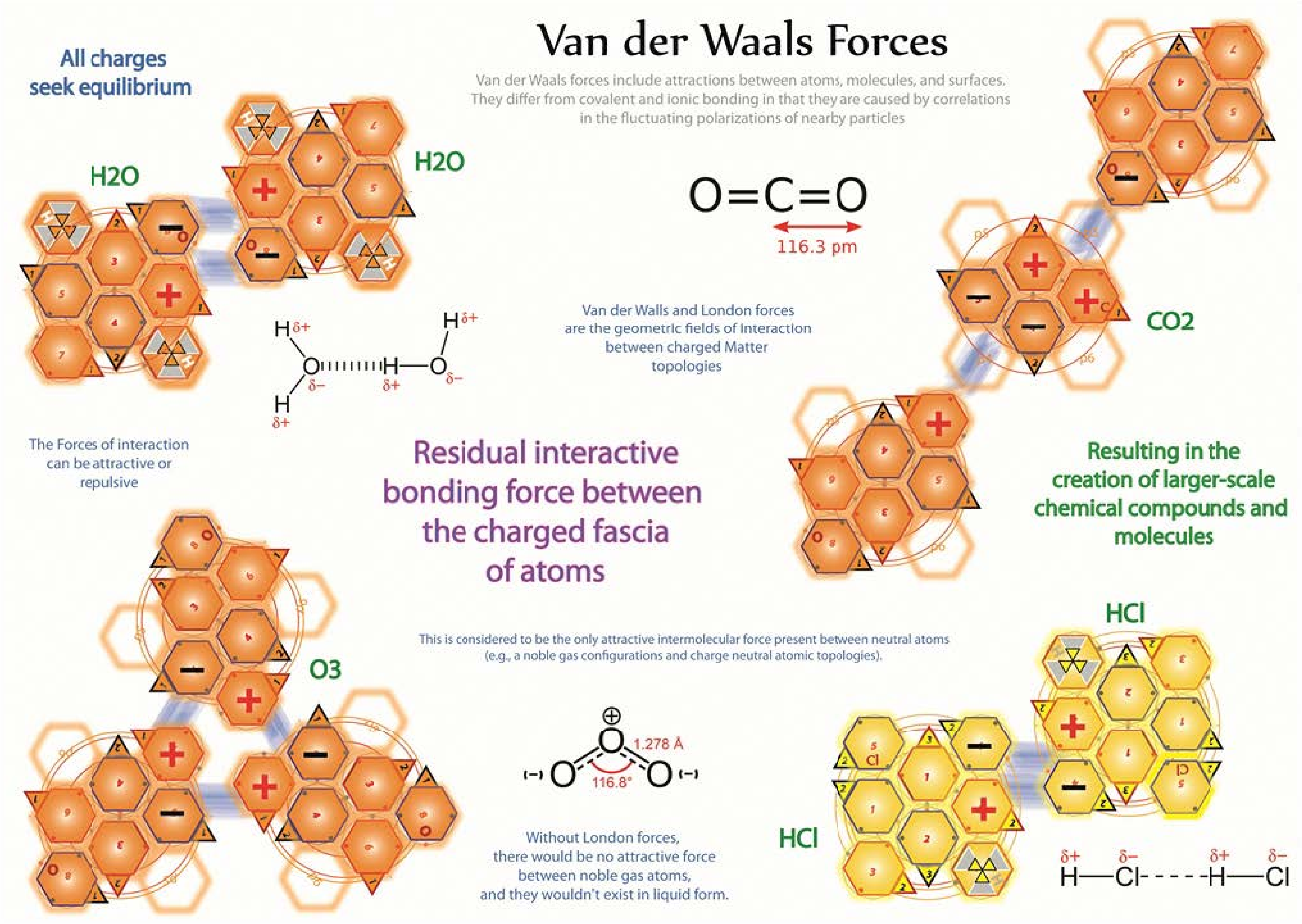


unfilled electron shells [stronger KEM'cal bonds]

Tetryonic geometry provides an advanced quantum topology for all atoms and compounds that is superior to the older Lewis diagrams and even molecular orbital theory, facilitating a clear understanding of the quantum geometry of each element, its nuclear bonds and electron sharing in all compound chemical structures; along with the core & valence electron configurations & interactive electric charge fascia bonding positions for each compound created.



Valance electrons also play an important role in determining the strength of chemical bonds



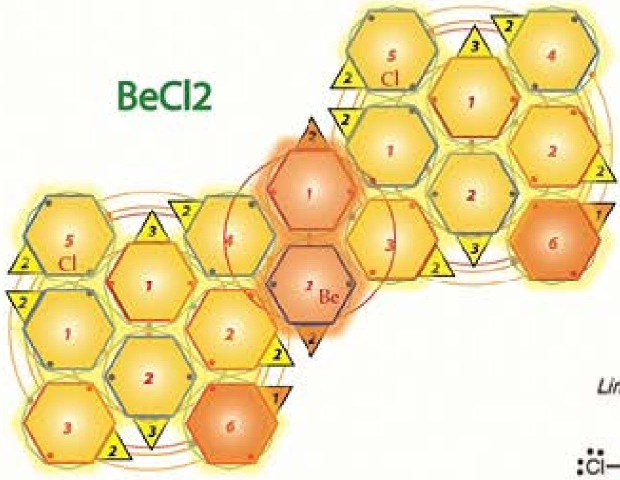
Tetryonics 55.03 - Van der Waals force

Lewis Structures

The Lewis structure was named after Gilbert N. Lewis,
who introduced it in his 1916 article
The Atom and the Molecule.

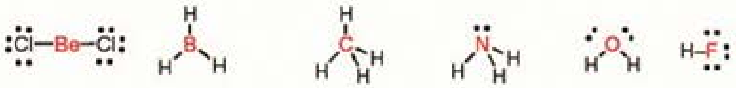
Lewis structures, also called Lewis-dot diagrams,
are diagrams that show the bonding between the atoms of any molecule,
and the lone pairs of electrons that may exist in the molecule.

BeCl2



HF

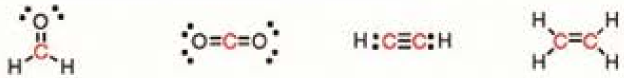
Line drawings can be used to depict molecular geometry:



Beryllium dichloride $BeCl_2$ *linear*	Borane BH_3 *trigonal planar*	Methane CH_4 *tetrahedral*	Ammonia NH_3 *trigonal pyrimidal*	Water H_2O *bent*	Hydrofluoric acid HF *linear*

Hydrogen is a 'free radical' atom whose energy can be changed to facilitate chemical bonding between elements

Also applies to molecules with multiple bonding:



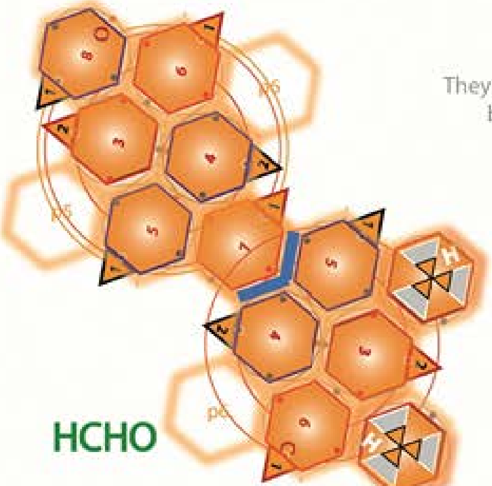
methanal (formaldehyde) *trigonal planar*	Carbon dioxide *linear*	ethyne (acetylene) *linear*	ethane (ethylene) *both carbons are trigonal planar*

Tetryonic geometry uses the charged geometry of the element fascia themselves

to show the bonds and charge interactions between differing elements as they form larger compounds

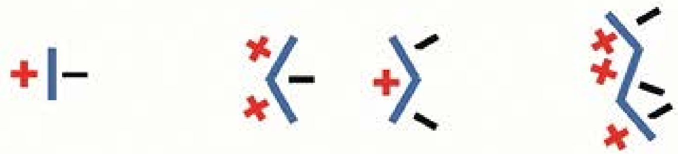
as well as the actual final quantum topology of compound elements and molecules

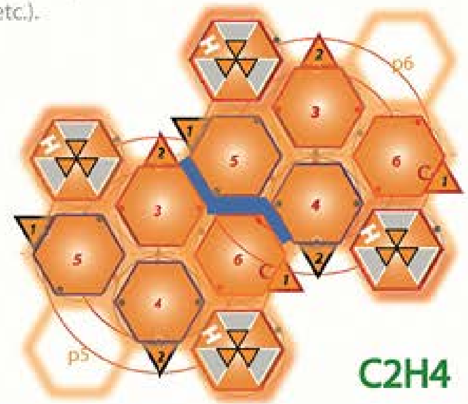
They are similar to electron dot diagrams in that the valence electrons in lone pairs are represented as dots, but they also contain lines to represent shared pairs in a chemical bond (single, double, triple, etc.).



HCHO

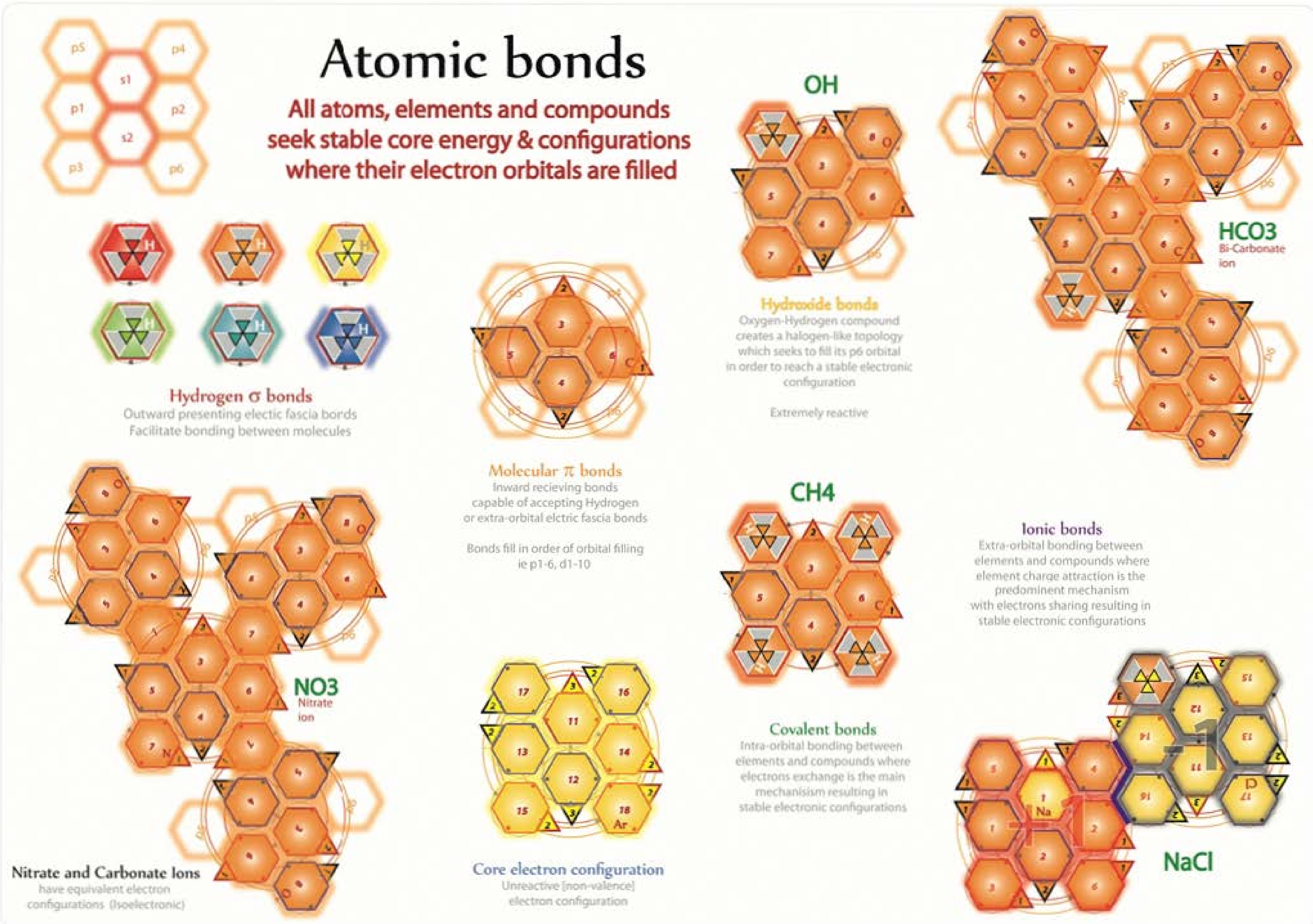
single fascia bond | double fascia bonds | triple fascia bond



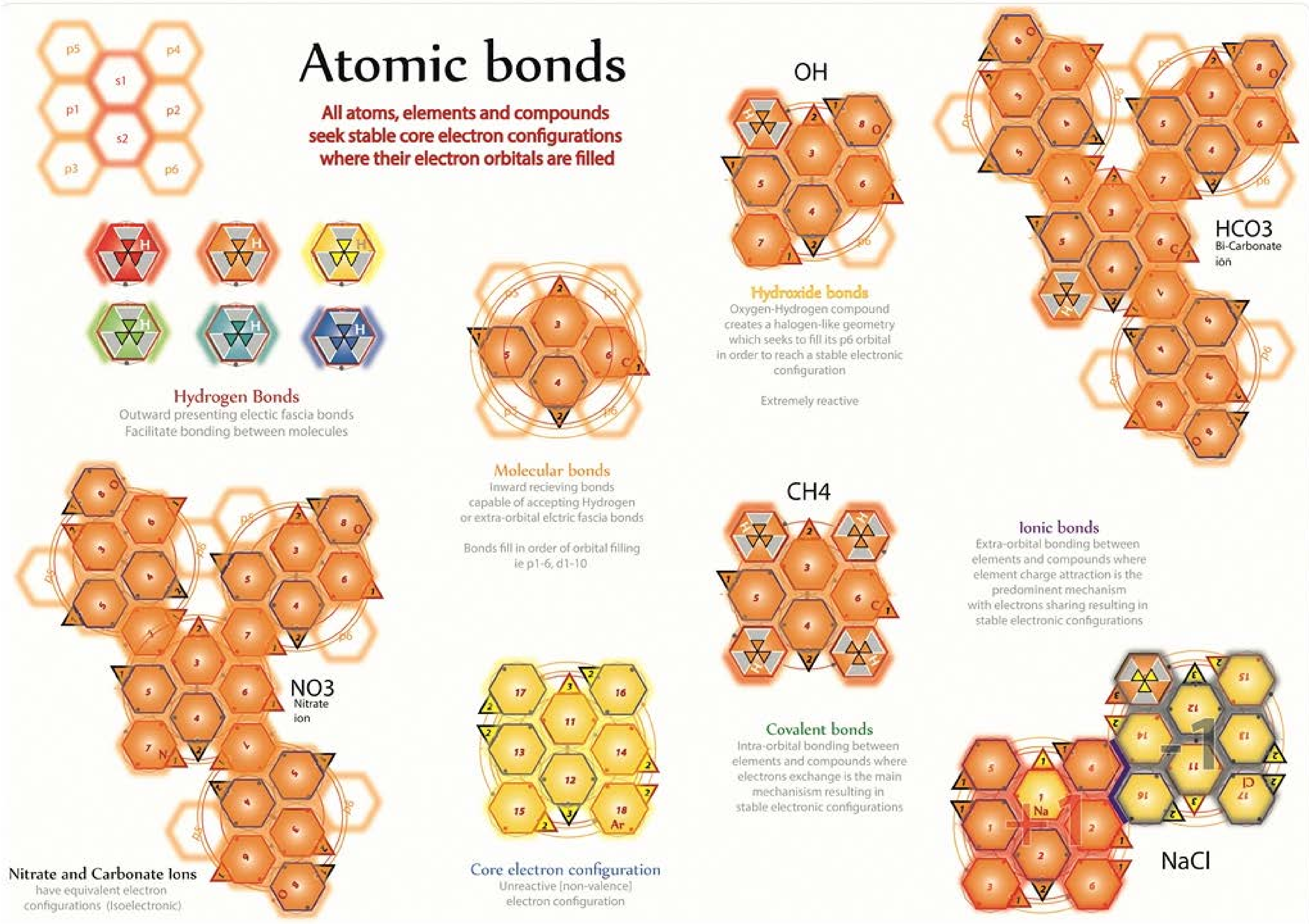


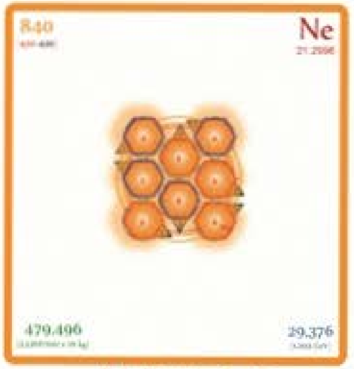
C2H4

it is the electric field fascia of baryons that facilitates chemical bonds



Tetryonics 55.05 - Atomic facsia Bonds


Atomic bonds
All atoms, elements and compounds
seek stable core electron configurations
where their electron orbitals are filled
p5
p4
s1
p1
p2
s2
p3
p6
OH
Hydroxide bonds
Oxygen-Hydrogen compound
creates a halogen-like geometry
which seeks to fill its p6 orbital
in order to reach a stable electronic
configuration
Extremely reactive
HCO3
Bi-Carbonate
ion
Hydrogen Bonds
Outward presenting electic fascia bonds
Facilitate bonding between molecules
Molecular bonds
Inward recieving bonds
capable of accepting Hydrogen
or extra-orbital elctric fascia bonds
Bonds fill in order of orbital filling
ie p1-6, d1-10
CH4
Ionic bonds
Extra-orbital bonding between
elements and compounds where
element charge attraction is the
predominent mechanism
with electrons sharing resulting in
stable electronic configurations
NO3
Nitrate
ion
Covalent bonds
Intra-orbital bonding between
elements and compounds where
electrons exchange is the main
mechanisism resulting in
stable electronic configurations
18
Ar
Na
+1
-1
Cl
NaCl
Nitrate and Carbonate Ions
have equivalent electron
configurations (Isoelectronic)
Core electron configuration
Unreactive (non-valence)
electron configuration



[He] 2s2 2p6
2

CORE ELECTRON configurations

			[He]
L	1s2	2s2 2p6	[Ne]
M	1s2 2s2 2p6	3s2 3p6	[Ar]
N	1s2 2s2 2p6 3s2 3p6 3d10	4s2 4p6	[Kr]
O	1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10	5s2 5p6	[Xe]
P	1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 4f14 5s2 5p6 5d10	6s2 6p6	[Rn]
Q	1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 4f14 5s2 5p6 5d10 5f14 6s2 6p6 6d10	7s2 7p6	[Uuo]

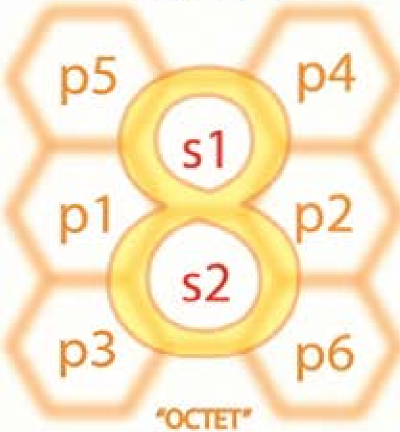
The term "core electrons" or "noble gas core" refers to the electrons within the atom which have the same electron configuration as the nearest noble gas of lower atomic number and contain filled s&p orbitals

[Kr] 4d10 5s2 5p6
36

[Ne] 3s2 3p6
10

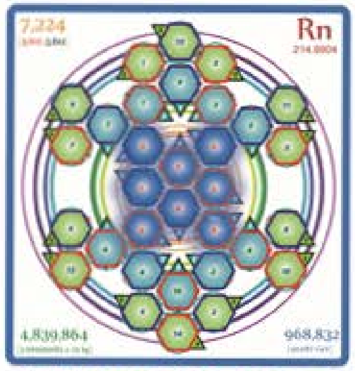
'Nobel Gas' configuration
full s,p orbitals

'core electron' configurations are present in energy levels L [2] - [7] Q



electrons not in filled or complete atomic orbitals are valence electrons

"OCTET"
No valance



[Xe] 4f14 5d10 6s2 6p6
54

[Ar] 3d10 4s2 4p6
18

Using core electron notation greatly reduces complexity of the electron configuration notations of larger elements in the periodic table

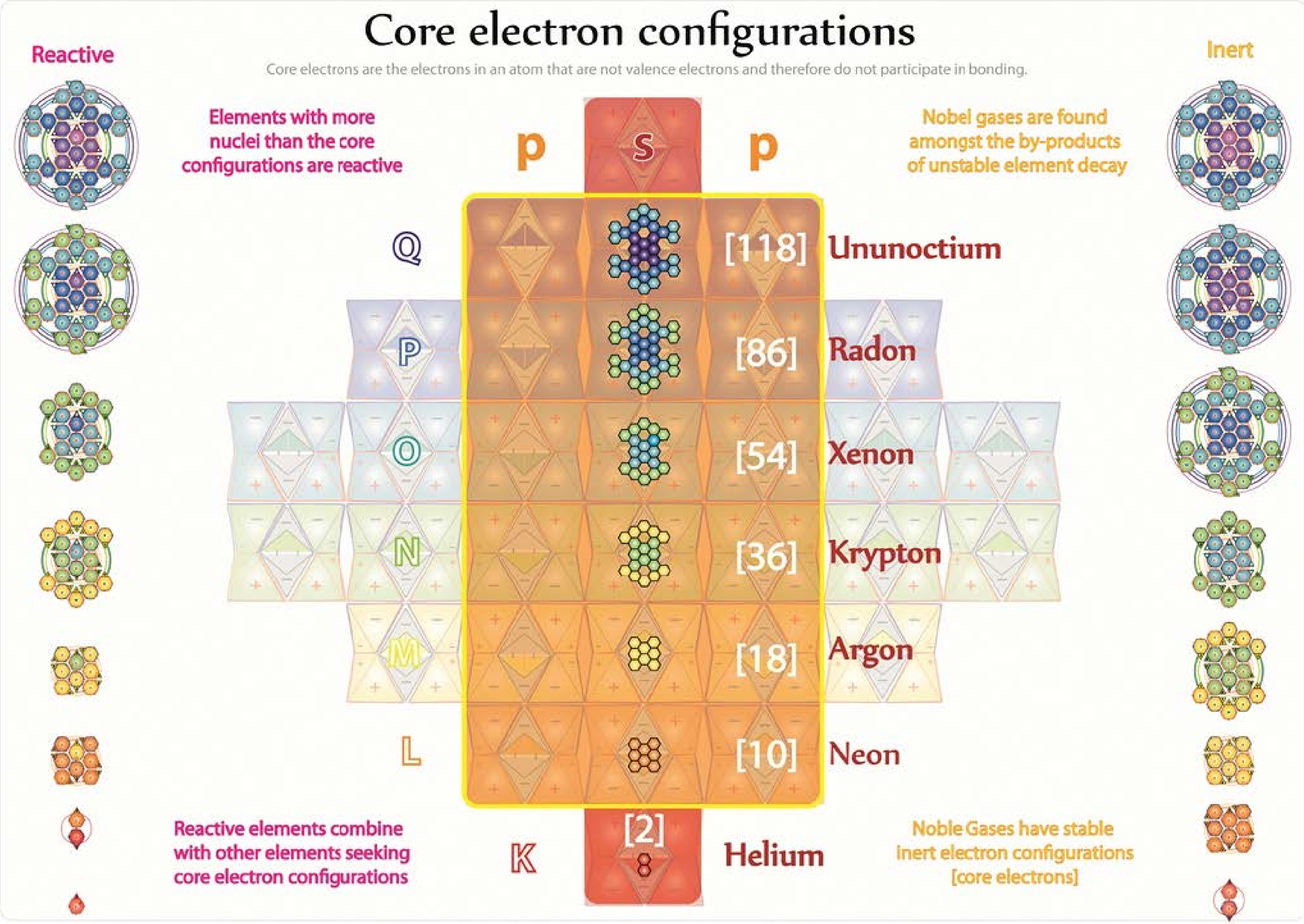
[Ub] 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 5s2 4d10 5p6 4f14 5d10 6s2 6p6 5f14 6d10 7s2 7p6 8s2
120

2 8 18 32 32 18 8 2

They are the electrons in the inner part of the atom that are not valence electrons and therefore do not participate in bonding

[Uuo] 8s2
118

[Rn] 5f14 6d10 7s2 7p6
86


Core electron configurations
Core electrons are the electrons in an atom that are not valence electrons and therefore do not participate in bonding.
Reactive
Inert
Elements with more nuclei than the core configurations are reactive
Nobel gases are found amongst the by-products of unstable element decay
p
s
p
Q
P
O
N
M
L
K
[118] Ununoctium
[86] Radon
[54] Xenon
[36] Krypton
[18] Argon
[10] Neon
[2] Helium
Reactive elements combine with other elements seeking core electron configurations
Noble Gases have stable inert electron configurations [core electrons]

!

Helium is a unique noble gas in that it only has filled s-orbitals

suggesting that it be more appropriate to designate it as an alkaline earth gas

Nobel gases all have inert core sp electron configurations

The Nobel Gases

are nuclei whose electron orbitals are completely filled
(and consequently have no valence electrons for bonding)

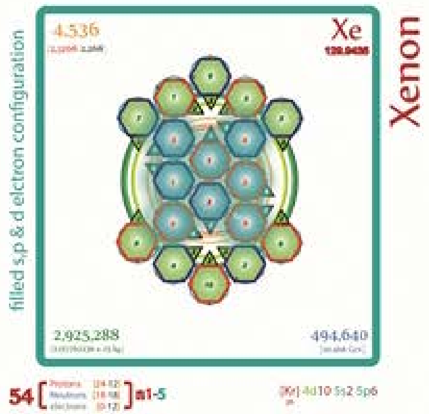
2			[He]
10	1s2	2s2 2p6	[Ne]
18	1s2 2s2 2p6	3s2 3p6	[Ar]
36	1s2 2s2 2p6 3s2 3p6 3d10	4s2 4p6	[Kr]
54	1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10	5s2 5p6	[Xe]
86	1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 4f14 5s2 5p6 5d10	6s2 6p6	[Rn]
118	1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 4f14 5s2 5p6 5d10 5f14 6s2 6p6 6d10	7s2 7p6	[Uuo]

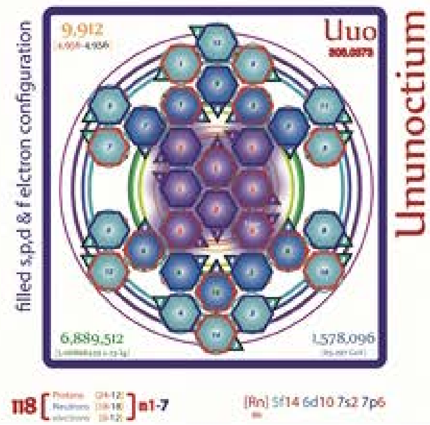
All nobel gases have filled electron orbitals creating inert, chemically un-reactive elements

The noble gases are a group of chemical elements with very similar properties: under standard conditions, they are all odorless, colorless, monatomic gases, with a very low chemical reactivity.

Whilst some of the nobel gases are often termed core electron configurations the large elements also have filled d & f orbitals in them

The six noble gases that occur naturally are Helium (He), Neon (Ne), Argon (Ar), Krypton (Kr), Xenon (Xe), and the radioactive noble gases are Radon (Rn) and Ununioctium (Uuo).





Molecular Bonds

Hydrogen bonds

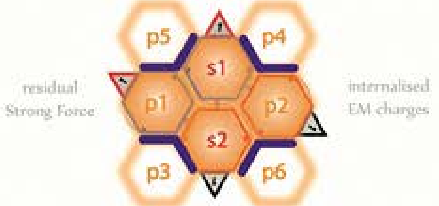
A weak, primarily electrostatic, bond between a hydrogen atom bound to a highly electronegative element in a given molecule and a second highly electronegative atom in another molecule

Diatomic bonds are fascia interactions between molecules with the same nuclei number [O2, F2, I2, Cl2]

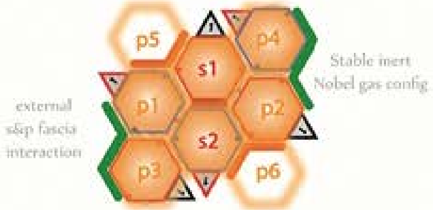
Sigma bonds

The residual EM force between opposite charge fascia in nuclei holds individual nuclei together in turn resulting in larger molecules and compounds

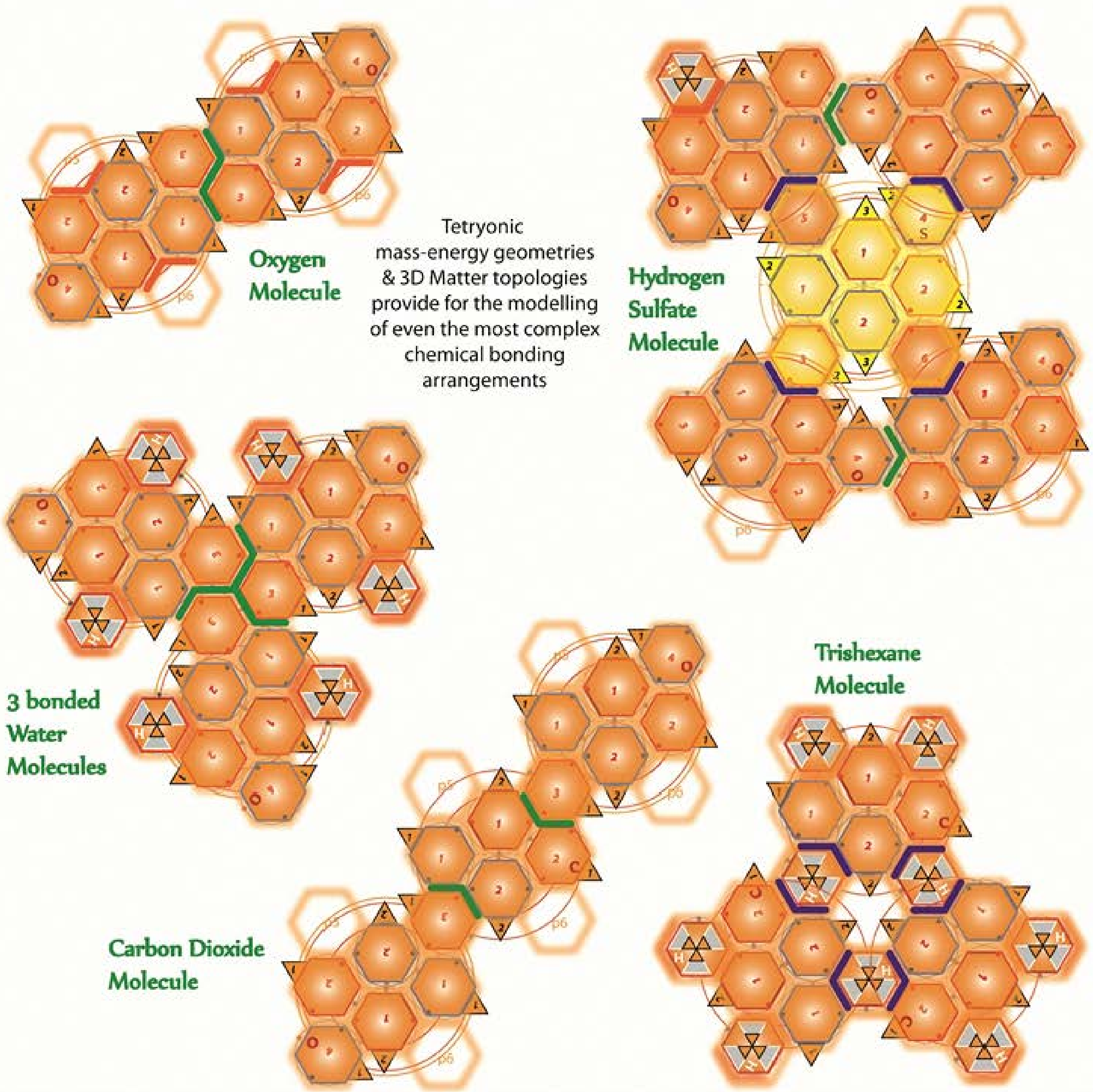
Pi bonds



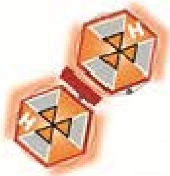
Molecular bonds



A molecular bond is an attractive force between nuclei that allows two or more elements or atoms to combine into a singular, complex compound structure

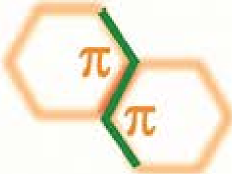


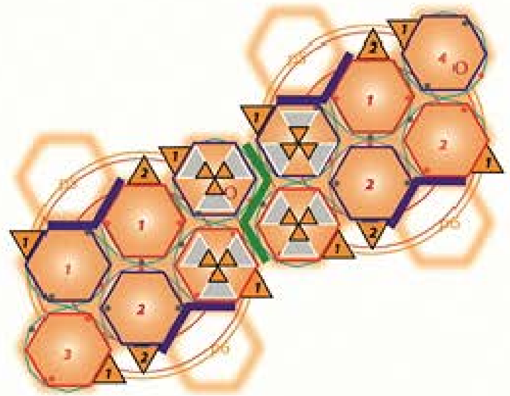
Covalent bonds are chemical links between two atoms in which electrons are shared between them.



Sigma bonds are covalent bonds formed by direct overlapping of two adjacent atom's outermost orbitals.

A pi bond is a covalent bond formed between two neighboring atom's unbonded p-orbitals.





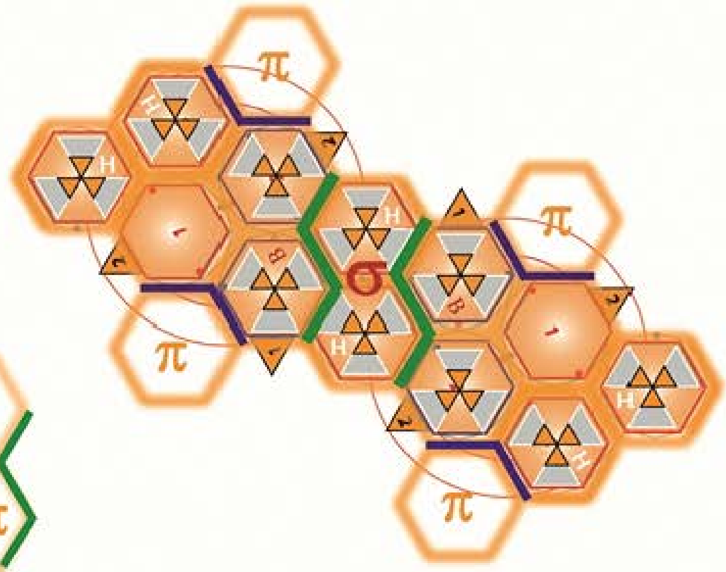
Double and triple bonds between atoms are usually made up of a single sigma bond and one or two pi bonds

$\pi - \sigma - \pi$

Note: sigma bonds can be formed by the bonding of either s-orbitals [or two adjacent p-orbitals]

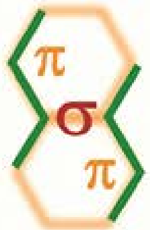
Lewis electron dot diagrams fail to illustrate reality in that molecules exist as 3D objects and not as a two dimensional systems as shown by them.

Tetryonic geometry & topologies provide a polar view of 3D atomic nuclei that can be viewed as an exact representation of what a molecule & its bonds would look like when viewed from above.



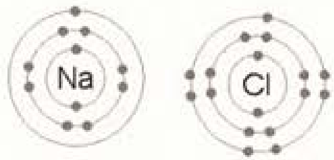
Sigma & Pi covalent bonds

The single electrons from each atom's p orbital combine to form an electron pair creating the sigma bond.

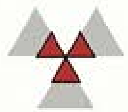


Alkali Metals

Halogens

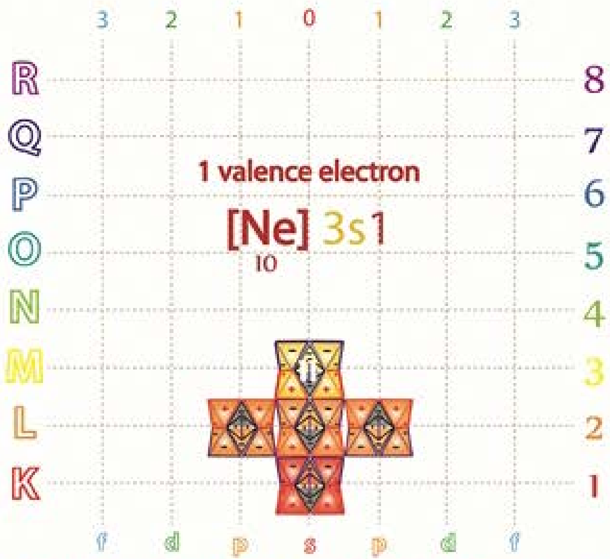


Valence electrons



are the highest energy electrons in an atom forming the outermost electrons of an atom, and are important in determining how the atom reacts chemically with other atoms

Historically, the number of valence electrons was reflected by the element's group number in the Mendeleev table and formed the basis of elemental families

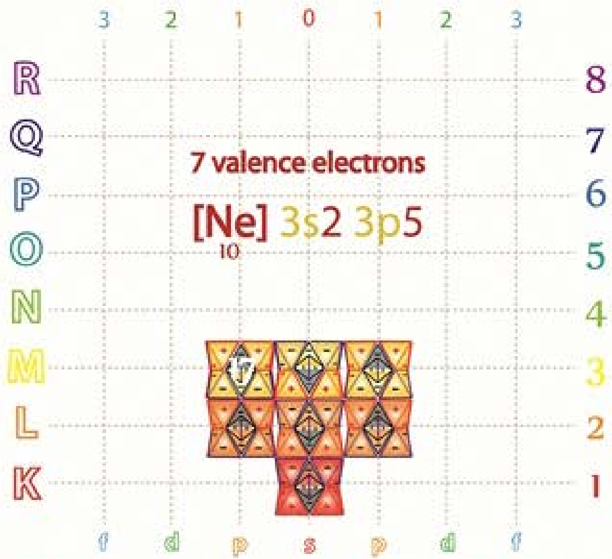


Atoms with more electrons than a closed shell are also highly reactive, as the extra valence electrons are easily removed from that orbital (to form a positive ion)

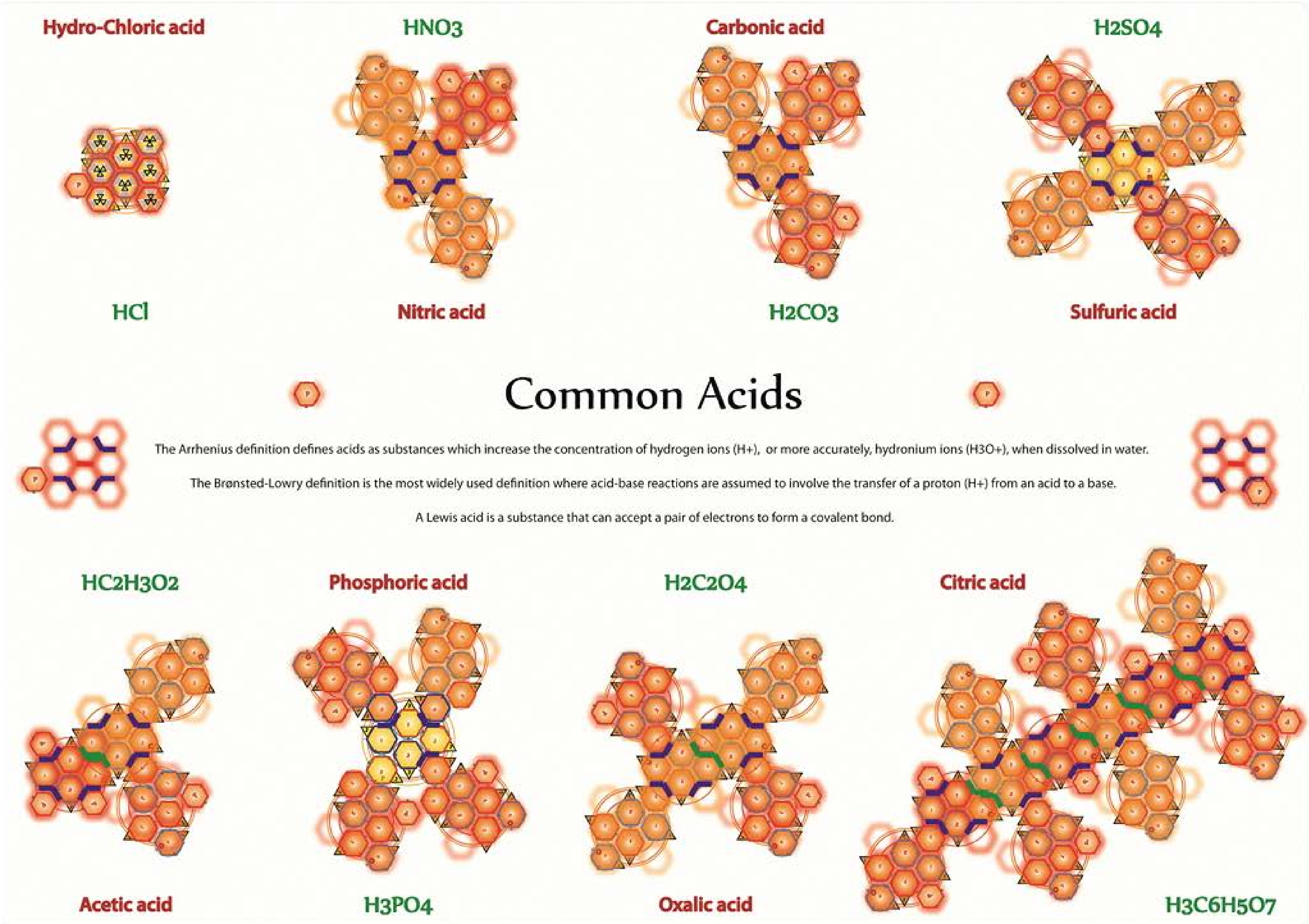
Tetryonic topologies now replace the older, incorrect models of valence electron configurations with the full 3D modelling of all atoms, elements & compounds

[zz] are core electron configurations

providing a superior visual means of accurately determining the energies and position of any electron in chemical compounds and determining the valence numbers



Atoms one or two valence electrons short of a closed shell are highly reactive, due to their tendency to seek to gain the missing valence electrons (thereby forming a negative ion)



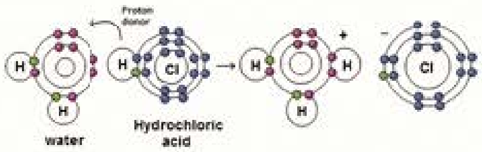
Tetryonics 56.04 - Common Acids

Chemical reactions

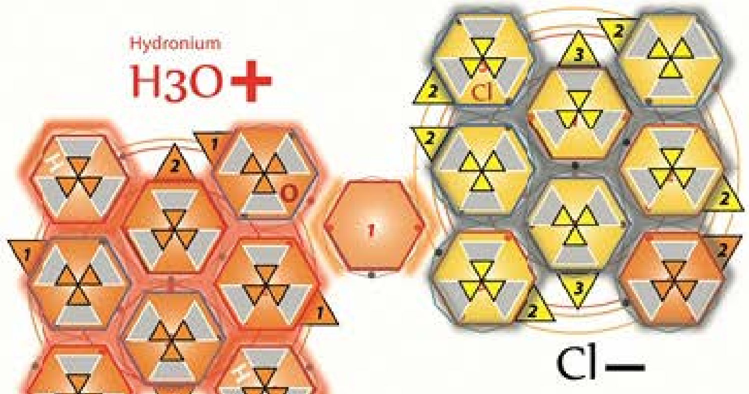
Valence Bonds & Molecular orbitals

A chemical reaction is a process that leads to the transformation of one set of chemical substances to another.

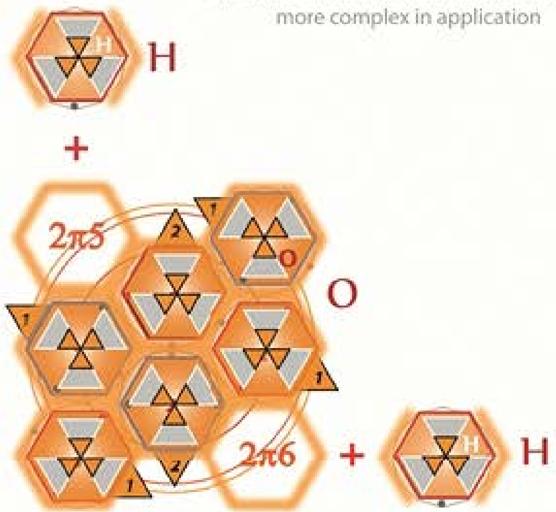
Valence bond theory focuses on how the atomic orbitals of the dissociated atoms combine in molecular formations to give rise to individual chemical bonds.

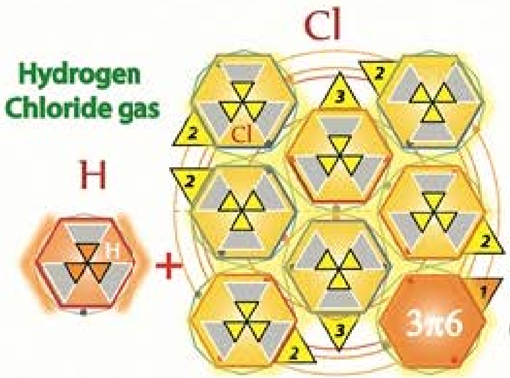


In contrast, molecular orbital theory has orbitals that are designed to cover the whole molecule but is mathematically more complex in application



Aqueous Hydro-Chloric acid solution





7 valence electrons
1 [n3] valence bond available
(8 electron stable configuration)

Tetryonic theory replaces both VB & MO theories by modelling the physical quantum charge topologies and rest mass-energy geometry of all elements and compounds

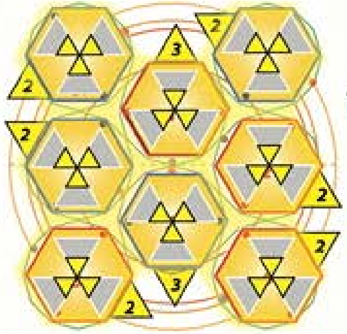
In order to form Hydro-chloric acid [HCl aq] and bond with similar water [H2O] molecules, the n2 Hydrogen atom's energy must be raised so it can migrate to the [3π6] orbital and bond

[n2] Hydrogen atom cannot bond in the [3π6] valence position so in HCl gas it forms a [n2] di-atomic bond instead and its electron migrates to the [π6] orbital

6 valence electrons
2 [n2] valence bonds available
(8 electron stable configuration)

H_2O

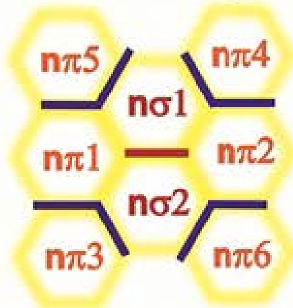
water



HCl [aq]

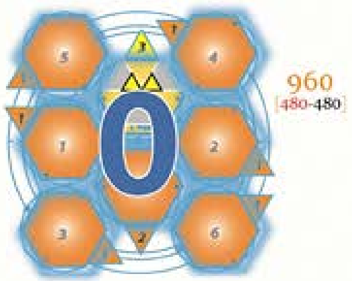
Hydrochloric acid

Valence configurations seek to create stable filled obital configurations



Building on exisiting electron configuration nomenclature tetryonic theory provides a new bonding schema for elements and complex compounds alike that is fully reflective of the physical quantum charge interactions

Ionic Bonding



Alkaline Metal

Sodium atom gives up an electron in order to create a stable [Ne] nobel gas configuration

Sodium atom develops into a nett POSITIVE charge ion

Resultant salt [NaCl] molecule has a NEUTRAL charge with the n3 electron migrating to fill the 3p6 orbital

OPPOSITES ATTRACT

Chlorine atom seeks an electron to order to create a stable [Ar] nobel gas configuration

Halogen

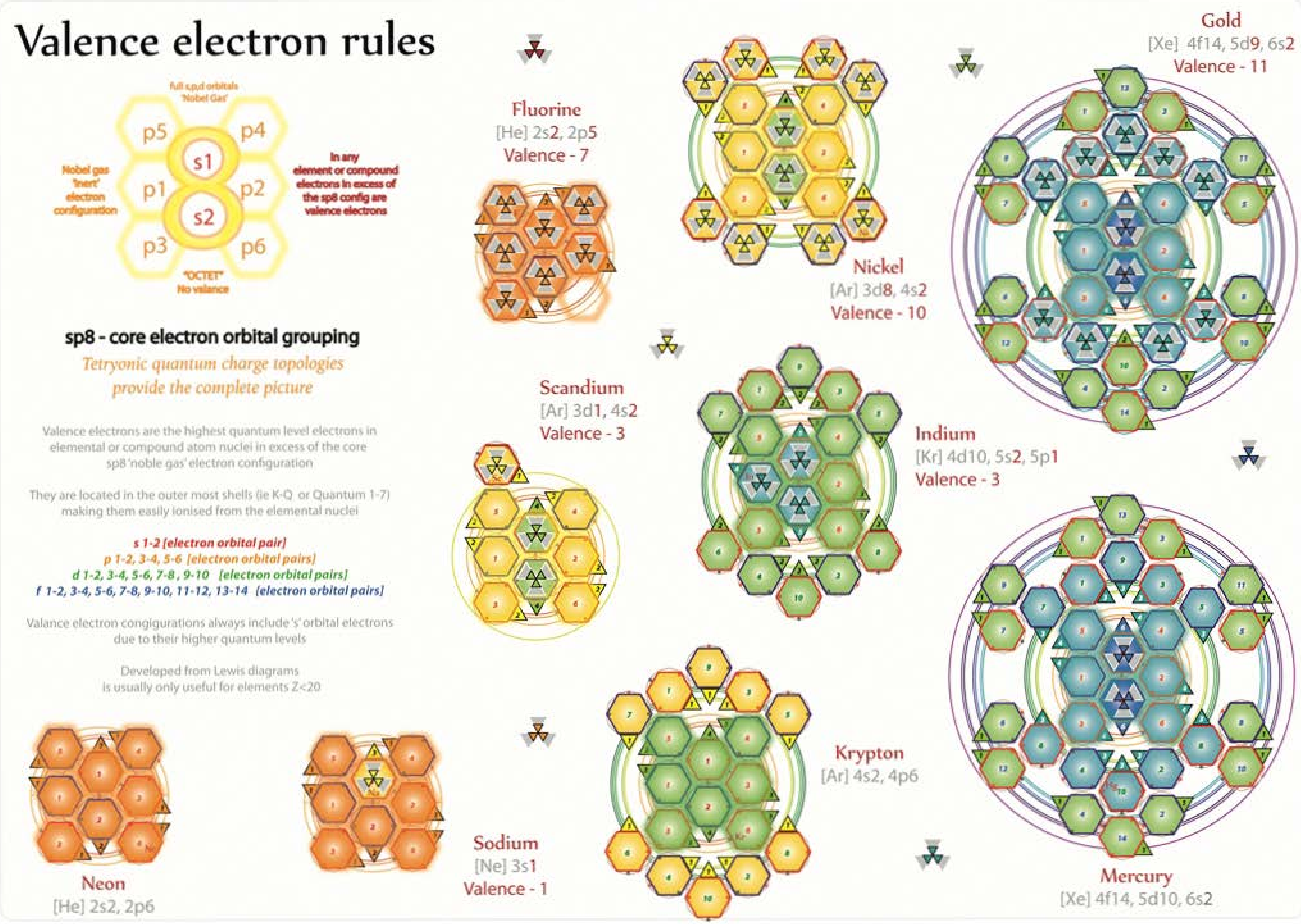
Chlorine atom develops into a nett NEGATIVE charge ion

All atoms and molecules seek equilibrium via stable electron configurations

In short, it is a bond formed by the attraction between two oppositely charged ions.

An ionic bond (or electrovalent bond) is a type of chemical bond that can often form between metal and non-metal ions (or polyatomic ions such as ammonium) through electrostatic attraction.

The metal donates one or more electrons, forming a positively charged ion or cation with a stable electron configuration. These electrons then enter the non metal, causing it to form a negatively charged ion or anion which also has a stable electron configuration. The electrostatic attraction between the oppositely charged ions causes them to come together and form a bond.


Valence electron rules
Full s,p,d orbitals 'Nobel Gas'
p5
p4
s1
Nobel gas 'inert' electron configuration
p1
p2
In any element or compound electrons in excess of the sp8 config are valence electrons
s2
p3
p6
"OCTET" No valance
sp8 - core electron orbital grouping
Tetryonic quantum charge topologies provide the complete picture
Valence electrons are the highest quantum level electrons in elemental or compound atom nuclei in excess of the core sp8 'noble gas' electron configuration
They are located in the outer most shells (ie K-Q or Quantum 1-7) making them easily ionised from the elemental nuclei
s 1-2 [electron orbital pair]
p 1-2, 3-4, 5-6 [electron orbital pairs]
d 1-2, 3-4, 5-6, 7-8 , 9-10 [electron orbital pairs]
f 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14 [electron orbital pairs]
Valance electron congigurations always include 's' orbital electrons due to their higher quantum levels
Developed from Lewis diagrams is usually only useful for elements Z<20
Fluorine
[He] 2s2, 2p5
Valence - 7
Nickel
[Ar] 3d8, 4s2
Valence - 10
Gold
[Xe] 4f14, 5d9, 6s2
Valence - 11
Scandium
[Ar] 3d1, 4s2
Valence - 3
Indium
[Kr] 4d10, 5s2, 5p1
Valence - 3
Neon
[He] 2s2, 2p6
Sodium
[Ne] 3s1
Valence - 1
Krypton
[Ar] 4s2, 4p6
Mercury
[Xe] 4f14, 5d10, 6s2

Filled electron orbitals

Once 8 valence electrons are reached a stable valence cofiguration is created

Once sub-orbit 8 (P7-8) is reached sequential valence numbering switches to paired valence numbering (as per orbital energies)

Valence numbers can be calculated by adding the 2 highest energy orbitals together (and subtracting 8 - if the total is higher than 8)

The octet rule is a simple chemical rule of thumb that states that atoms tend to combine in such a way that they each have eight electrons in their valence shells, giving them the same electronic configuration as a noble gas.

The rule is applicable to the main-group elements, especially carbon, nitrogen, oxygen, and the halogens, but also to metals such as sodium or magnesium. In simple terms, molecules or ions tend to be most stable when the outermost electron shells of their constituent atoms contain eight electrons.

In short, an element's valence shell is full and most stable when it contains eight electrons, corresponding to an s2p6 election configuration.

CORE ELECTRONS

This stability is the reason that the noble gases are so unreactive, for example neon with electron configuration 1s2 2s2 2p6. (Helium is an exception as explained).

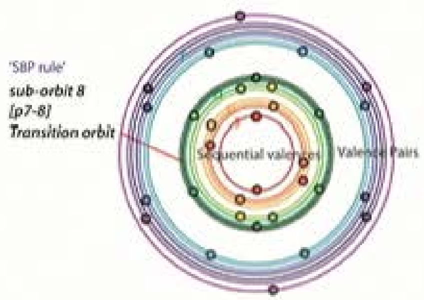
Note that a "full shell" means that there are the eight electrons in the valence shell when the next shell starts filling, even though higher subshells (d, f, etc.) have not been filled.

There can be at most eight valence electrons in a ground-state atom because p subshells are always followed by the s subshell of the next shell.

OCTET RULE

This means that once there are 8 valence electrons (when the p subshell is filled), the next additional electron goes into the next shell, which then becomes the valence shell.

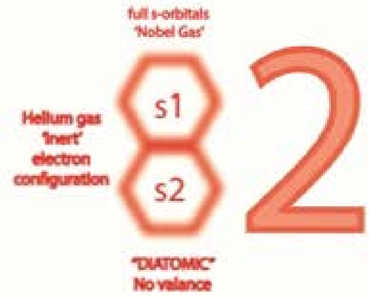
A consequence of the octet rule is that atoms generally react by gaining, losing, or sharing electrons in order to achieve a complete octet of valence electrons. Reaction of atoms occurs primarily in two ways: ionically and covalently.

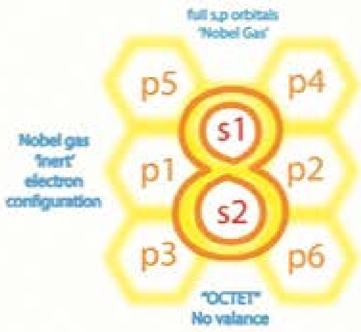


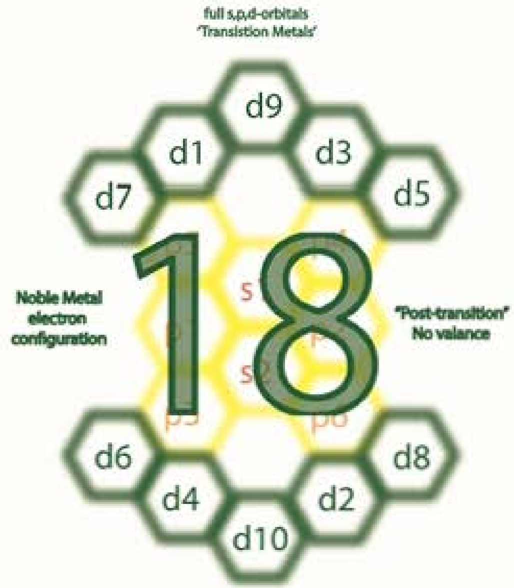
Once 8 valence electrons are reached the sub-orbits are stable and form a stable, non-reactive valence configuration.

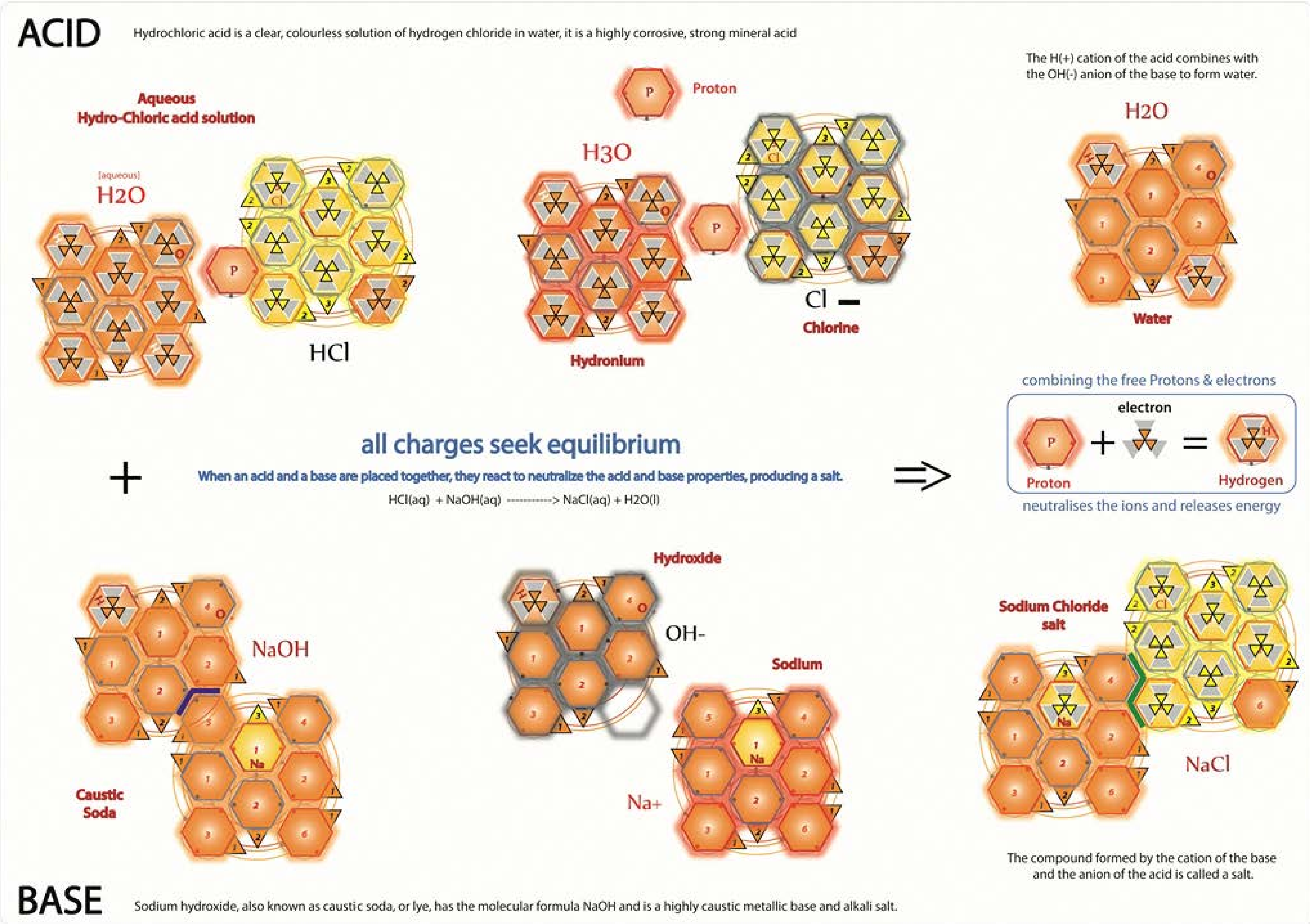
Additionally, valence numbers proceed sequentially (1,2,3,4,5,6,7) up to sub-orbit 8 (P7-8) at which point all sub-orbit valences number in valence pairs (1-2, 3-4, 5-6, 7-8, 9-10, 11-2, 13-14)

The siginificance is that sub-orbit 8 is the middle sub-orbit (of 16 total sub-orbits possible)








ACID
Hydrochloric acid is a clear, colourless solution of hydrogen chloride in water, it is a highly corrosive, strong mineral acid
Aqueous
Hydro-Chloric acid solution
[aqueous]
H2O
HCl
Proton
H3O
Hydronium
Cl -
Chlorine
The H(+) cation of the acid combines with the OH(-) anion of the base to form water.
H2O
Water
all charges seek equilibrium
When an acid and a base are placed together, they react to neutralize the acid and base properties, producing a salt.
HCl(aq) + NaOH(aq) -------------> NaCl(aq) + H2O(l)
combining the free Protons & electrons
electron
Proton
Hydrogen
neutralises the ions and releases energy
NaOH
Caustic Soda
Hydroxide
OH-
Sodium
Na+
Sodium Chloride salt
NaCl
The compound formed by the cation of the base and the anion of the acid is called a salt.
BASE
Sodium hydroxide, also known as caustic soda, or lye, has the molecular formula NaOH and is a highly caustic metallic base and alkali salt.

Geometric Molecular Topology

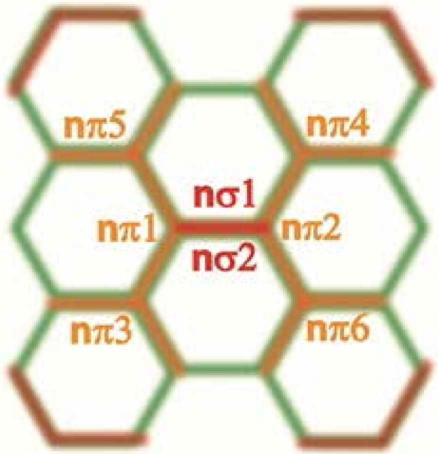
Molecules are most often held together with covalent bonds involving single, double, and/or triple bonds, where a "bond" is a pair of electrons shared between elements as they seek equilibrium (another method of bonding is ionic bonding and involves a positive cation and a negative anion).

Hydrogen

A Hydrogen bond is a chemical bond in which a hydrogen atom of one molecule is attracted to an electronegative atom, especially nitrogen, oxygen, or flourine atoms, usually of another molecule

The hydrogen bond is often described as an electrostatic dipole-dipole interaction.

However, it also has some features of covalent bonding: it is directional and strong, acting over interatomic distances shorter than that of van der Waals radii



Oxygen

The oxidation state of oxygen is −2 in almost all known compounds

Oxides of Oxygen & oxygen molecules are found throughout the range of Organic & inorganic compounds

All molecules seek KEM'ical charge and energy equilibrium

Geometric Molecular Topology is the overall arrangement of the atoms in a molecule, where the bonded atoms in a molecule are responsible for determining the final molecular topology of a chemical system of bonded elements.

As the numbers of atoms in molecules increases, the quantum molecular topology of a system grows increasingly complex and can only be modelled accurately using Tetryonic charged geometries

by bonding together and forming larger complex molecules

Common nitrogen functional groups include: amines, amides, nitro groups, imines, and enamines.

Compounds of Carbon form the 'backbones' of Organic & inorganic compounds

Molecular Octets

The concept of the Expanded Octet occurs in any system that has an atom with more than four electron pairs attached to it.

Most commonly, atoms will expand their octets to contain a total of five or six electron pairs, in total. In theory, it is possible to expand beyond those number.

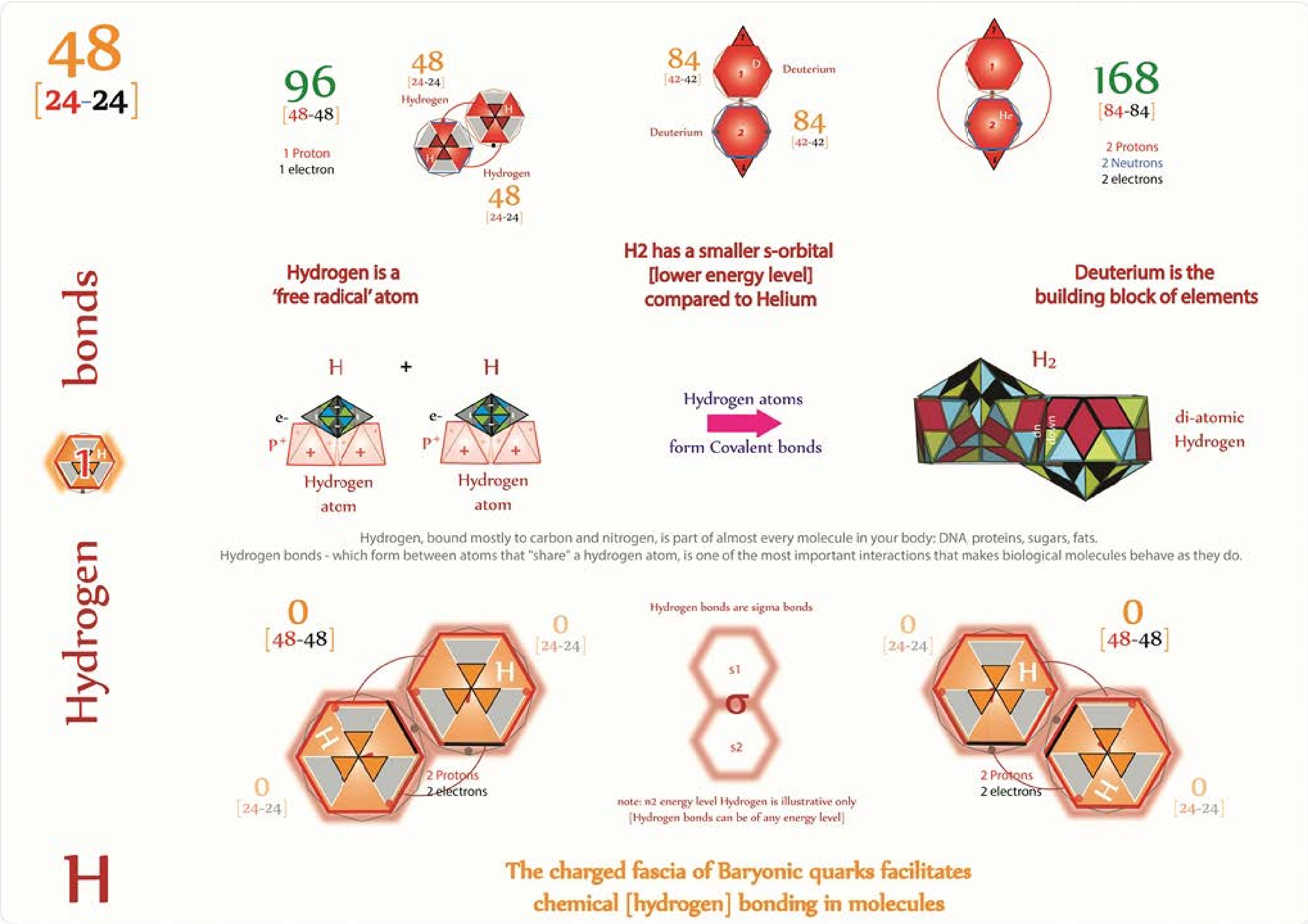
The large amounts of negative charge concentrated in small volumes of space prevent those larger expanded octets from forming.

When an atom expands its octet, it does so by making use of empty d-orbitals that are available in the valence level of the atom doing the expanding.

The atom that expands its octet in a structure will usually be located in the center of the structure and the system will not use any multiple bonds in attaching atoms to the central atom.

Nitrogen

Carbon


48
[24-24]
Hydrogen bonds
H
96
[48-48]
1 Proton
1 electron
48
[24-24]
Hydrogen
Hydrogen
48
[24-24]
84
[42-42]
Deuterium
Deuterium
84
[42-42]
168
[84-84]
2 Protons
2 Neutrons
2 electrons
Hydrogen is a
'free radical' atom
H2 has a smaller s-orbital
[lower energy level]
compared to Helium
Deuterium is the
building block of elements
H
+
H
e-
P+
Hydrogen
atom
e-
P+
Hydrogen
atom
Hydrogen atoms
form Covalent bonds
H2
di-atomic
Hydrogen
Hydrogen, bound mostly to carbon and nitrogen, is part of almost every molecule in your body: DNA, proteins, sugars, fats.
Hydrogen bonds - which form between atoms that "share" a hydrogen atom, is one of the most important interactions that makes biological molecules behave as they do.
0
[48-48]
0
[24-24]
0
[24-24]
2 Protons
2 electrons
Hydrogen bonds are sigma bonds
s1
σ
s2
note: n2 energy level Hydrogen is illustrative only
[Hydrogen bonds can be of any energy level]
0
[24-24]
0
[48-48]
2 Protons
2 electrons
0
[24-24]
The charged fascia of Baryonic quarks facilitates
chemical [hydrogen] bonding in molecules

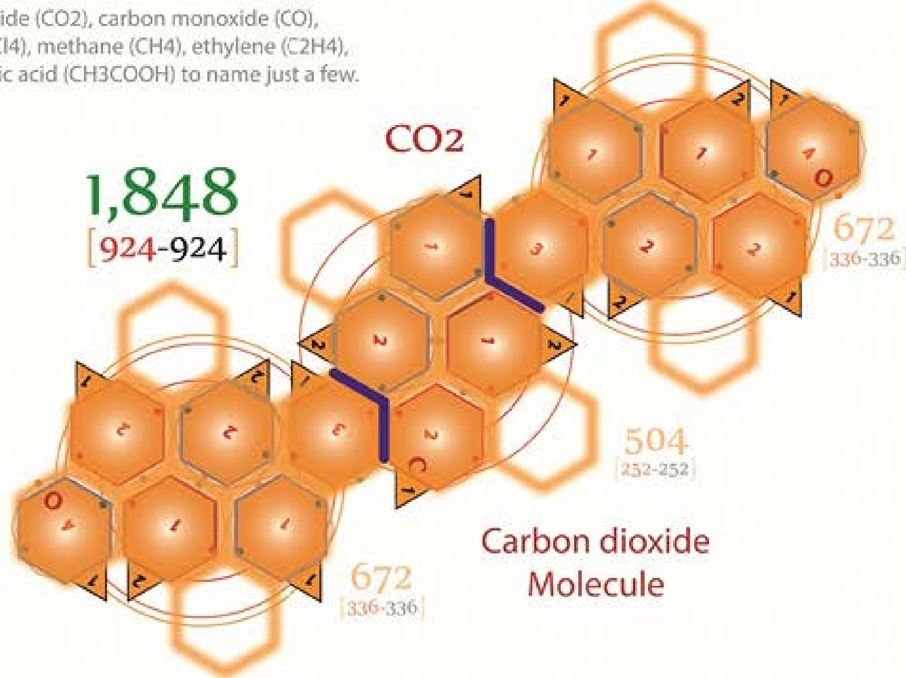
Carbon Compounds

504
[252-252]

Carbon can bond in four places, and it can bond to itself so it's easy to make lots of different molecules.

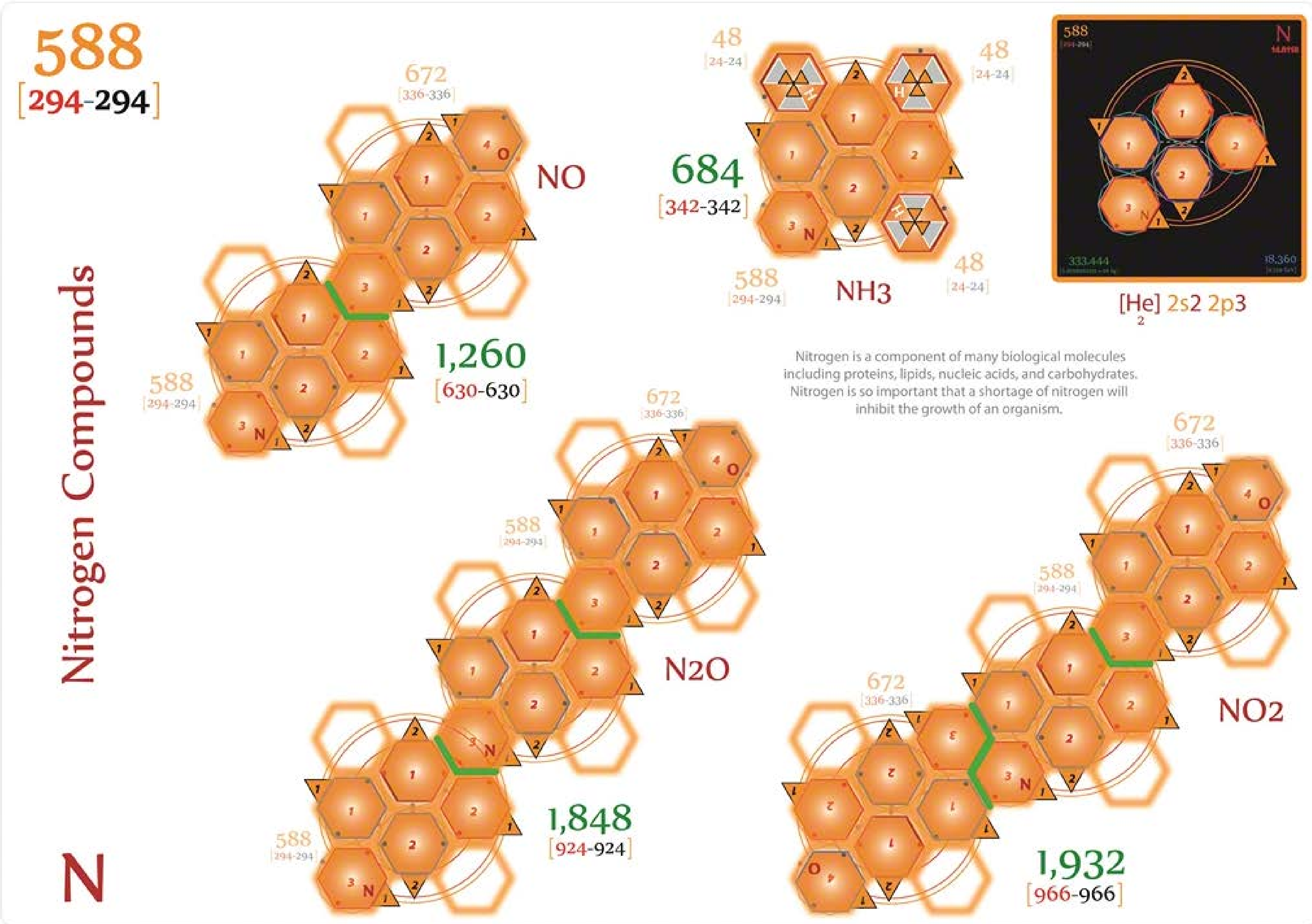
[He] 2s2 2p2

Many carbon compounds are essential for life as we know it.
Some of the most common carbon compounds are: carbon dioxide (CO2), carbon monoxide (CO), carbon disulfide (CS2), chloroform (CHCl3), carbon tetrachloride (CCl4), methane (CH4), ethylene (C2H4), acetylene (C2H2), benzene (C6H6), ethyl alcohol (C2H5OH) and acetic acid (CH3COOH) to name just a few.



C

There are nearly ten million known carbon compounds and an entire branch of chemistry, known as organic chemistry, is devoted to their study.

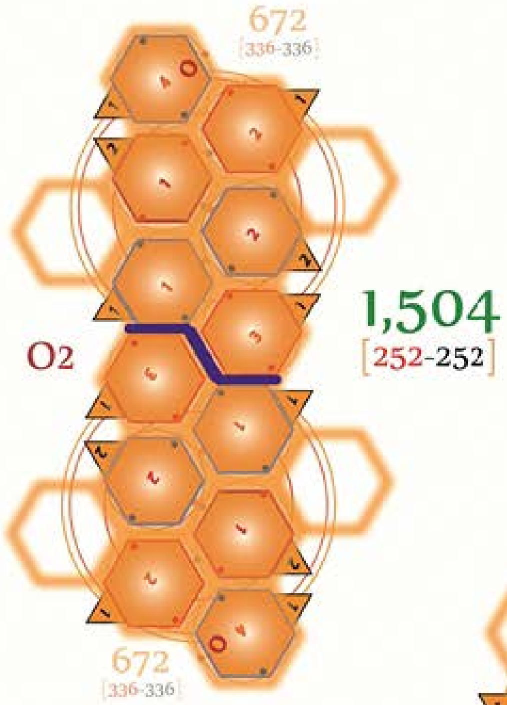


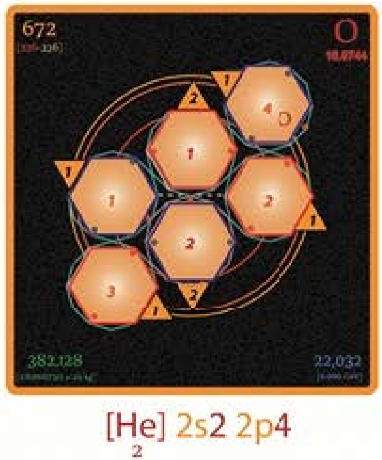
Tetryonics 57.04 - Nitrogen compounds

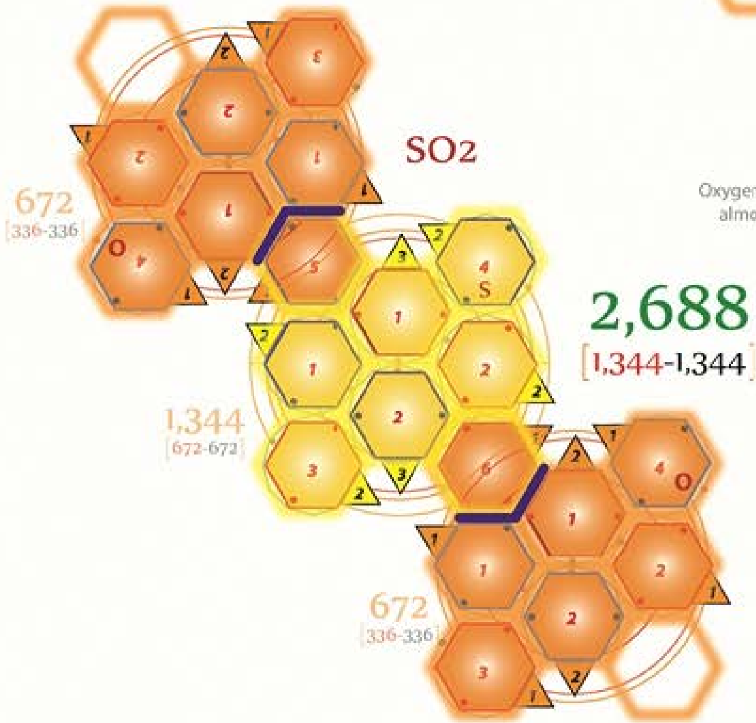
672

[336-336]

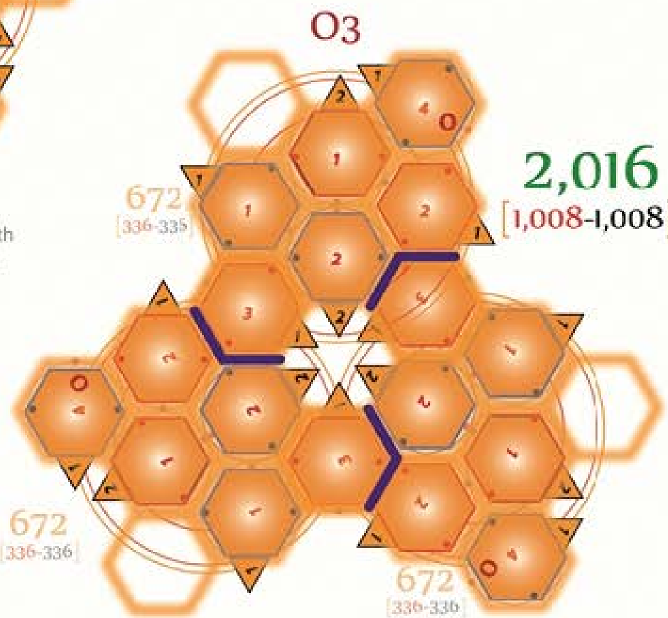
Oxygen Compounds







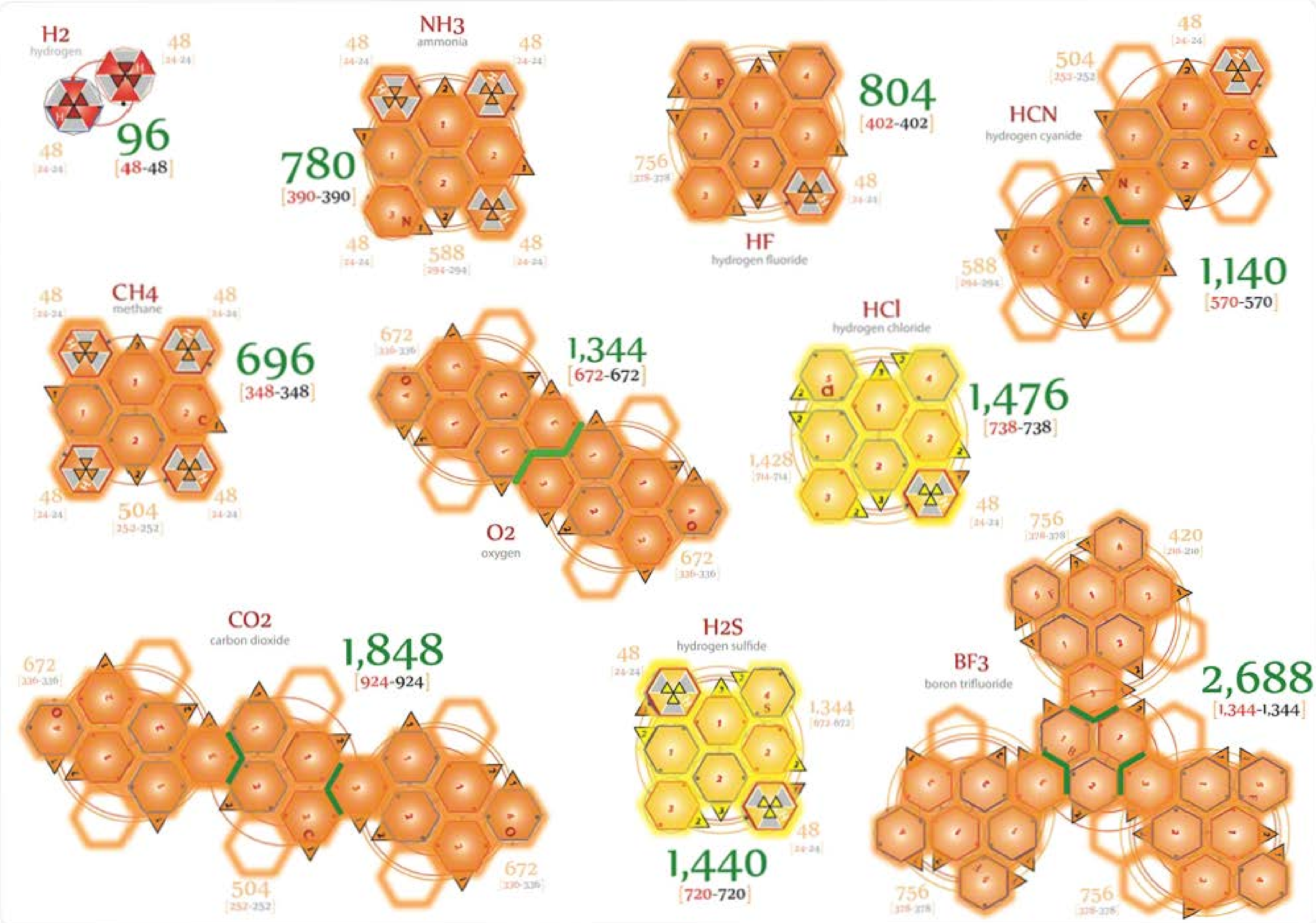
Oxygen forms oxide compounds with almost all of the known elements



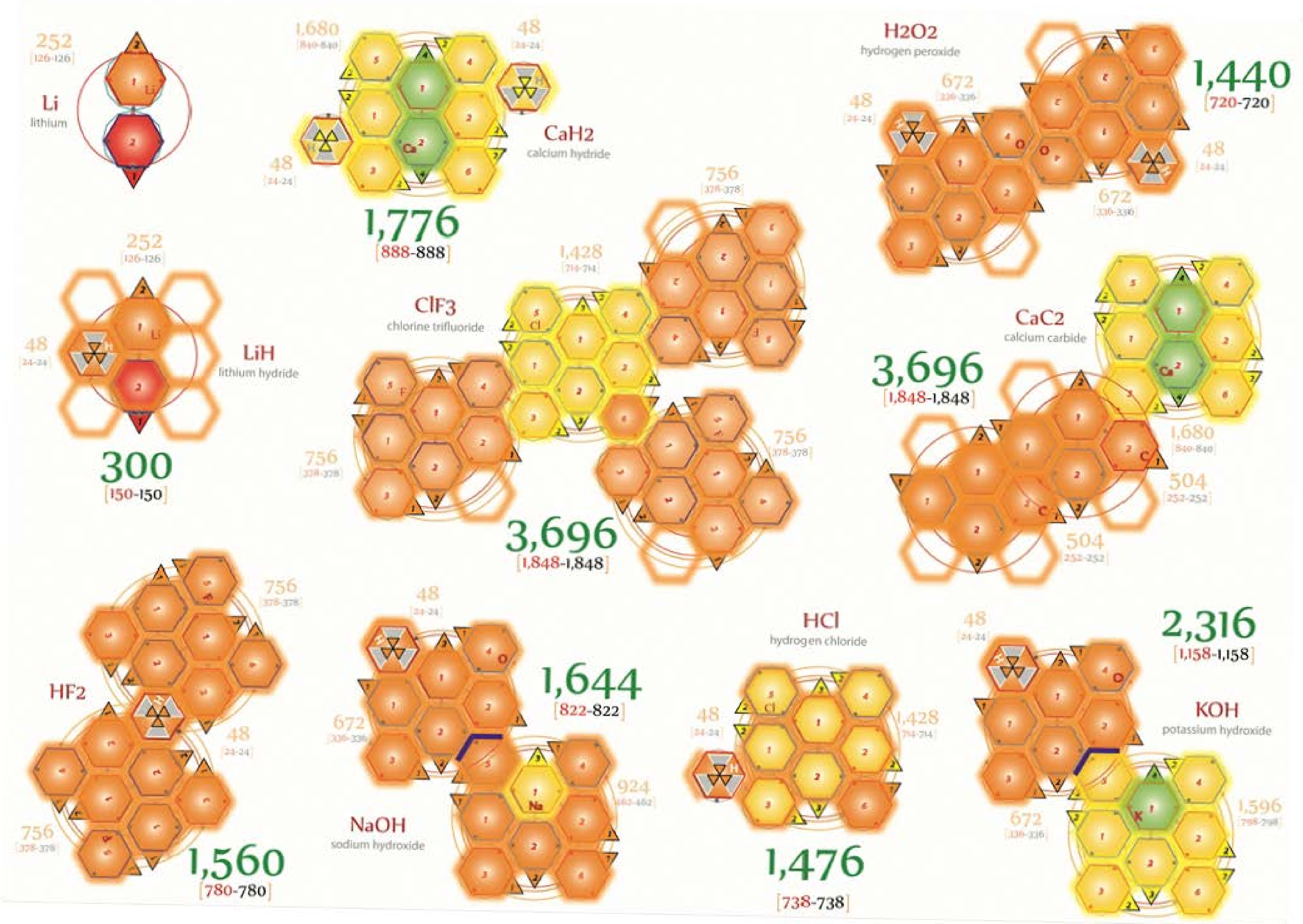
As soon as the oxygen enters your blood, a passing protein molecule called hemoglobin picks it up. Each molecule of hemoglobin can transport four molecules of oxygen to almost anywhere in the body.

The hemoglobin transport the oxygen to your cells where another protein, called cytochrome C oxidase makes two molecules of water out of every molecules of oxygen delivered to it

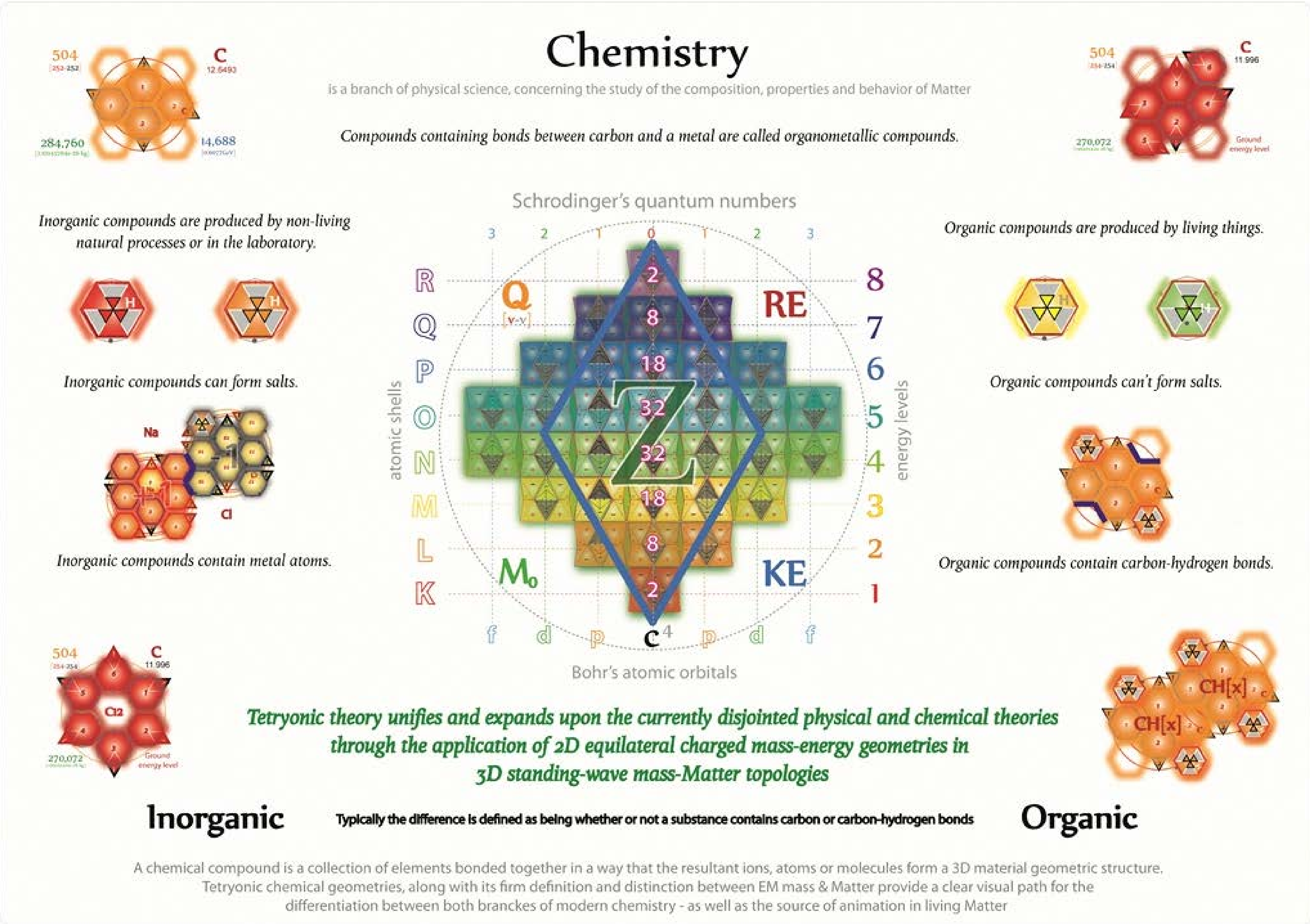
O



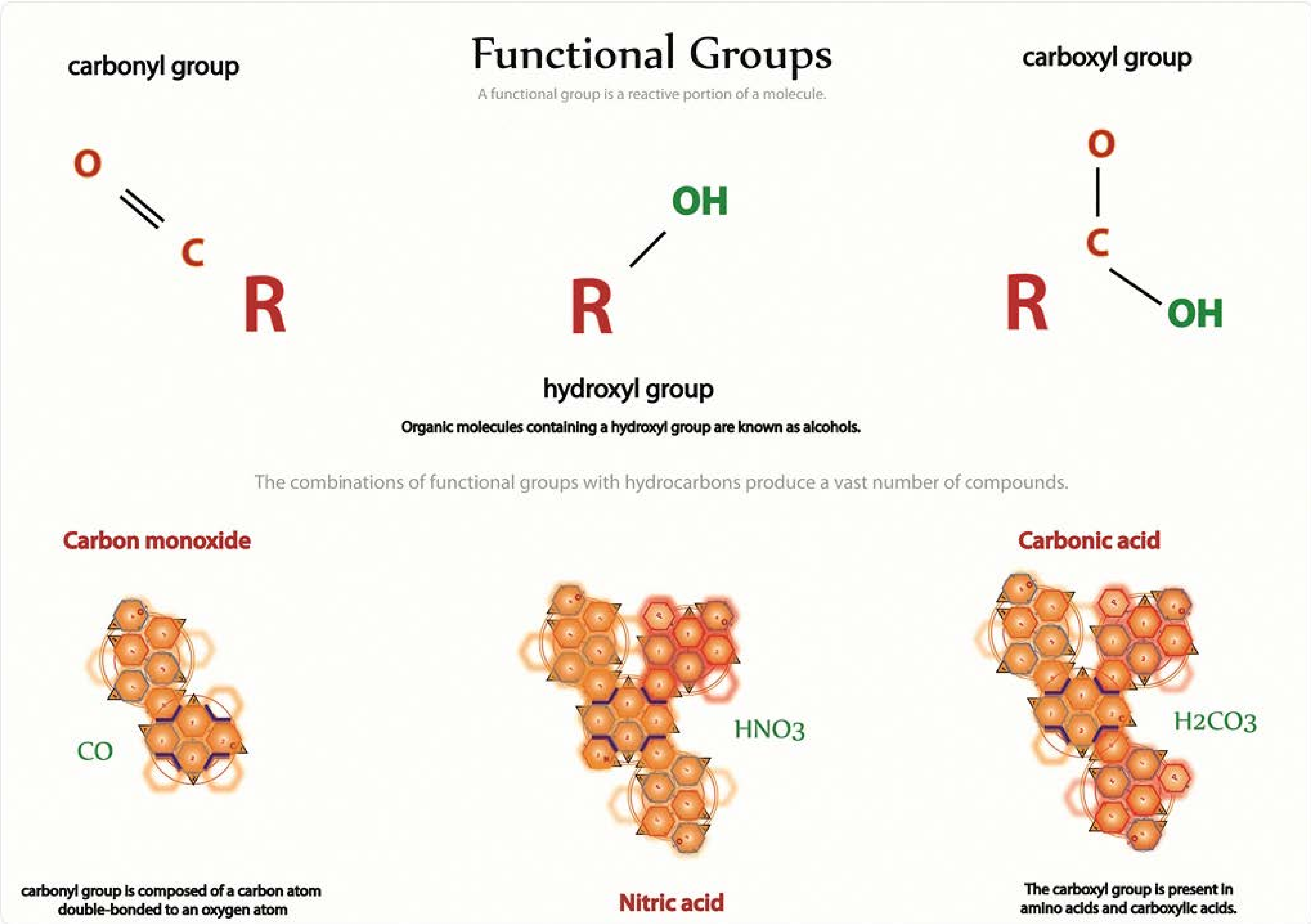
H2
hydrogen
96
[48-48]
NH3
ammonia
780
[390-390]
588
HF
hydrogen fluoride
804
[402-402]
756
HCN
hydrogen cyanide
1,140
[570-570]
504
588
CH4
methane
696
[348-348]
504
O2
oxygen
1,344
[672-672]
672
HCl
hydrogen chloride
1,476
[738-738]
1,428
CO2
carbon dioxide
1,848
[924-924]
672
504
H2S
hydrogen sulfide
1,440
[720-720]
1,344
BF3
boron trifluoride
2,688
[1,344-1,344]
756
420
48

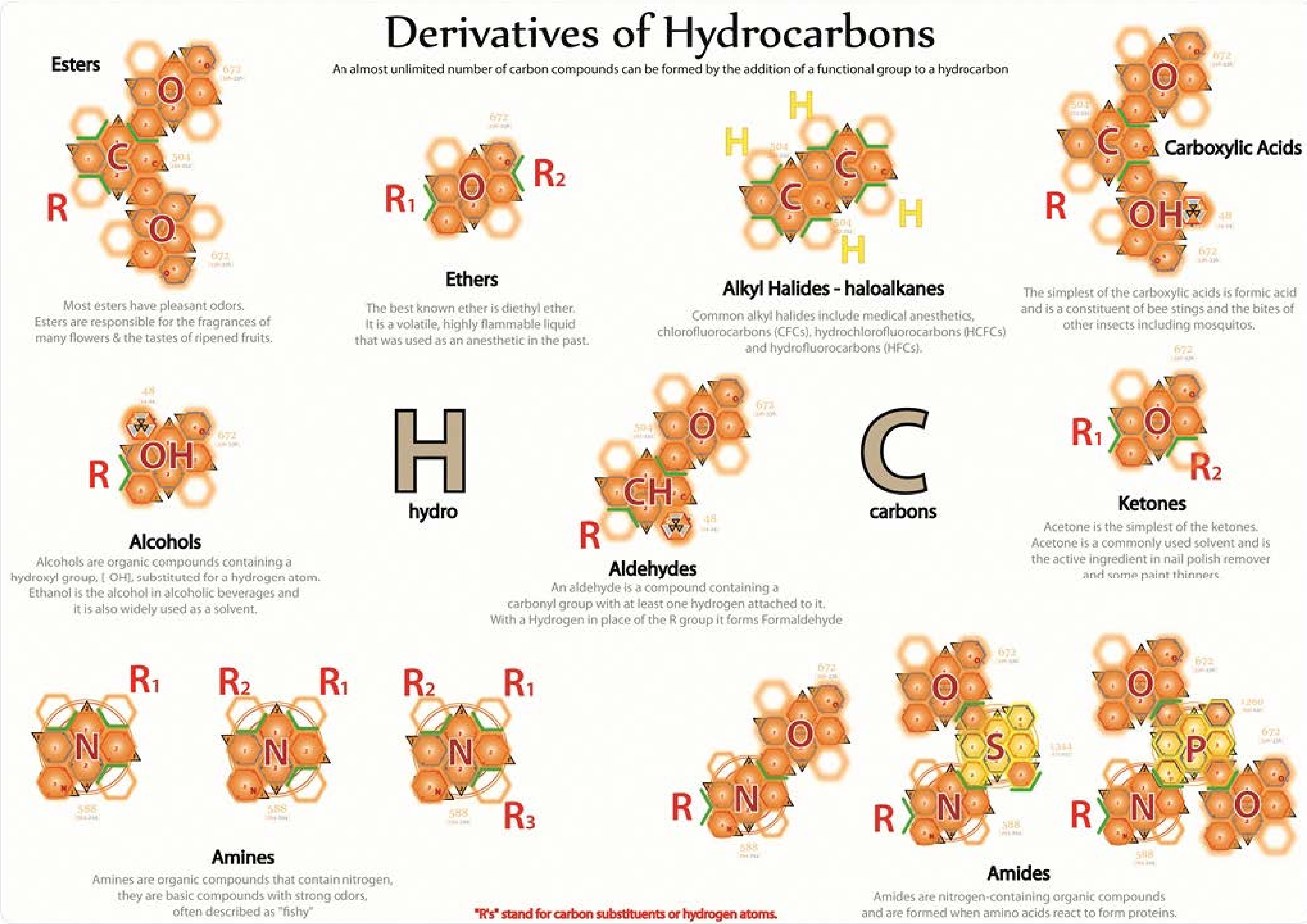


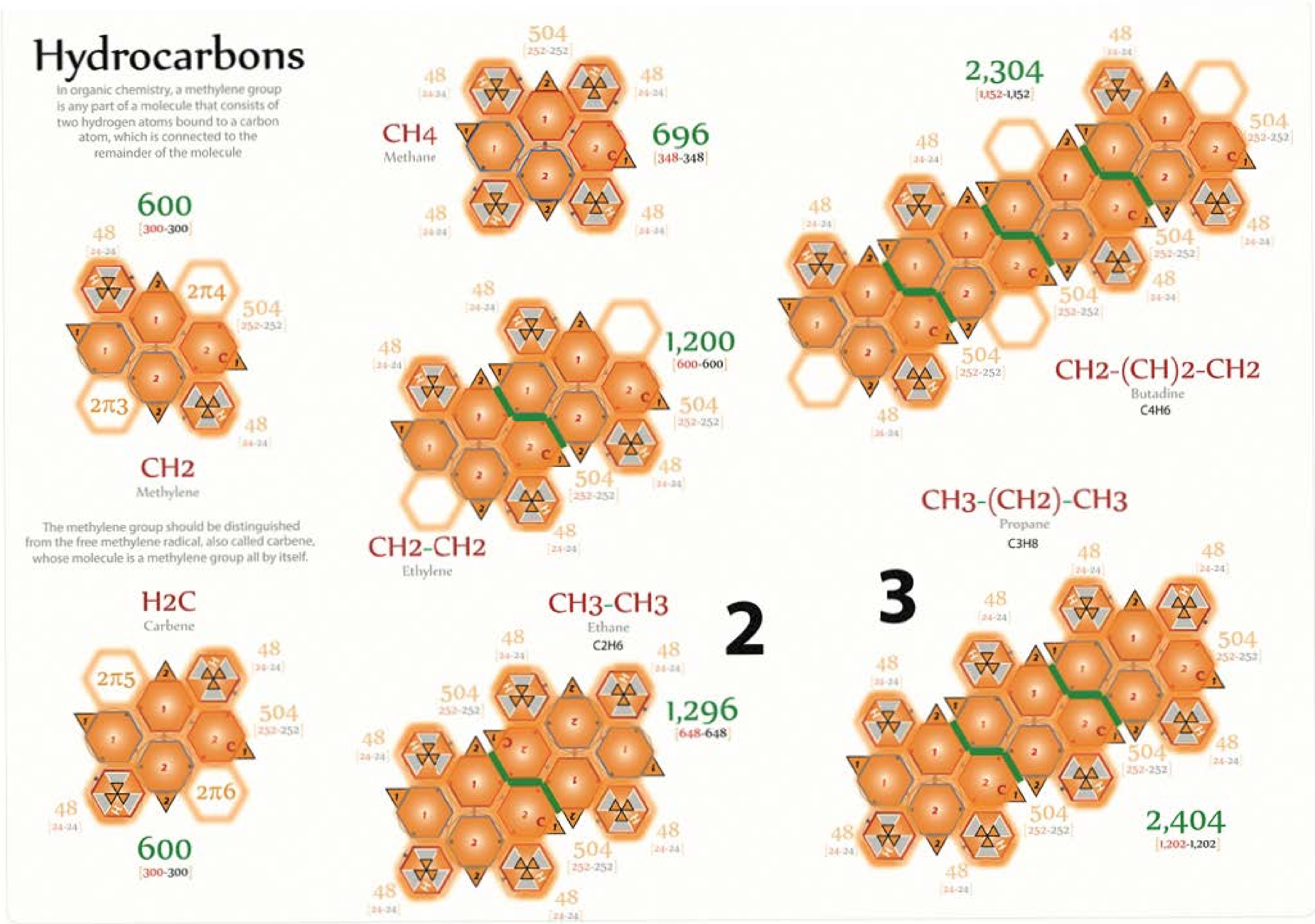
252
[126-126]
Li
lithium
1,680
[840-840]
48
[24-24]
CaH2
calcium hydride
48
[24-24]
1,776
[888-888]
H2O2
hydrogen peroxide
672
[336-336]
48
[24-24]
1,440
[720-720]
48
[24-24]
672
[336-336]
252
[126-126]
48
[24-24]
LiH
lithium hydride
300
[150-150]
756
[378-378]
1,428
[714-714]
ClF3
chlorine trifluoride
756
[378-378]
756
[378-378]
3,696
[1,848-1,848]
CaC2
calcium carbide
3,696
[1,848-1,848]
1,680
[840-840]
504
[252-252]
504
[252-252]
756
[378-378]
HF2
48
[24-24]
756
[378-378]
1,560
[780-780]
48
[24-24]
1,644
[822-822]
672
[336-336]
924
[462-462]
NaOH
sodium hydroxide
HCl
hydrogen chloride
48
[24-24]
1,428
[714-714]
1,476
[738-738]
48
[24-24]
2,316
[1,158-1,158]
KOH
potassium hydroxide
672
[336-336]
1,596
[798-798]

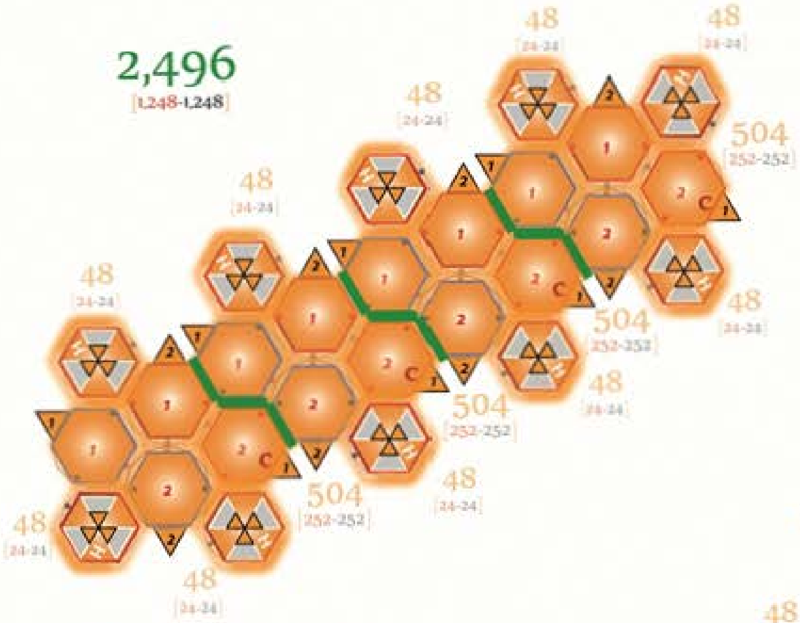


Tetryonics 57.08 - Compound molecular geometries


Functional Groups
A functional group is a reactive portion of a molecule.
carbonyl group
O
C
R
OH
R
hydroxyl group
Organic molecules containing a hydroxyl group are known as alcohols.
carboxyl group
O
C
R
OH
The combinations of functional groups with hydrocarbons produce a vast number of compounds.
Carbon monoxide
CO
carbonyl group is composed of a carbon atom double-bonded to an oxygen atom
HNO3
Nitric acid
Carbonic acid
H2CO3
The carboxyl group is present in amino acids and carboxylic acids.


Derivatives of Hydrocarbons
An almost unlimited number of carbon compounds can be formed by the addition of a functional group to a hydrocarbon
Esters
O
C
R
O
Most esters have pleasant odors.
Esters are responsible for the fragrances of
many flowers & the tastes of ripened fruits.
R1
O
R2
Ethers
The best known ether is diethyl ether.
It is a volatile, highly flammable liquid
that was used as an anesthetic in the past.
H
H
C
C
H
H
Alkyl Halides - haloalkanes
Common alkyl halides include medical anesthetics,
chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs)
and hydrofluorocarbons (HFCs).
O
C
Carboxylic Acids
R
OH
The simplest of the carboxylic acids is formic acid
and is a constituent of bee stings and the bites of
other insects including mosquitos.
R
OH
Alcohols
Alcohols are organic compounds containing a
hydroxyl group, [OH], substituted for a hydrogen atom.
Ethanol is the alcohol in alcoholic beverages and
it is also widely used as a solvent.
H
hydro
O
CH
R
Aldehydes
An aldehyde is a compound containing a
carbonyl group with at least one hydrogen attached to it.
With a Hydrogen in place of the R group it forms Formaldehyde
C
carbons
R1
O
R2
Ketones
Acetone is the simplest of the ketones.
Acetone is a commonly used solvent and is
the active ingredient in nail polish remover
and some paint thinners.
R1
N
R2
R1
N
R2
R1
N
R3
Amines
Amines are organic compounds that contain nitrogen,
they are basic compounds with strong odors,
often described as "fishy"
"R's" stand for carbon substituents or hydrogen atoms.
O
R
N
O
S
R
N
O
P
R
N
O
Amides
Amides are nitrogen-containing organic compounds
and are formed when amino acids react to form proteins.


Hydrocarbons
In organic chemistry, a methylene group is any part of a molecule that consists of two hydrogen atoms bound to a carbon atom, which is connected to the remainder of the molecule
600
[300-300]
CH2
Methylene
The methylene group should be distinguished from the free methylene radical, also called carbene, whose molecule is a methylene group all by itself.
H2C
Carbene
600
[300-300]
CH4
Methane
696
[348-348]
1,200
[600-600]
CH2-CH2
Ethylene
CH3-CH3
Ethane
C2H6
1,296
[648-648]
2
2,304
[1,152-1,152]
CH2-(CH)2-CH2
Butadine
C4H6
CH3-(CH2)-CH3
Propane
C3H8
3
2,404
[1,202-1,202]

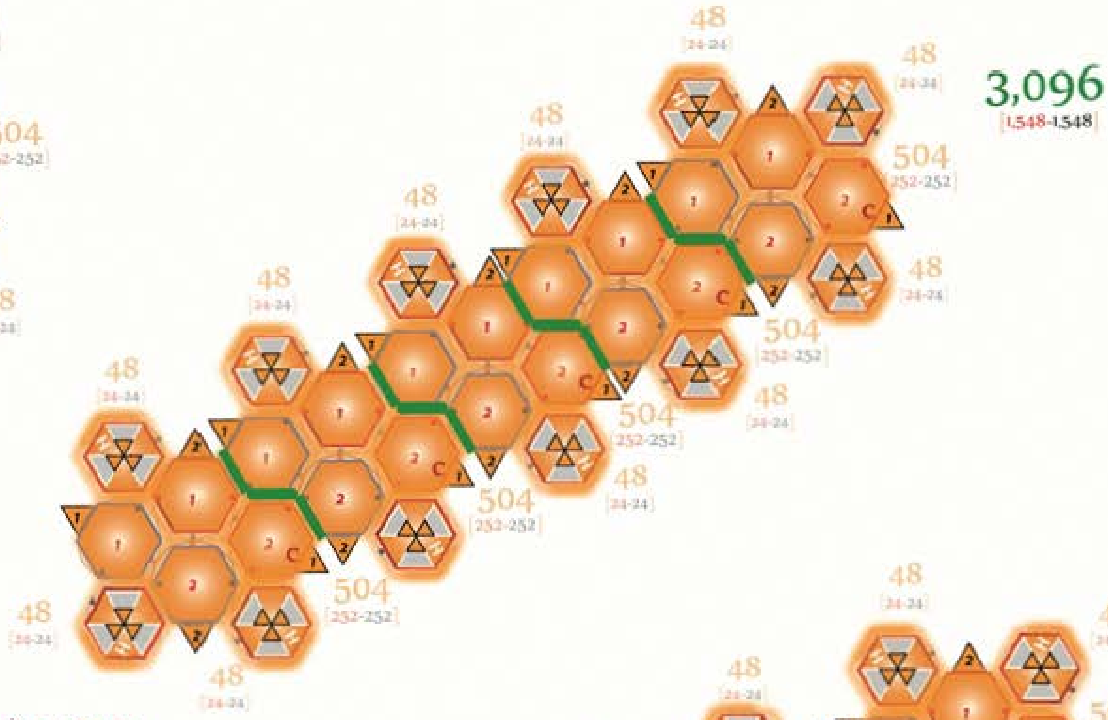


CH3-(CH2)2-CH3

Butane

C4H10

4



CH3-(CH2)3-CH3

Pentane

C5H12

5

Butane, also called n-butane,
is the unbranched alkane
with four carbon atoms,
CH3- [CH2]n -CH3.

Butane is also used as a collective
term for n-butane together
with its only other isomer, isobutane
(also called methylpropane), CH(CH3)3.

Butanes are highly flammable, colorless,
odorless, easily liquefied gases.

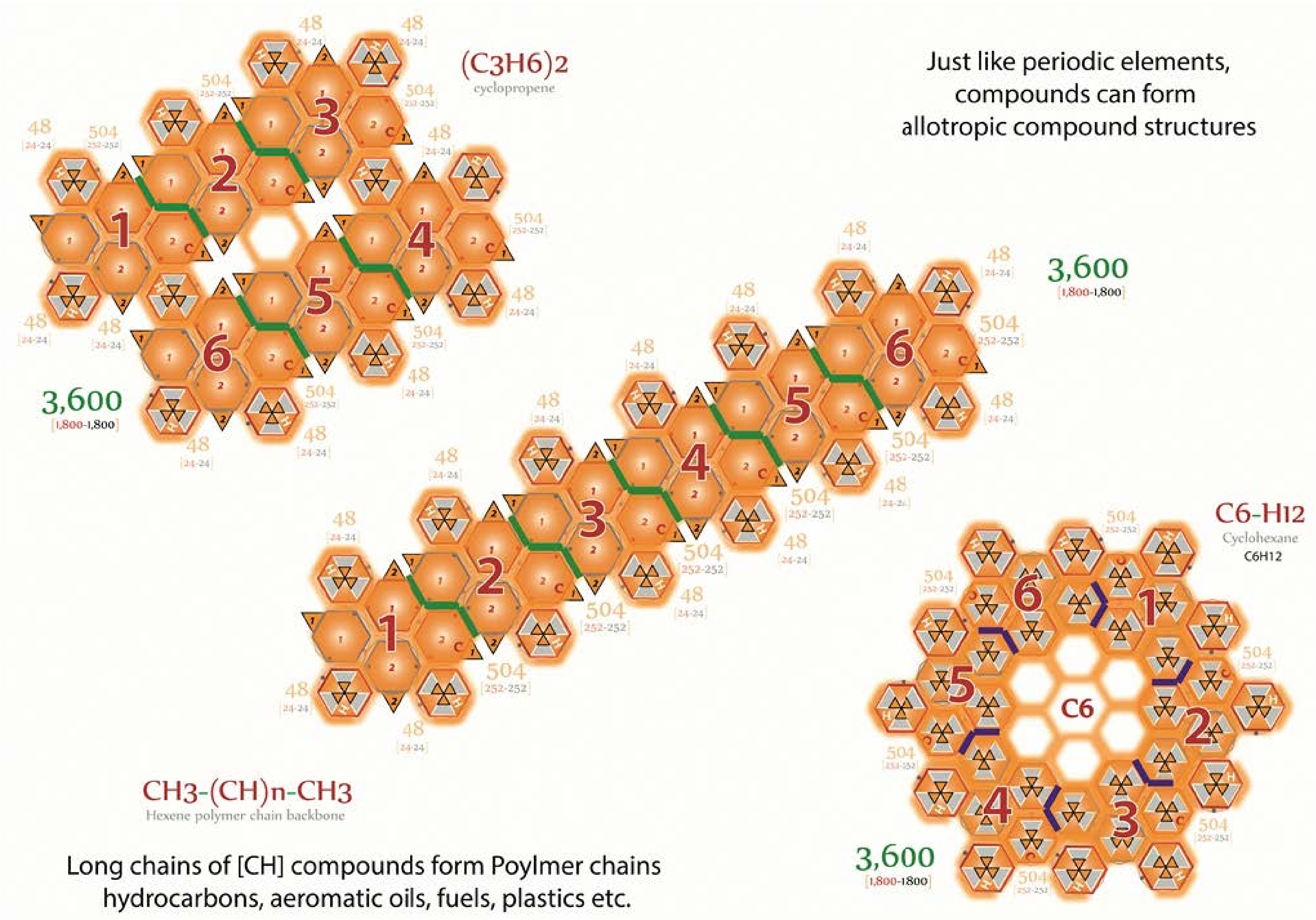
CH3-(CH2)4-CH3

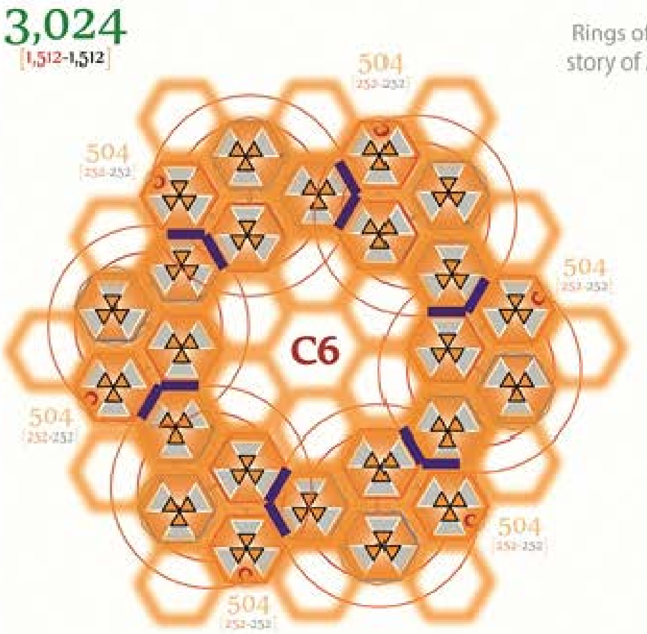
Hexane

C6H14

6


7
CH3-(CH2)5-CH3
Heptane
C7H16
4,296
[2,148-2,148]
48
[24-24]
504
[252-252]
CH3-(CH2)6-CH3
Octane
C8H16
4,896
[2,448-2,448]
8


(C3H6)2
cyclopropene
Just like periodic elements,
compounds can form
allotropic compound structures
3,600
[1,800-1,800]
3,600
[1,800-1,800]
C6-H12
Cyclohexane
C6H12
C6
3,600
[1,800-1800]
CH3-(CH)n-CH3
Hexene polymer chain backbone
Long chains of [CH] compounds form Poylmer chains
hydrocarbons, aeromatic oils, fuels, plastics etc.

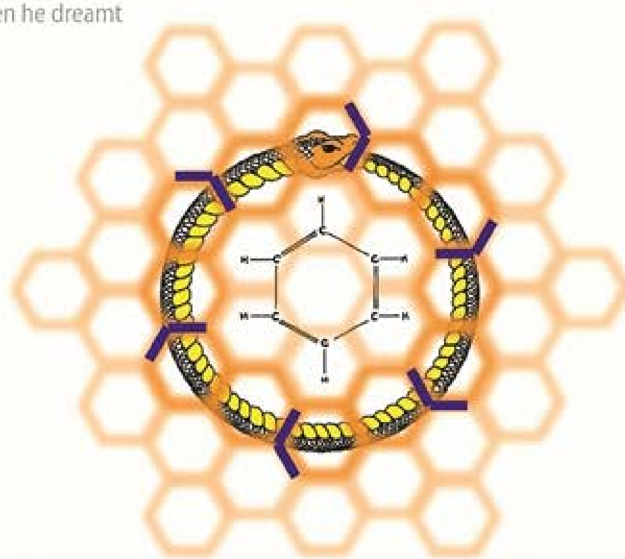


Carbon ring

Rings of atoms are also common in organic structures. You may have heard the famous story of Auguste Kekulé first realizing that benzene has a ring structure when he dreamt of snakes biting their own tails.

Friedrich August Kekul

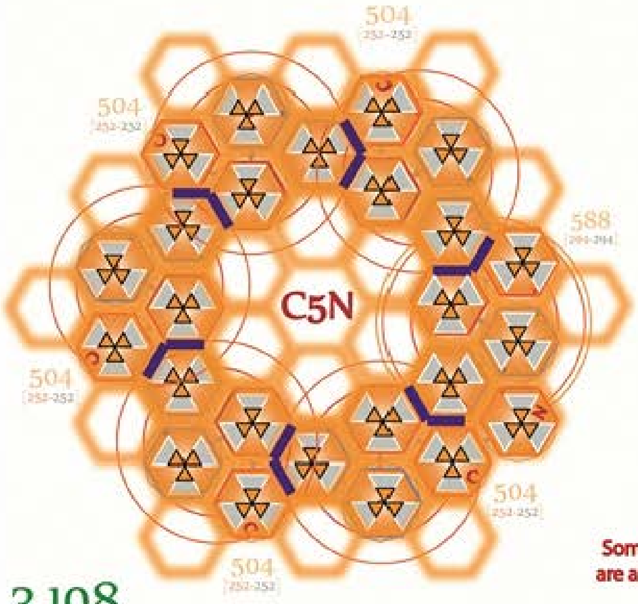
(7 September 1829 - 13 July 1896)



Organic Chemistry

In 1865, August Kekulé presented a paper at the Académie des Sciences in Paris suggesting a cyclic structure for benzene, the inspiration for which he ascribed to a dream. However, was Kekulé the first to suggest that benzene was cyclic. Some credit an Austrian schoolteacher, Josef Loschmidt with the first depiction of cyclic benzene structures.

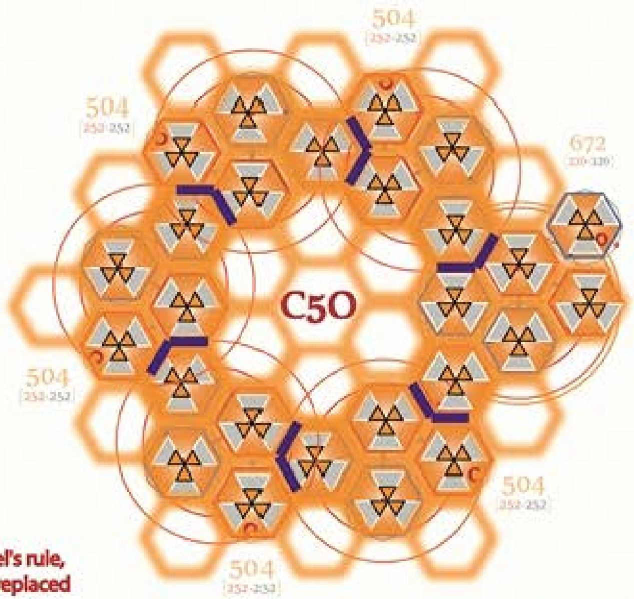
In 1861, 4 years before Kekulé's dream, Loschmidt published a book in which he represented benzene as a set of rings. It is not certain whether Loschmidt or Kekulé—or even a Scot named Archibald Couper—got it right first



3,108
[1,554-1,554]

Carbon-Nitrogen ring

Some non-benzene-based compounds called heteroarenes, which follow Hückel's rule, are also aromatic compounds. In these compounds, at least one carbon atom is replaced by one of the heteroatoms oxygen, nitrogen, or sulfur.



Carbon-Oxygen ring

3,192
[1,596-1,596]

Benzene molecules

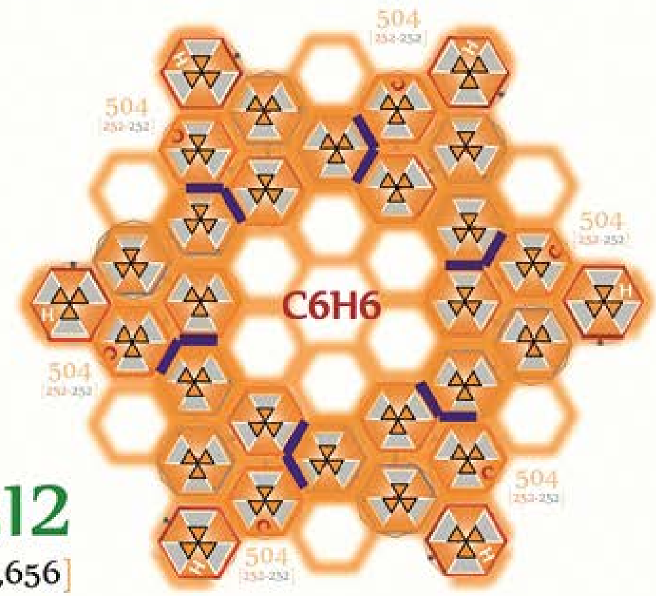
Benzene, or benzol, is an organic chemical compound and a known carcinogen with the molecular formula C6H6.

It is sometimes abbreviated Ph–H.
Benzene is a colorless and highly flammable liquid with a sweet smell and a relatively high melting point.

Because it is a known carcinogen, its use as an additive in gasoline is now limited, but it is an important industrial solvent and precursor in the production of drugs, plastics, synthetic rubber, and dyes. Benzene is a natural constituent of crude oil, and may be synthesized from other compounds present in petroleum.

Benzene is an aromatic hydrocarbon and the second [n]-annulene ([6]-annulene), a cyclic hydrocarbon with a continuous pi bond.

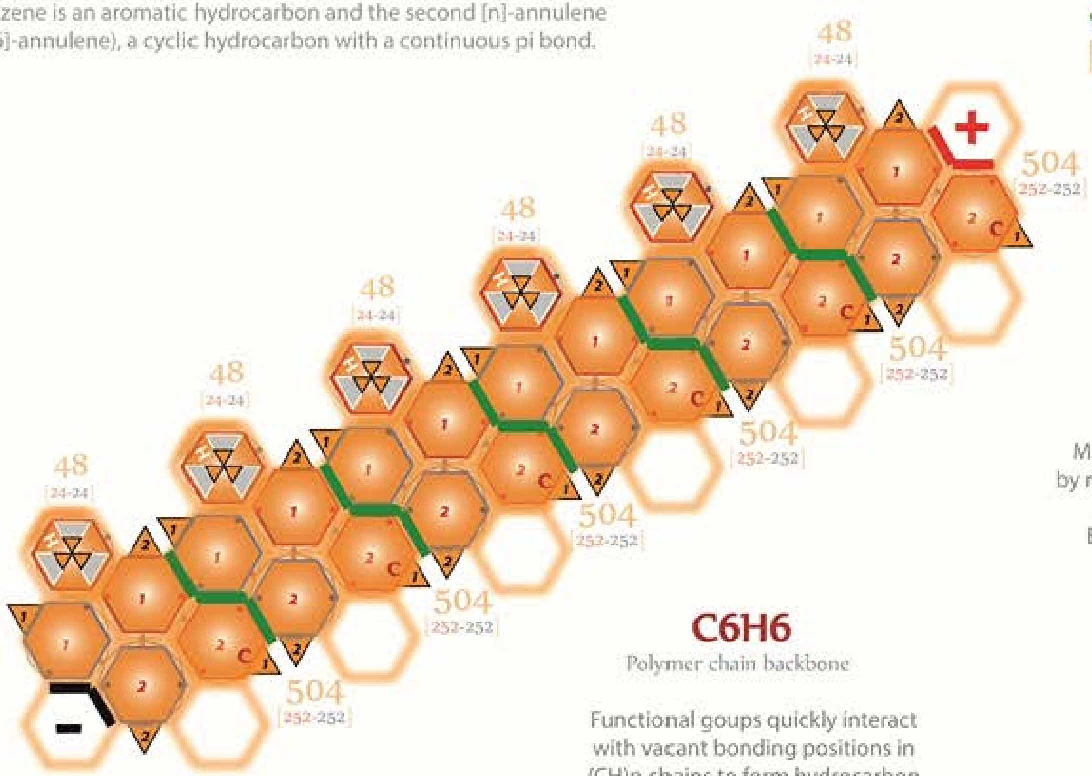
Cyclic hydrocarbon compounds
are often referred to as
Aromatic compounds
due to their sweet smell



3,312
[1,656-1,656]

(CH)6
Benzene ring
C6H6

A aromatic hydrocarbon is formed when CH compounds form a cyclic molecule



C6H6
Polymer chain backbone

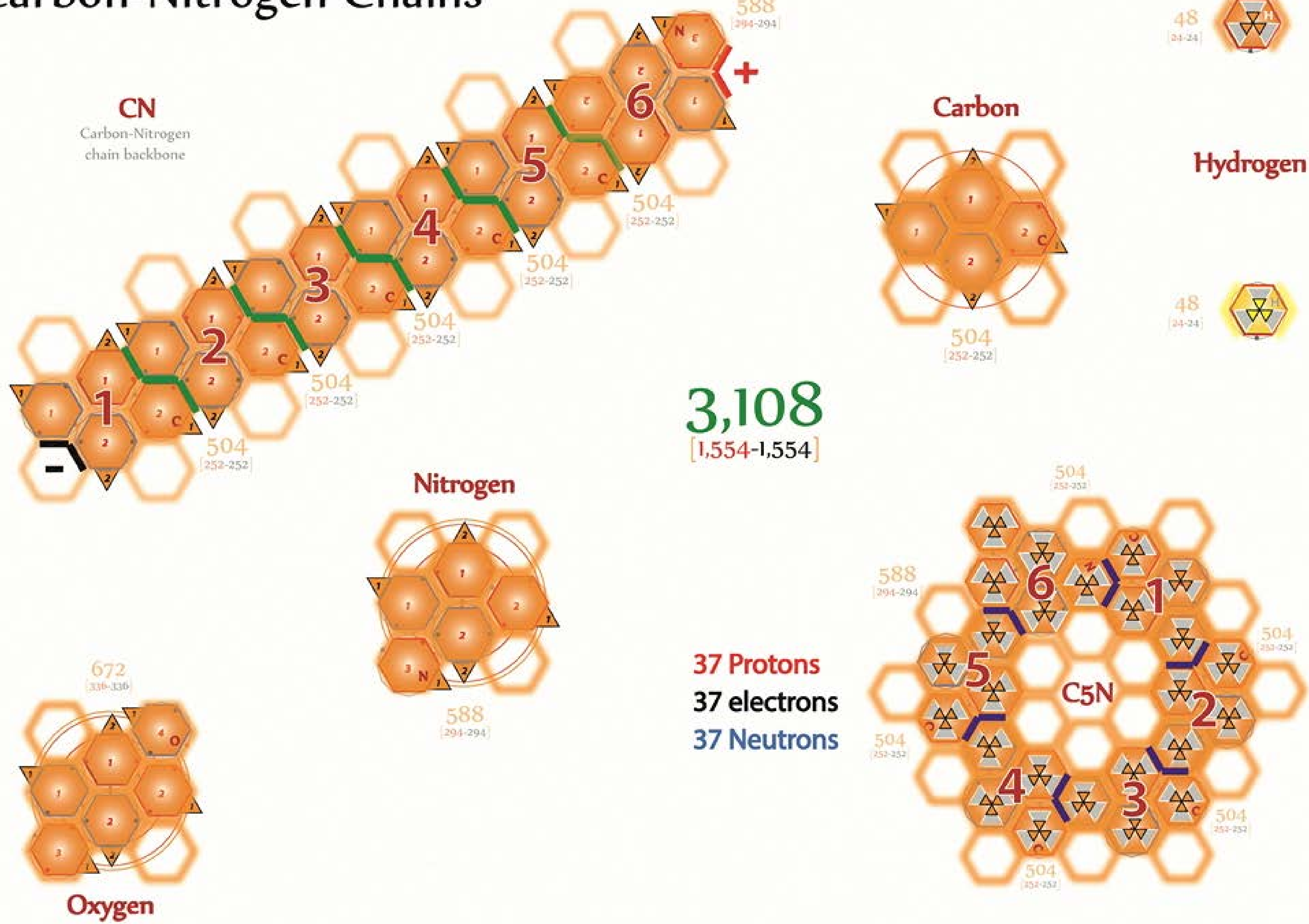
Functional goups quickly interact with vacant bonding positions in (CH)n chains to form hydrocarbon compounds

Many important additional chemical compounds are derived from benzene by replacing one or more of its hydrogen atoms with another functional group.

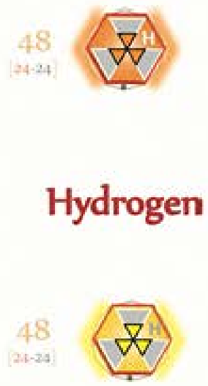
Examples of simple benzene derivatives are phenol, toluene, and aniline, abbreviated PhOH, PhMe, and PhNH2, respectively

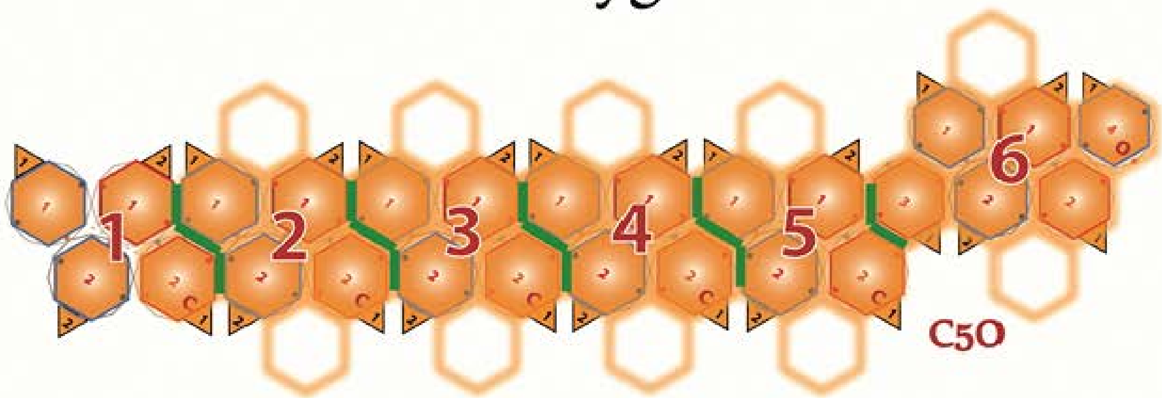
Linear (CH)n chains are rarely found in nature as the Positive and Negative tail ends of Hydrocarbon chain interact and bond to form cyclic compounds.

Carbon-Nitrogen Chains



Carbon-Oxygen Chains



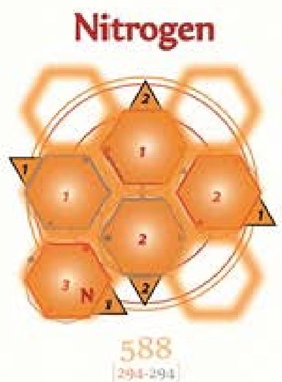


Heterocyclic Rings

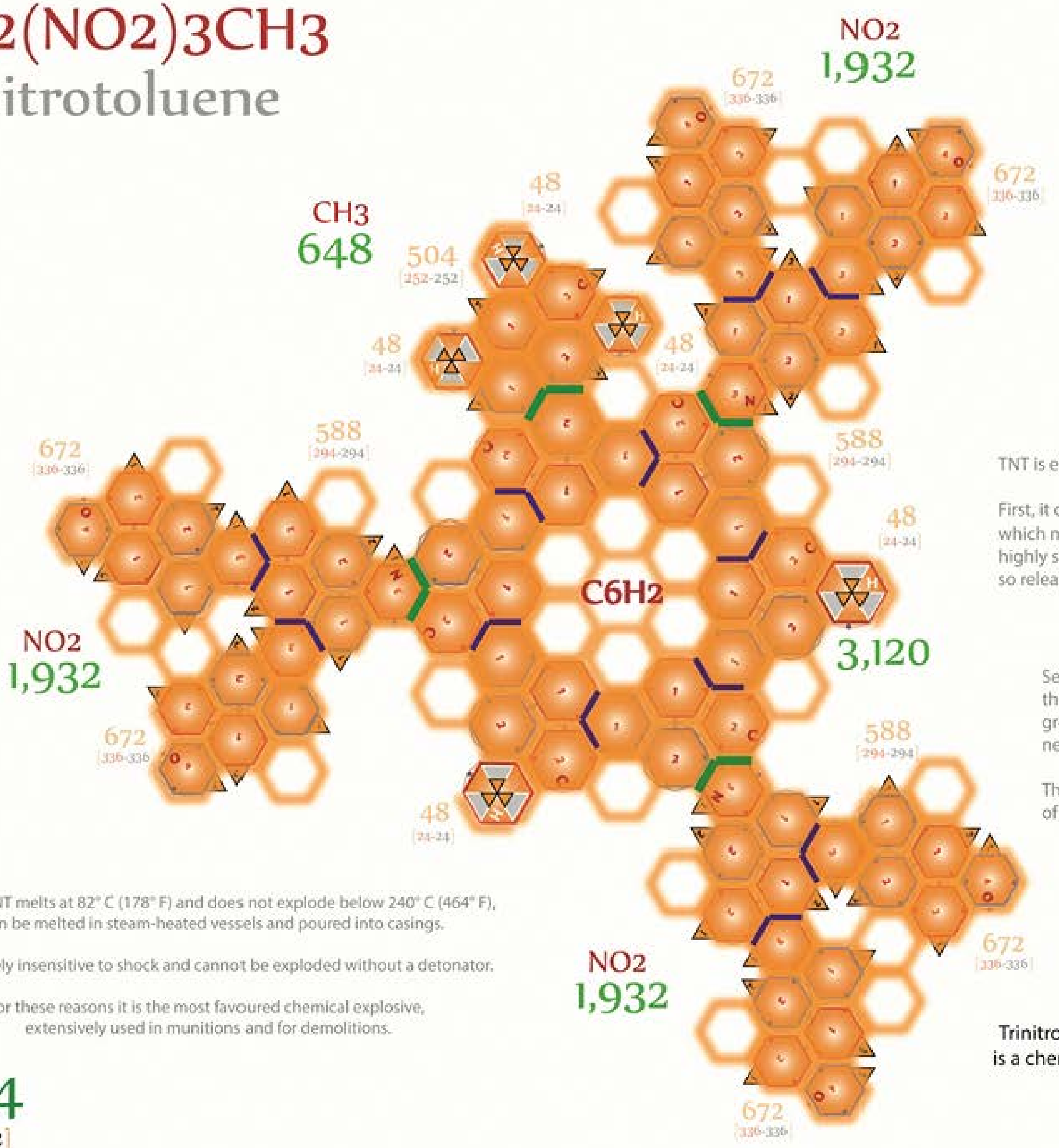
Tetrahydropyran is the organic compound consisting of a saturated six-membered ring containing five carbon atoms and one oxygen atom.

3,192
[1,596-1,596]

38 Protons
38 electrons
38 Neutrons



C6H2(NO2)3CH3
Trinitrotoluene



2,4,6-trinitrotoluene is better known by its initials, TNT.
It is an important explosive, since it can very quickly change from a solid into hot expanding gases.

TNT is explosive for two reasons;

First, it contains the elements carbon, oxygen and nitrogen, which means that when the material burns it produces highly stable substances (CO, CO2 and N2) with strong bonds, so releasing a great deal of energy.

Secondly, TNT is chemically unstable - the nitro groups are so closely packed that they experience a great deal of strain and hindrance to movement from their neighbouring groups.

Thus it doesn't take much of an initiating force to break some of the strained bonds, and the molecule then flies apart.

Because TNT melts at 82° C (178° F) and does not explode below 240° C (464° F), it can be melted in steam-heated vessels and poured into casings.

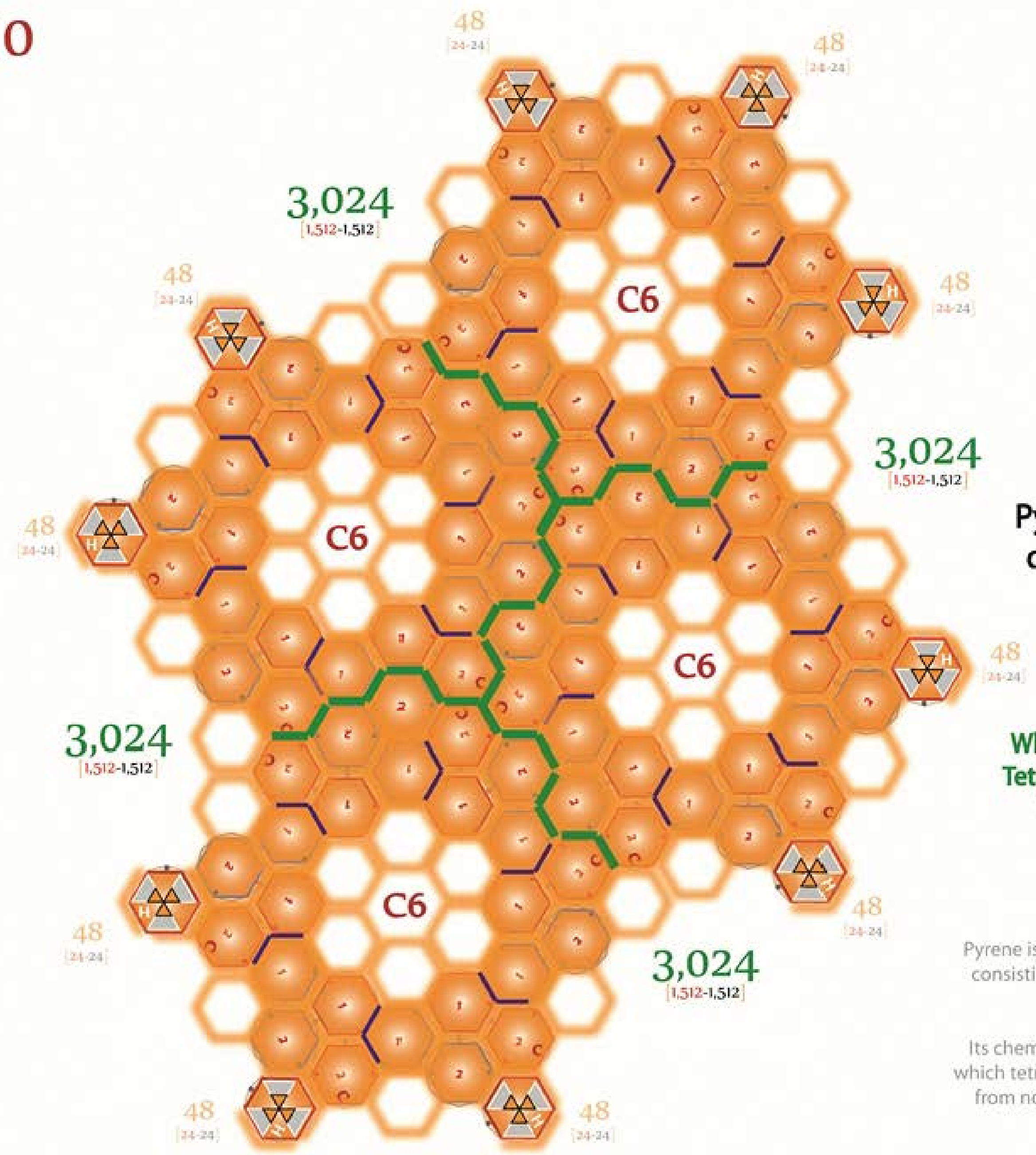
It is relatively insensitive to shock and cannot be exploded without a detonator.

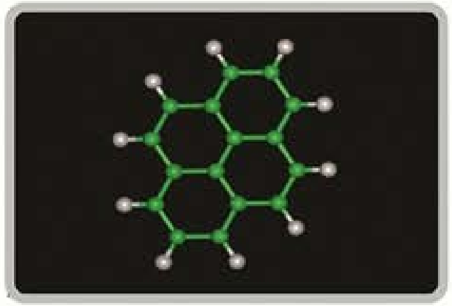
For these reasons it is the most favoured chemical explosive, extensively used in munitions and for demolitions.

Trinitrotoluene, or more specifically, 2,4,6-trinitrotoluene, is a chemical compound with the formula C6H2(NO2)3CH3

9,564
[4,782-4,782]

(C6)4-H10
Pyrene





12,576
[6,288-6,288]

Pyrene highlights the failings of Lewis diagram structures

Which can be rectified using charged Tetryonic geometric Matter topologies for all elements and compound interactions & modelling

Pyrene is a polycyclic aromatic hydrocarbon (PAH) consisting of four fused benzene rings, resulting in a flat aromatic system.

Its chemcial formula as is often stated as C16H10, which tetryonic geometry shows is an error resulting from not using equilateral quantum geometries in chemical topology modelling.

Four cyclic carbon rings cannot be formed with only 16 C-atoms

Ammonium Nitrate

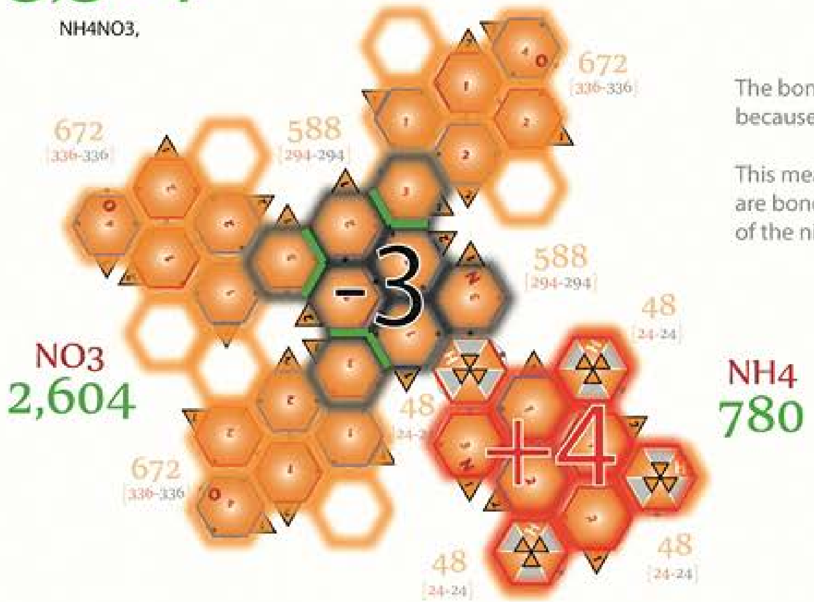
3,384

NH_4NO_3,

Ammonium nitrate is composed of two polyatomic ions:

1) Ammonium Ion (NH_4^+)
2) Nitrate Ion (NO_3^-)

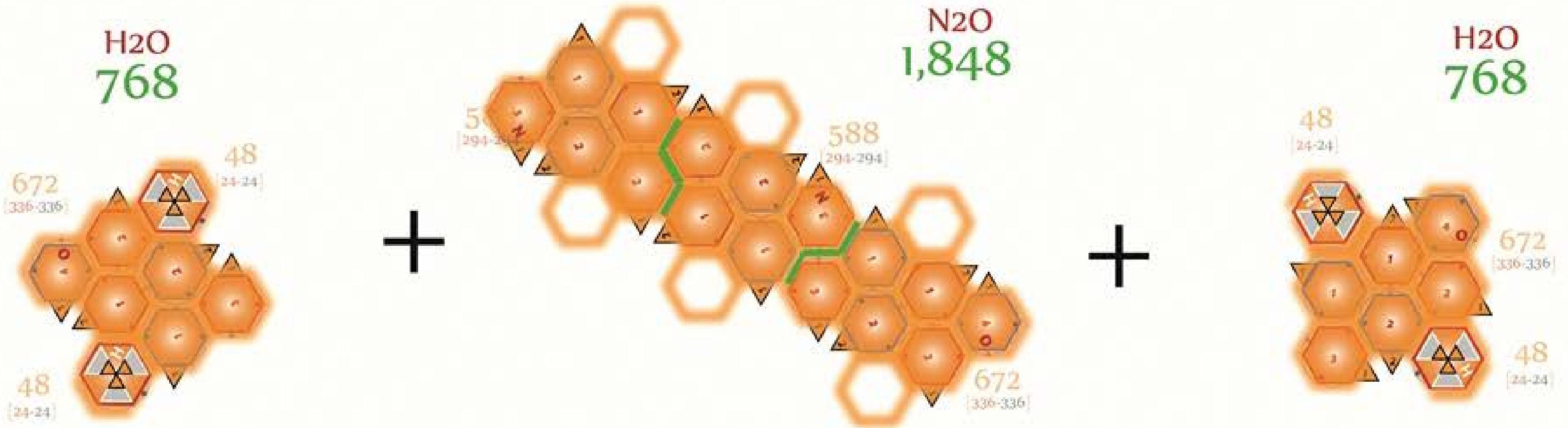
The bond between these ions is an ionic bond meaning the ammonium ion transfers an electron to the nitrate ion.



The bonds in a polyatomic atomic ion are covalent because they take place between gases.

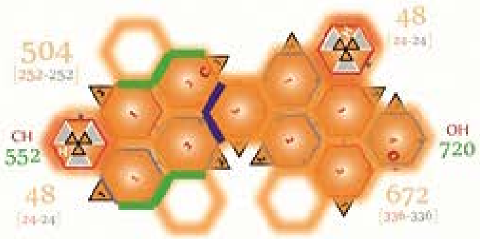
This means that the hydrogens of the ammonium ion are bonded to the nitrogen covalently and that the oxygens of the nitrate are bonded to the nitrogen covalently

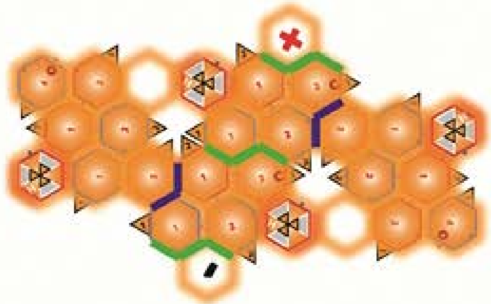
Ammonium nitrate decomposes into the gases nitrous oxide and water vapor when heated (non-explosive reaction); however, ammonium nitrate can be induced to decompose explosively by detonation.



Carbohydrates

A carbohydrate is an organic compound that consists only of carbon, hydrogen, and oxygen (with a hydrogen:oxygen ratio of 2:1) in other words, with the empirical formula $C_m(H_2O)_n$





Monosaccharides

Disaccharides

Oligosaccharides

Polysaccharides

Ribose

Gluclose

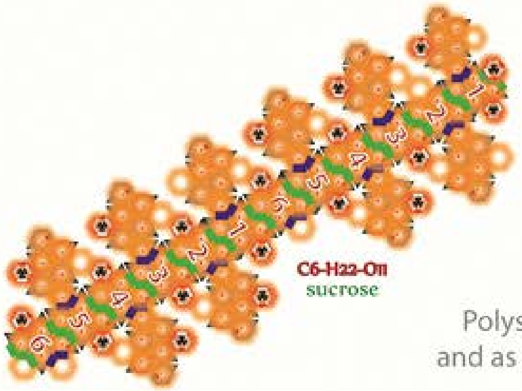
Lactose

$$C_m(H_2O)_n$$

Fructose

Sucrose

Deoxyribose



Carbohydrates perform numerous roles in living organisms.
Polysaccharides serve for the storage of energy (e.g., starch and glycogen), and as structural components (e.g., cellulose in plants and chitin in arthropods)

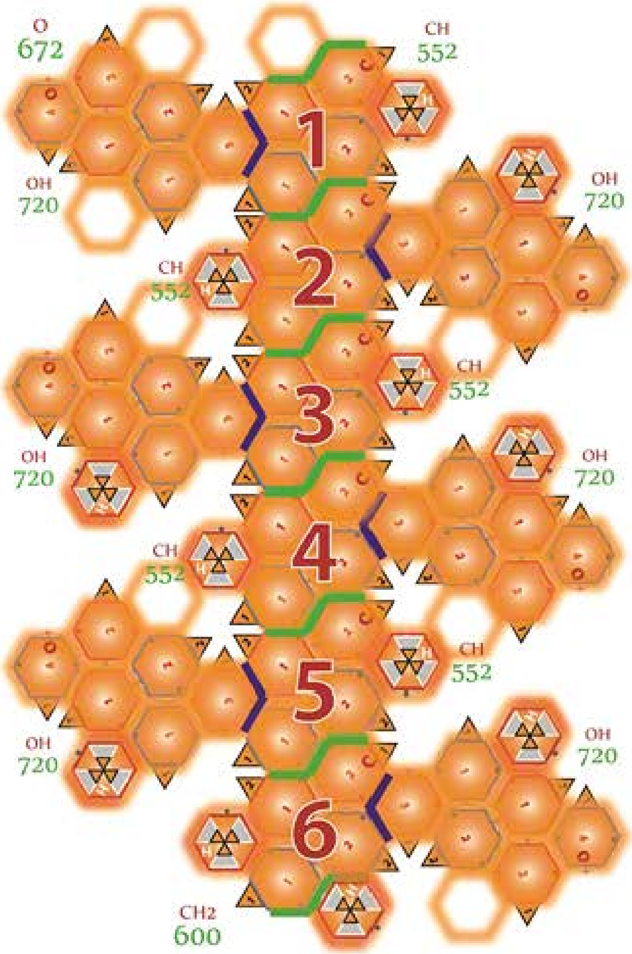
Monosaccharides

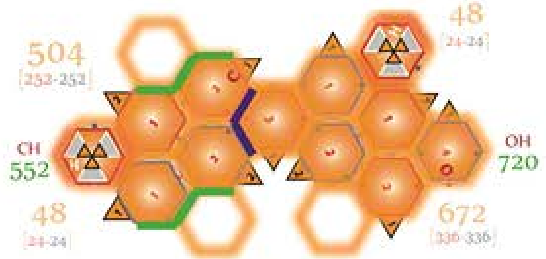
Monosaccharides are the simplest carbohydrates in that they cannot be hydrolyzed to smaller carbohydrates

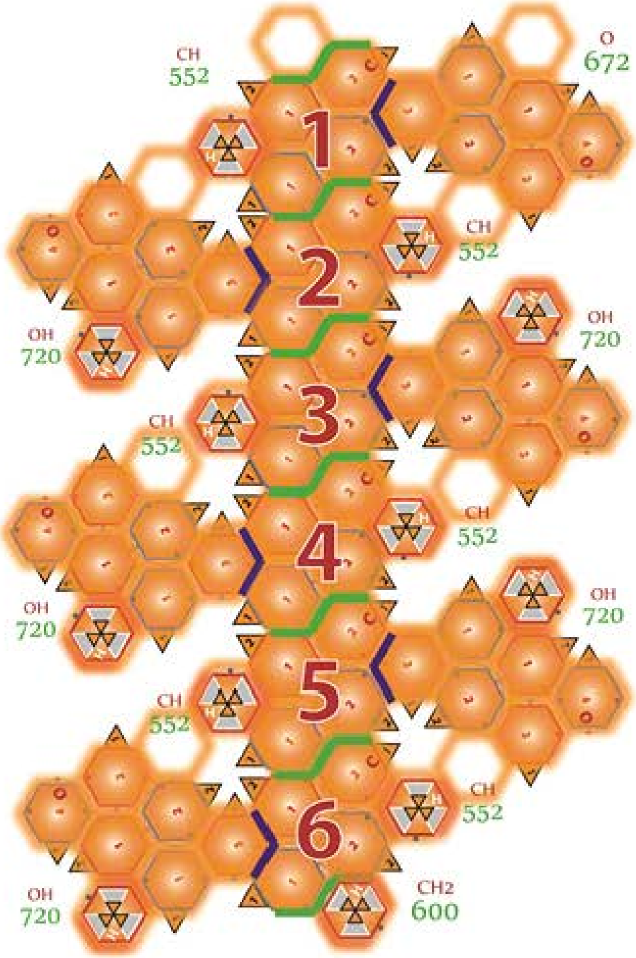
The Carbon nuclei in Monosaccharides join together to form chains of biologically important carbohydrates

1,272

[636-636]



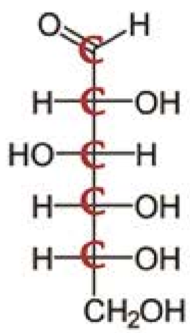


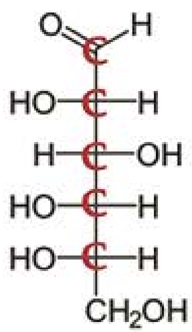


C(H2O)

The general chemical formula of an unmodified monosaccharide is (C•H2O) n, literally a "carbon hydrate."

CH 552 **CH-OH** OH 720



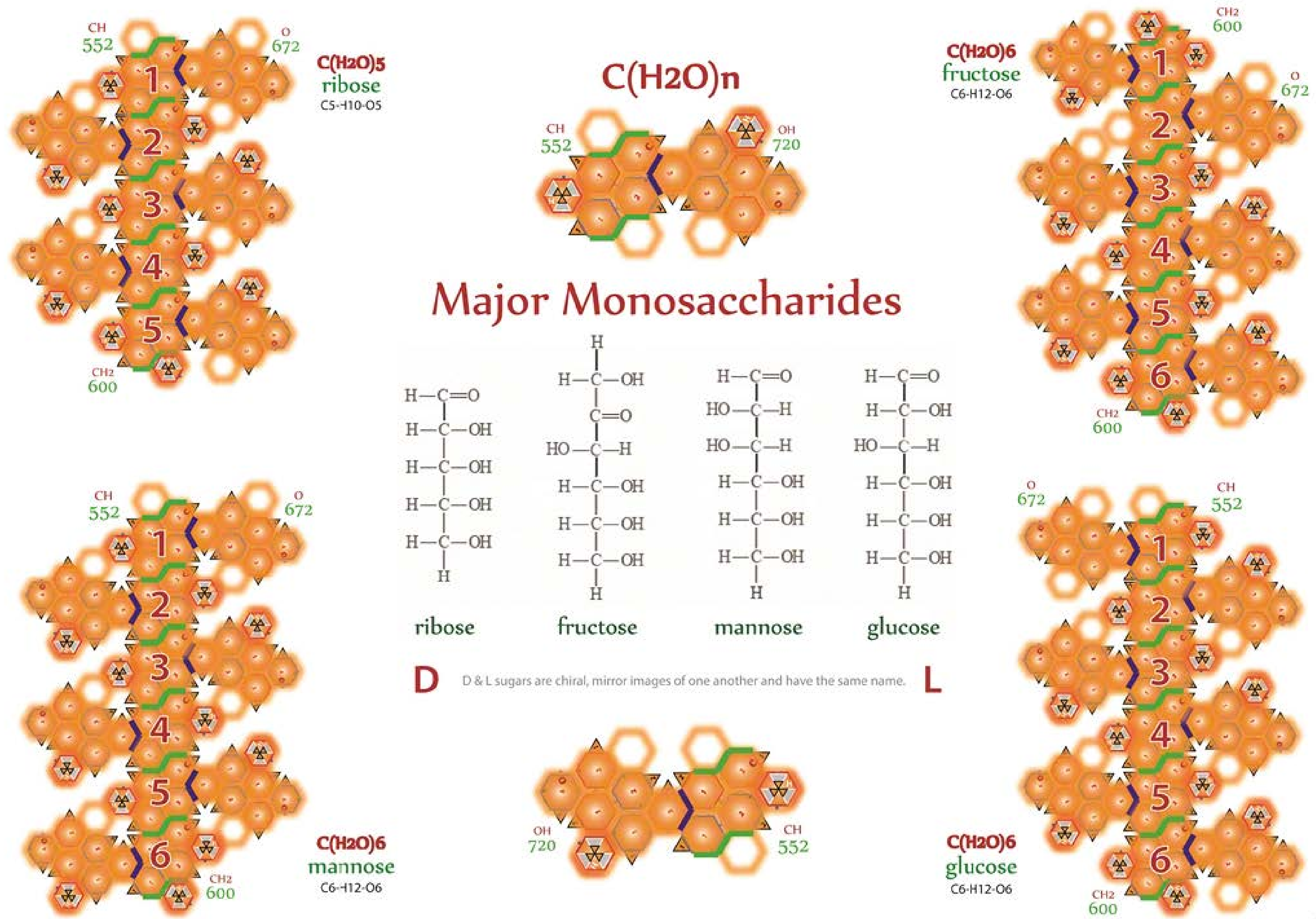


C(H2O)6
D-glucose
C6-H12-O6

D-Glucose

L-Glucose

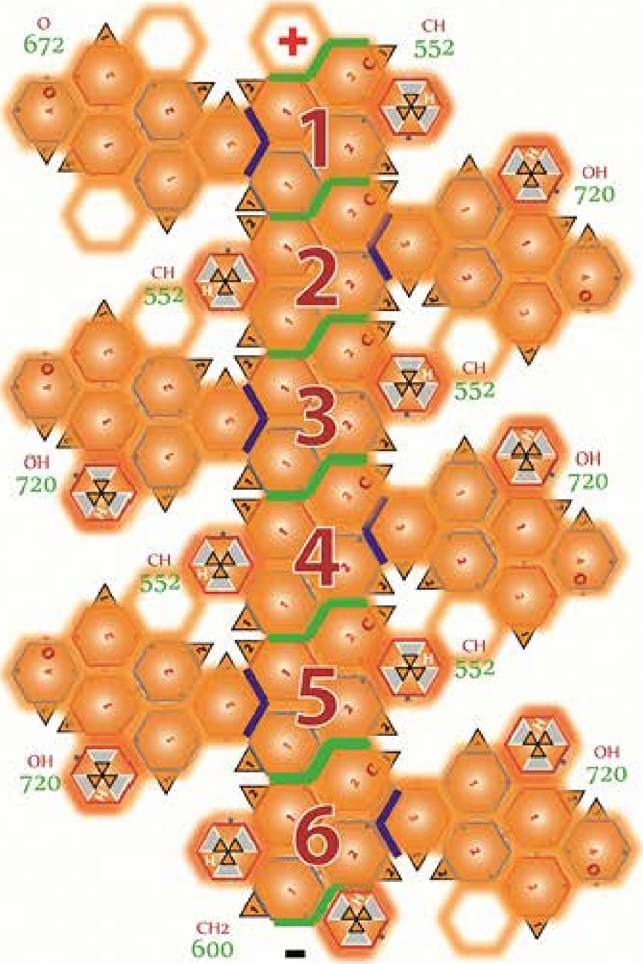
C(H2O)6
L-glucose
C6-H12-O6


C(H2O)n
Major Monosaccharides
CH
552
OH
720
C(H2O)5
ribose
C5-H10-O5
O
672
CH2
600
C(H2O)6
fructose
C6-H12-O6
C(H2O)6
mannose
C6-H12-O6
C(H2O)6
glucose
C6-H12-O6
1
2
3
4
5
6
ribose
fructose
mannose
glucose
D
D & L sugars are chiral, mirror images of one another and have the same name.
L

A monosaccharide often switches from the acyclic (open-chain) form to a cyclic form, through a nucleophilic addition reaction between the carbonyl group and one of the hydroxyls of the same molecule.

cyclic monosaccharides

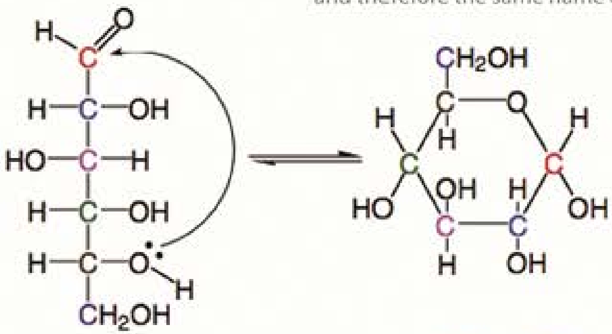
For many monosaccharides (including glucose), the cyclic forms predominate, and therefore the same name commonly is used for forms of isomers.



linear saccharide chain

The Carbon nuclei in Monosaccharides chains can join together to form cyclic [Carbon-Oxygen] rings or polycarbohydrates through condensation

C(H2O)6
glucose
C6-H12-O6



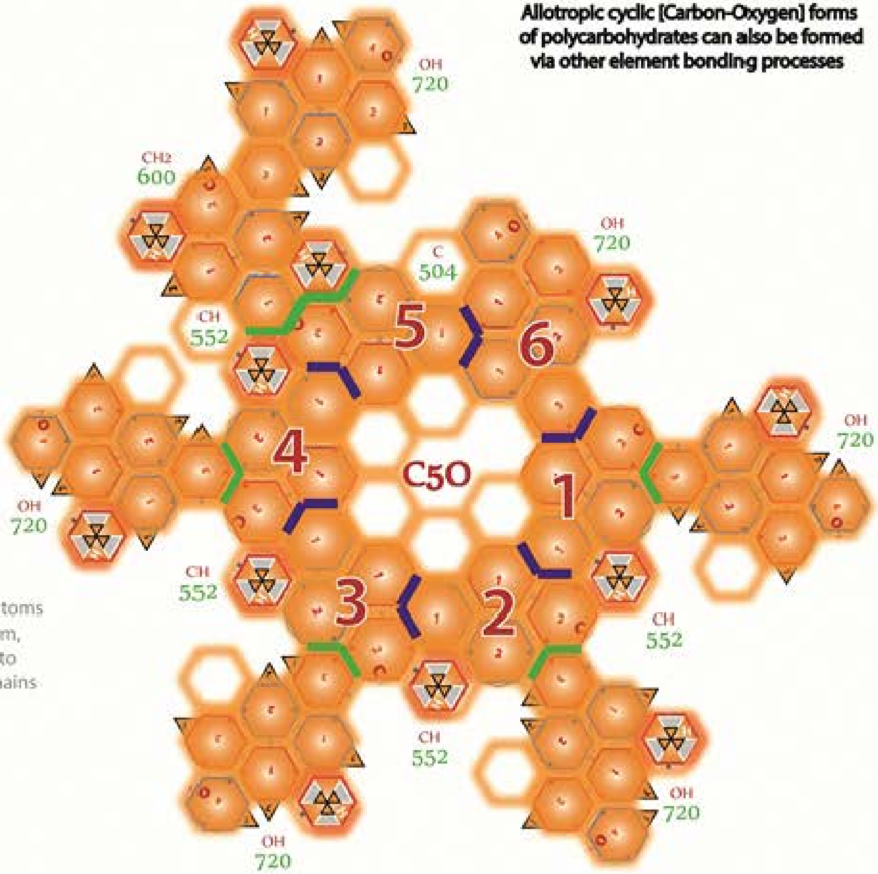
C(H2O)6
glucopyranose
C6-H12-O6

C6-H12-O6
7,632
[3,816-3,816]

The reaction creates a ring of carbon atoms closed by one bridging oxygen atom, which in turn can be easily broken to restore the linear monosaccharide chains

cyclic Oxygen-Carbon ring

Allotropic cyclic [Carbon-Oxygen] forms of polycarbohydrates can also be formed via other element bonding processes

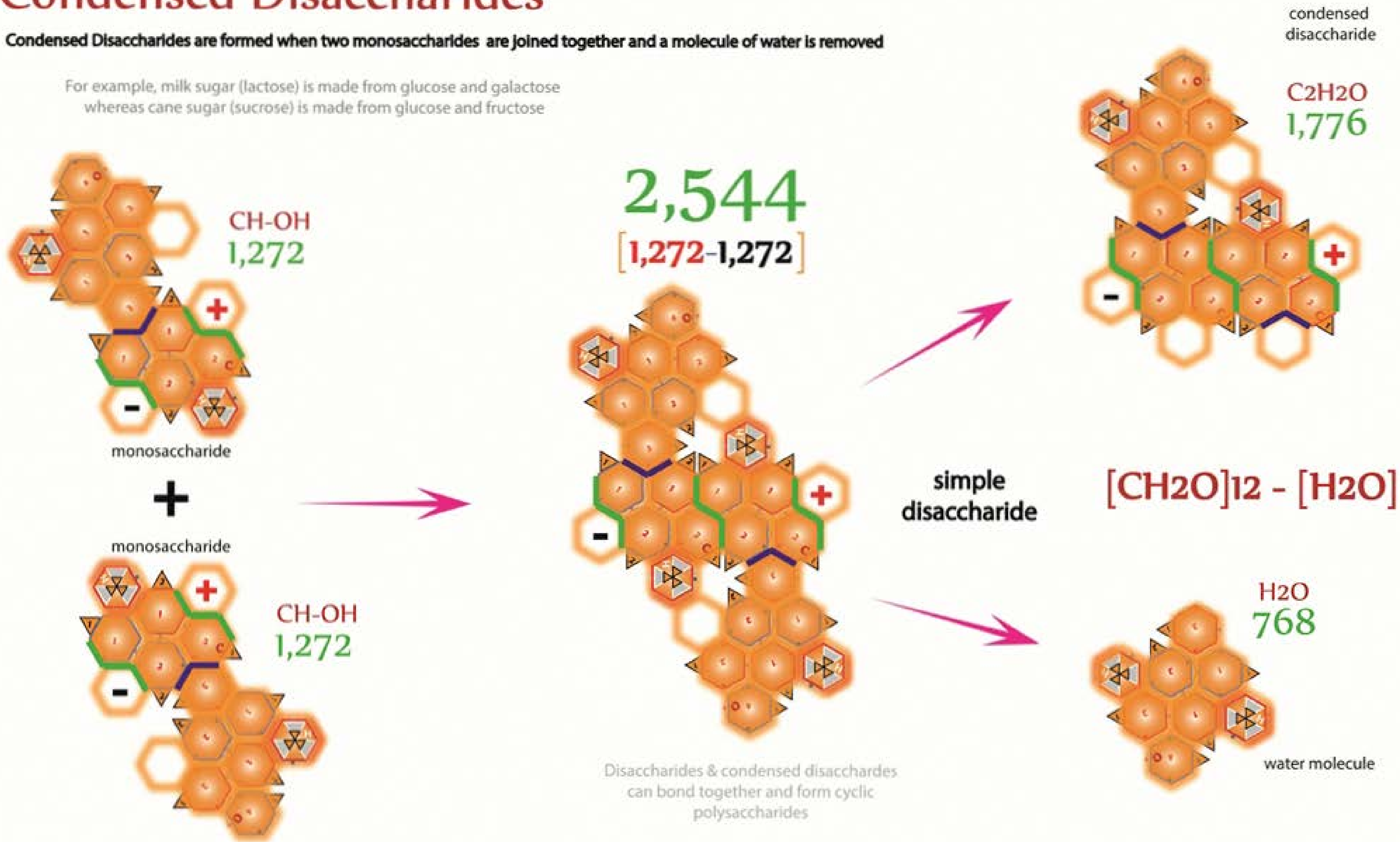


acyclic monosaccharides

Condensed Disaccharides

Condensed Disaccharides are formed when two monosaccharides are joined together and a molecule of water is removed

For example, milk sugar (lactose) is made from glucose and galactose
whereas cane sugar (sucrose) is made from glucose and fructose



Disaccharides & condensed disaccharides
can bond together and form cyclic
polysaccharides

The reverse of this reaction, the formation of two monosaccharides from one disaccharide, is called a hydrolysis reaction and requires one water molecule to supply the H and OH to the sugars formed.

Sucrose is used in many plants for transporting food reserves, often from the leaves to other parts of the plant.
Lactose is the sugar found in the milk of mammals and maltose is the first product of starch digestion
and is further broken down to glucose before absorption in the human gut.

14,496

[7,248-7,248]

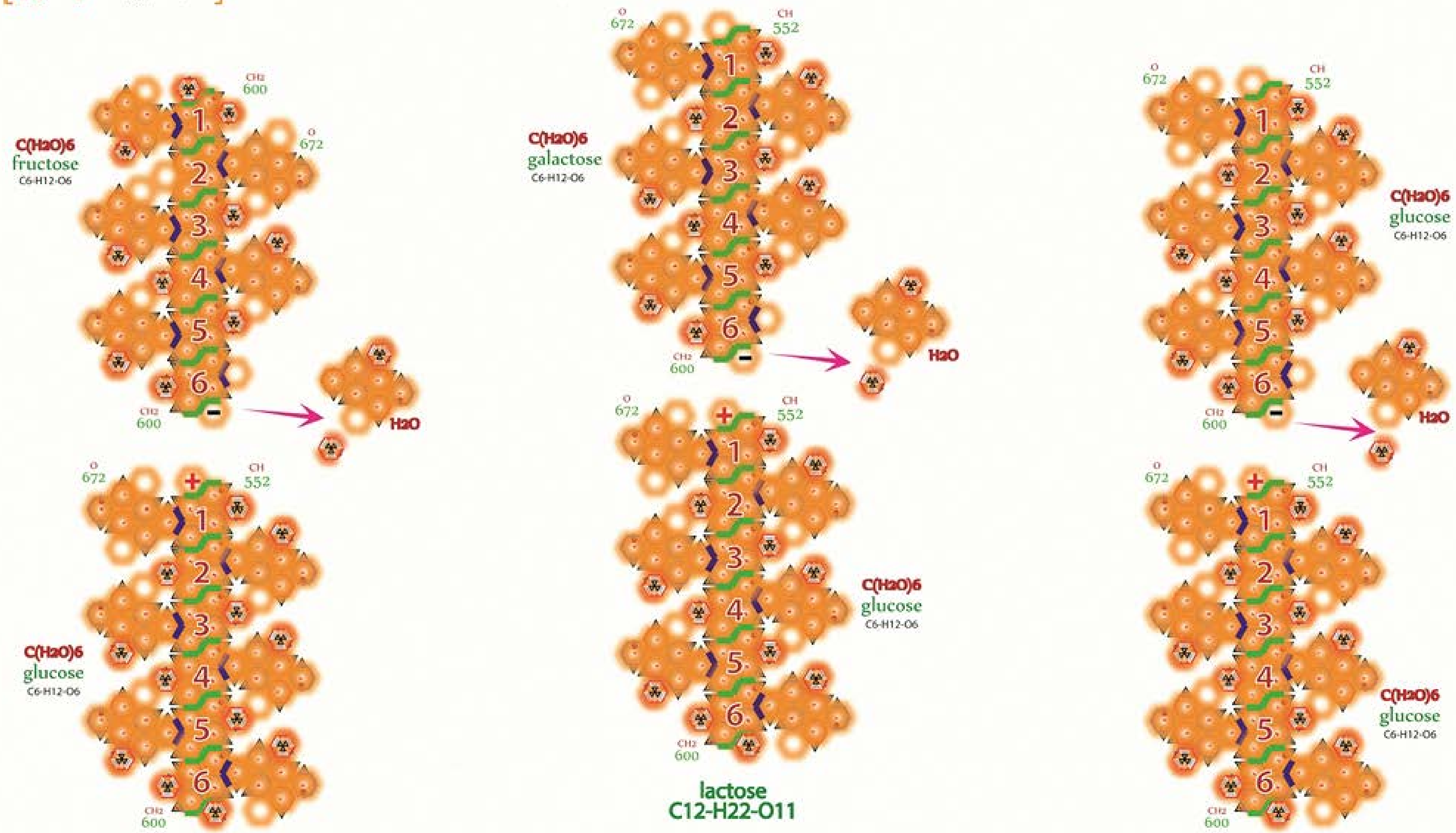
Disaccharides

Disaccharides are one of the four basic categories of carbohydrates,
(the others are monosaccharides, oligosaccharides, and polysaccharides)

Monosaccharides, such as glucose, are the monomers out of which disaccharides are constructed.

C12-(H2O)11

Disaccharides & condensed disaccharides can bond together and form cyclic polysaccharides



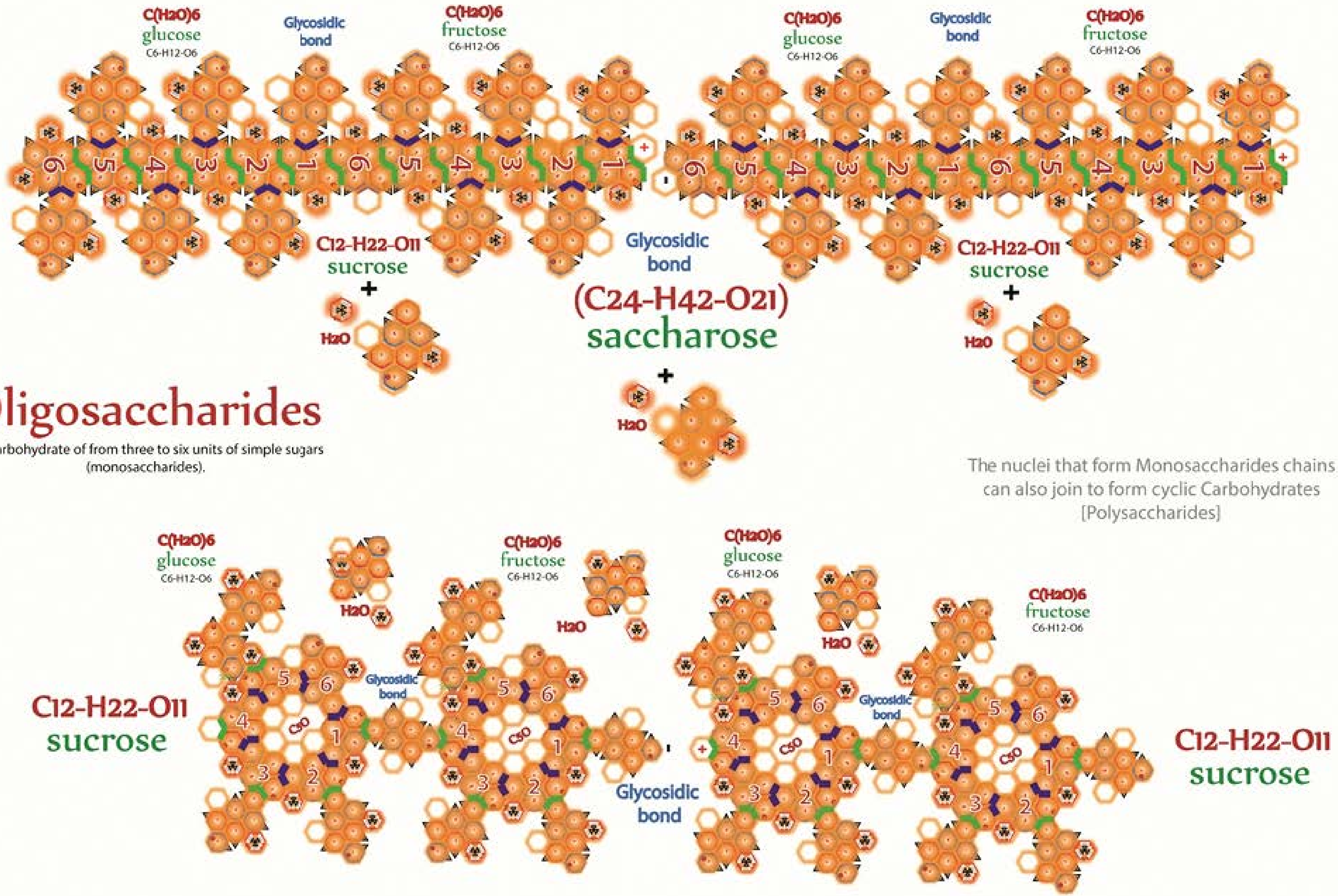
sucrose
C12-H22-O11

The general chemical formula for carbohydrates, C(H2O),
gives the relative proportions of carbon, hydrogen, and oxygen in a monosaccharide
(the proportion of these atoms are 1:2:1)-(H2O)

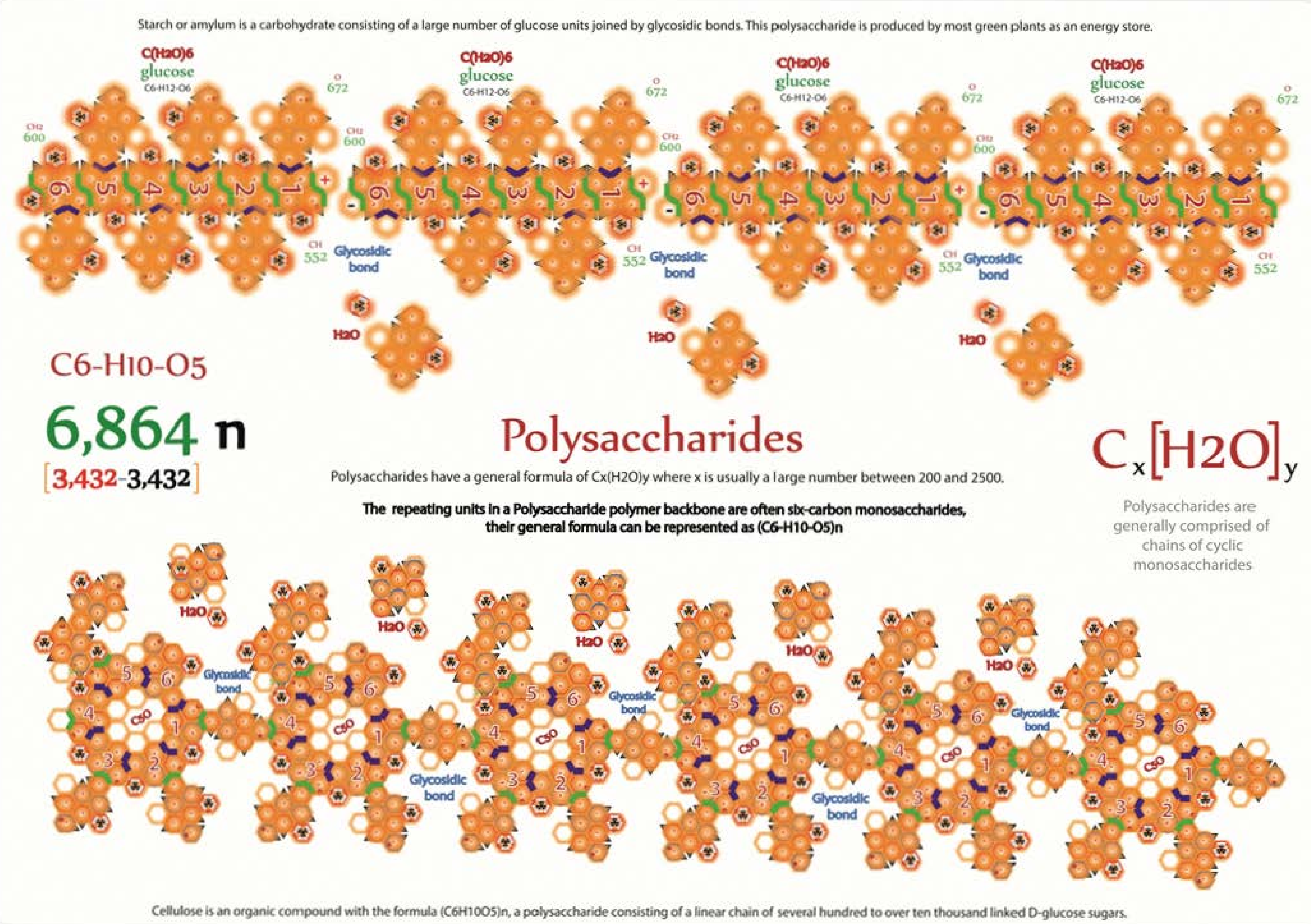
maltose
C12-H22-O11

Oligosaccharides

any carbohydrate of from three to six units of simple sugars (monosaccharides).



An oligosaccharide is a saccharide polymer containing a small number (typically two to ten) component sugars (monosaccharides). Oligosaccharides can have many functions; for example, they are commonly found on the plasma membrane of animal cells where they can play a role in cell–cell recognition.



Starch or amylum is a carbohydrate consisting of a large number of glucose units joined by glycosidic bonds. This polysaccharide is produced by most green plants as an energy store.
C(H2O)6
glucose
C6-H12-O6
O 672
CH2 600
CH 552
Glycosidic bond
H2O
C6-H10-O5
6,864 n
[3,432-3,432]
Polysaccharides
Polysaccharides have a general formula of Cx(H2O)y where x is usually a large number between 200 and 2500.
Cx[H2O]y
The repeating units in a Polysaccharide polymer backbone are often six-carbon monosaccharides, their general formula can be represented as (C6-H10-O5)n
Polysaccharides are generally comprised of chains of cyclic monosaccharides
Cellulose is an organic compound with the formula (C6H10O5)n, a polysaccharide consisting of a linear chain of several hundred to over ten thousand linked D-glucose sugars.

Amines

Amines are organic compounds that contain Nitrogen

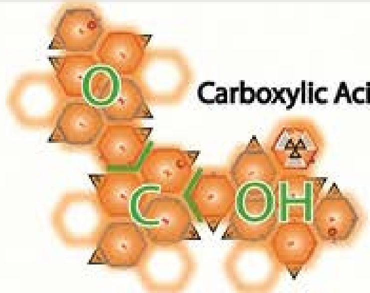
NH2-[HC-R]-COOH + NH2-[HC-R]-COOH

As both the amine and carboxylic acid groups of amino acids can react to form amide bonds, one amino acid molecule can react with another and become joined through an amide linkage. This polymerization of amino acids is what creates proteins.

OH + NH2 -----> NH + H2O

This yields a peptide bond and a molecule of water via a condensation reaction

Carboxylic Acids



The general formula of a carboxylic acid is R-COOH

Amino Acids

Amino acids are biologically important organic compounds made from amine and carboxylic acid functional groups, along with a side-chain specific to each amino acid

un-ionized amino acid

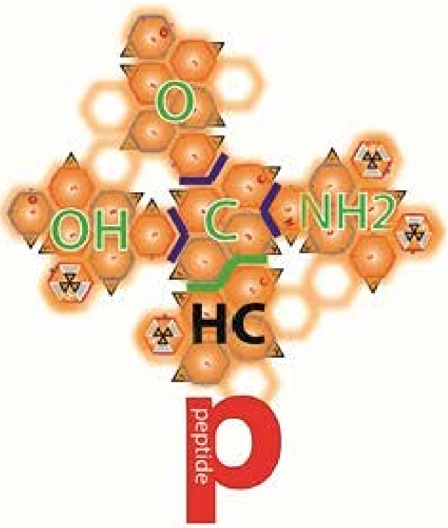
NH2-[HC-R]-COOH

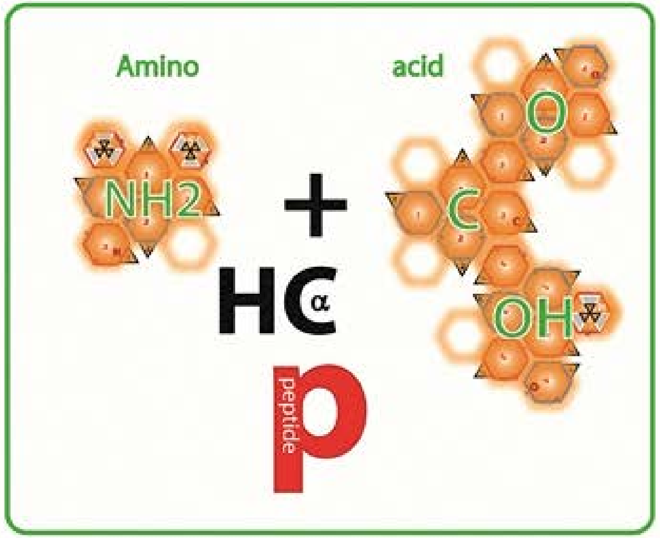
zwitterionic amino acid

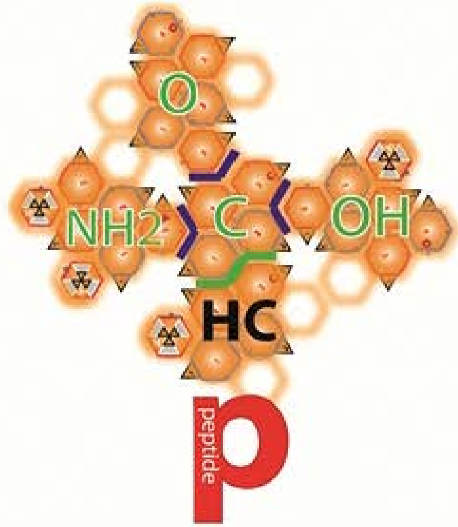
NH3-[HC-R]-COO

The α-carbon.

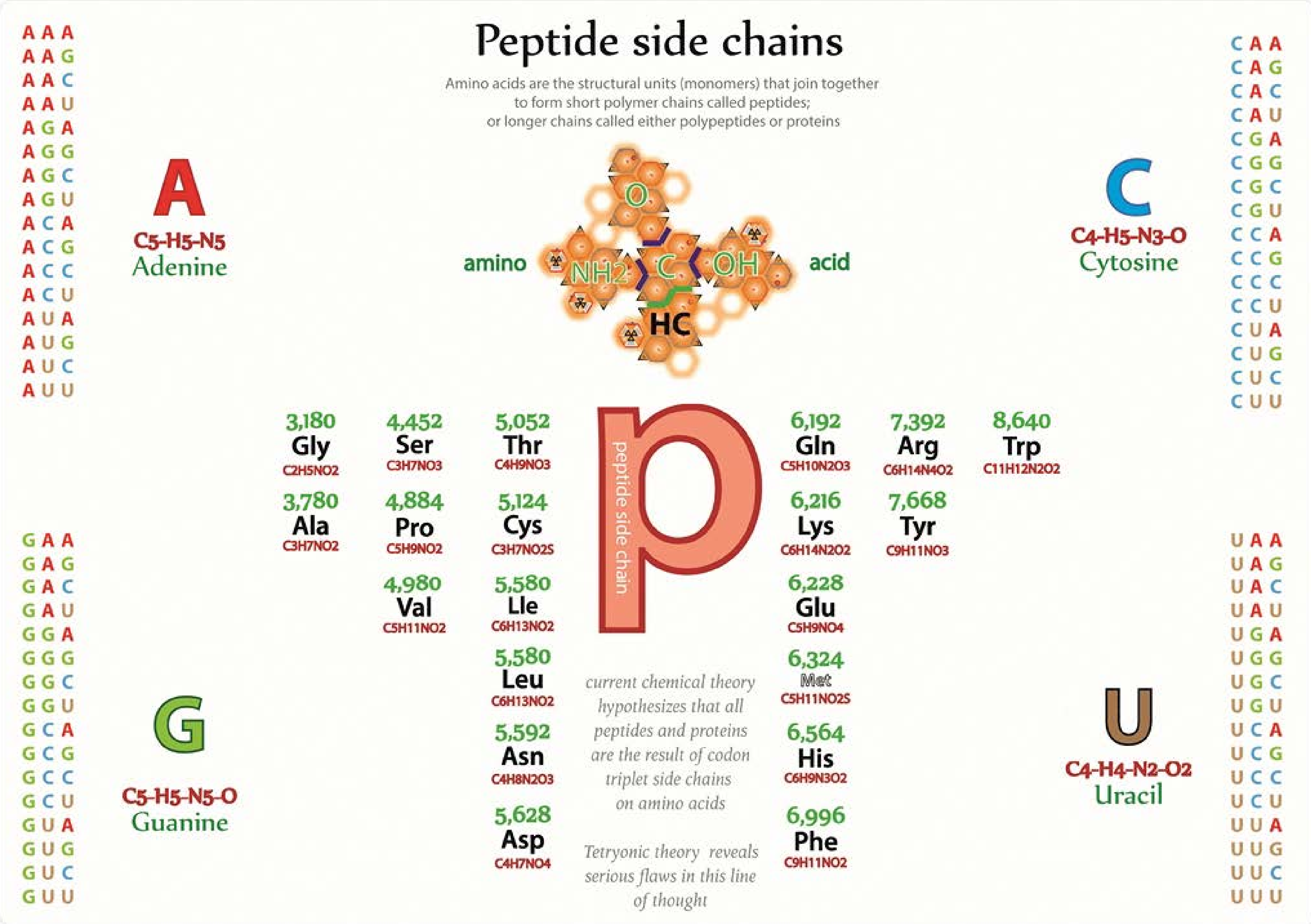
The α-amino acids in peptides and proteins consist of a carboxylic acid (-COOH) and an amino (-NH2) functional group attached to the same tetrahedral carbon atom



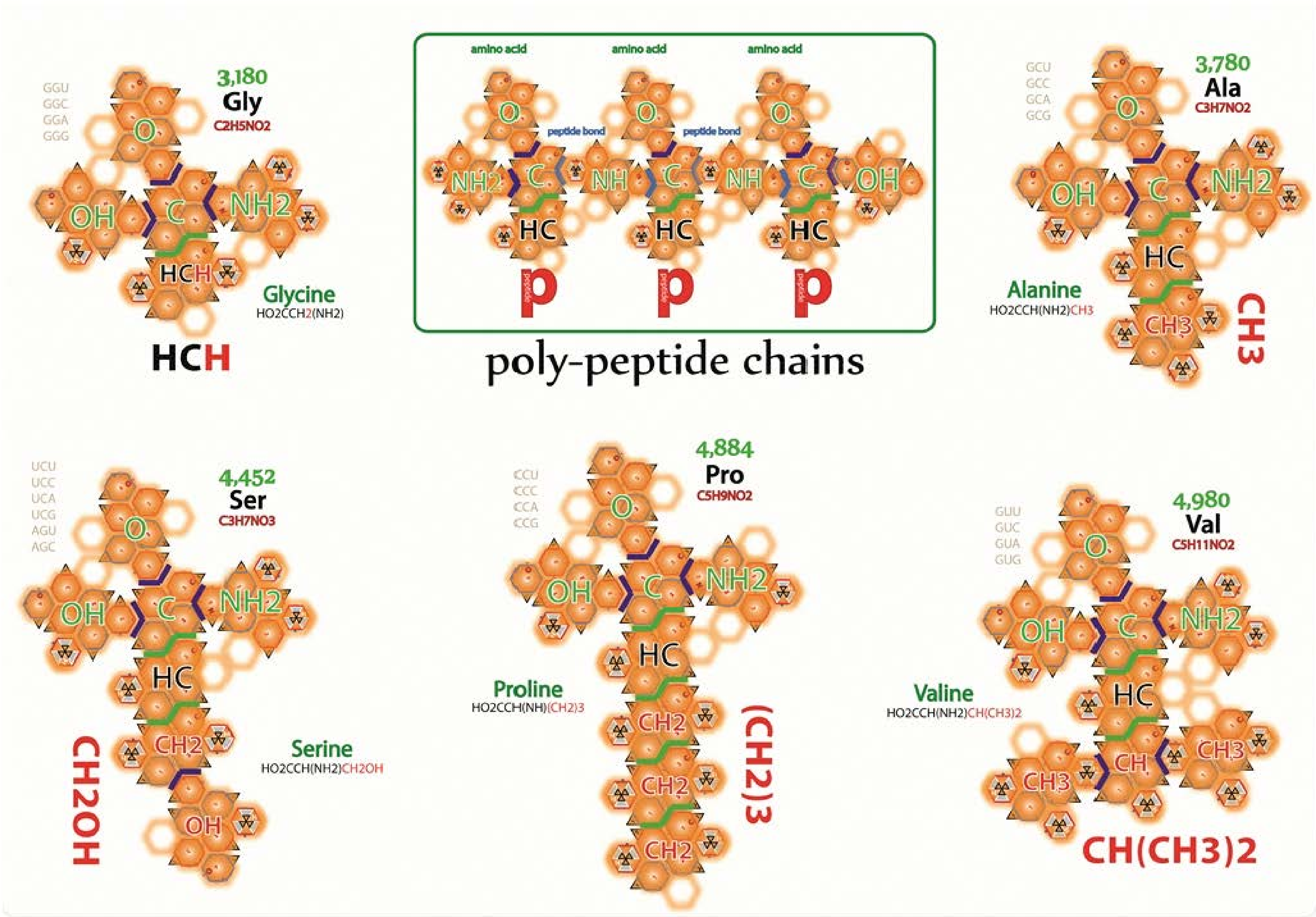


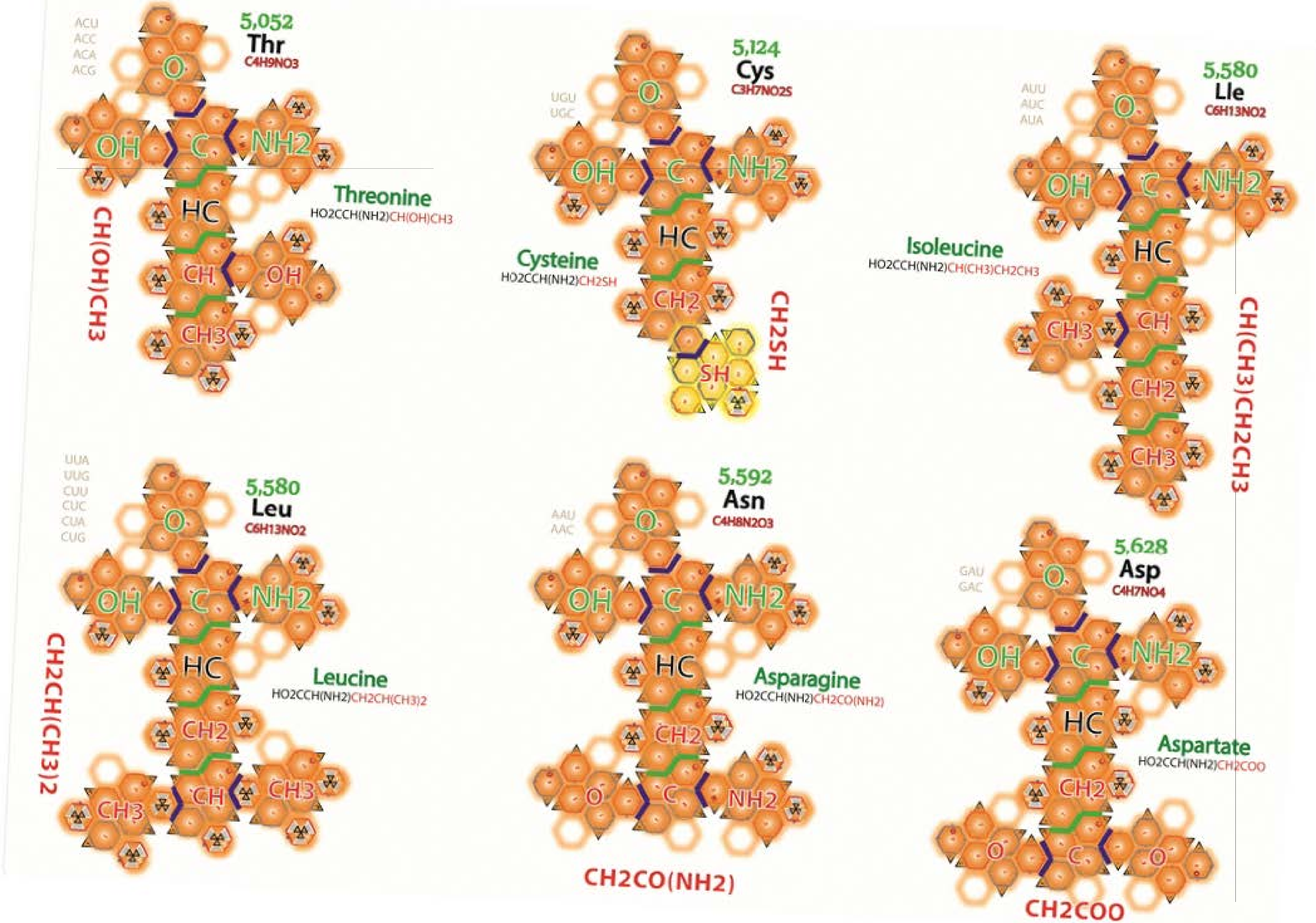


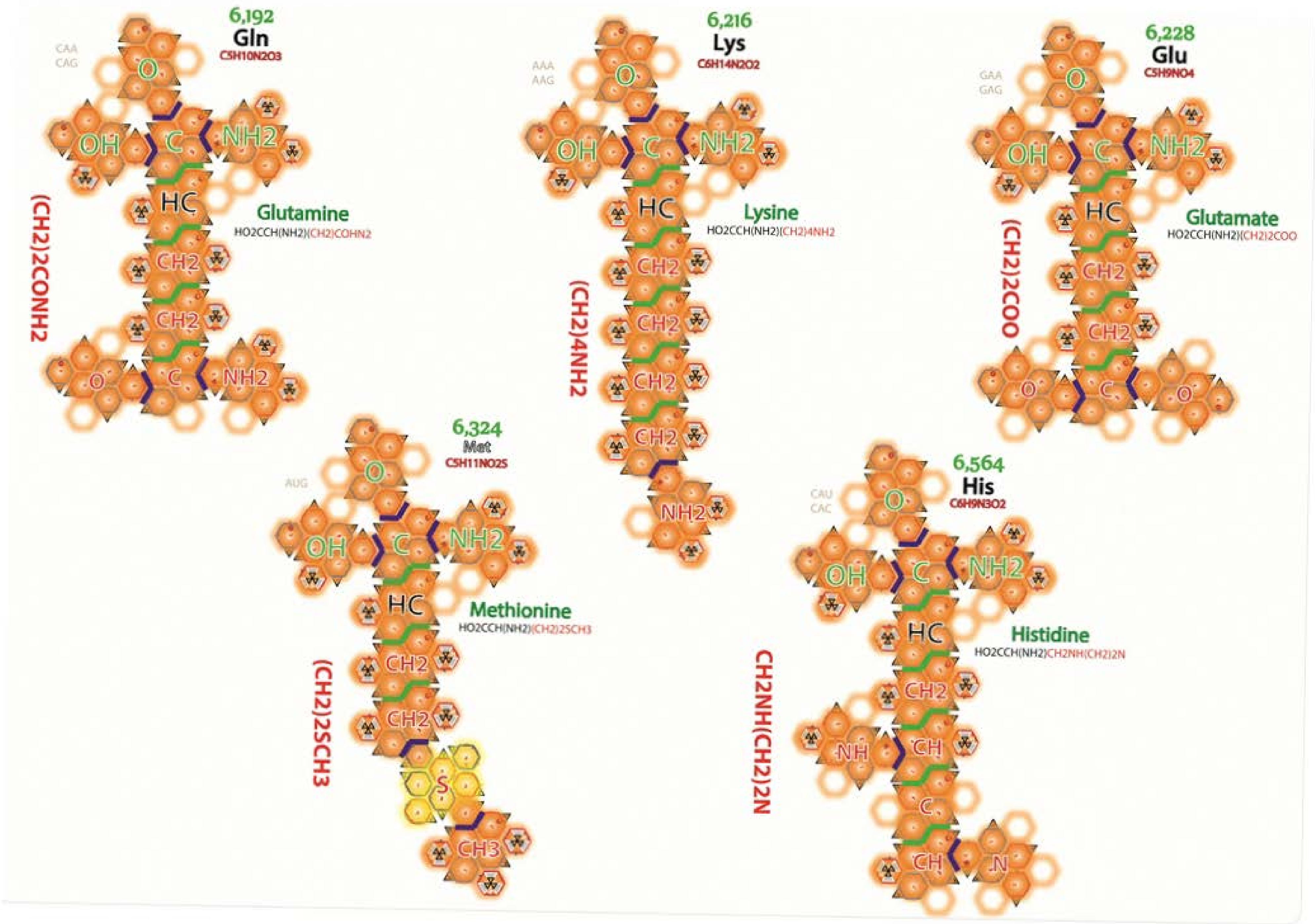
The peptide group attached to the alpha carbon distinguishes one amino acid from another (Tetryonic theory defines these compound side-chains of atoms as peptides [p])

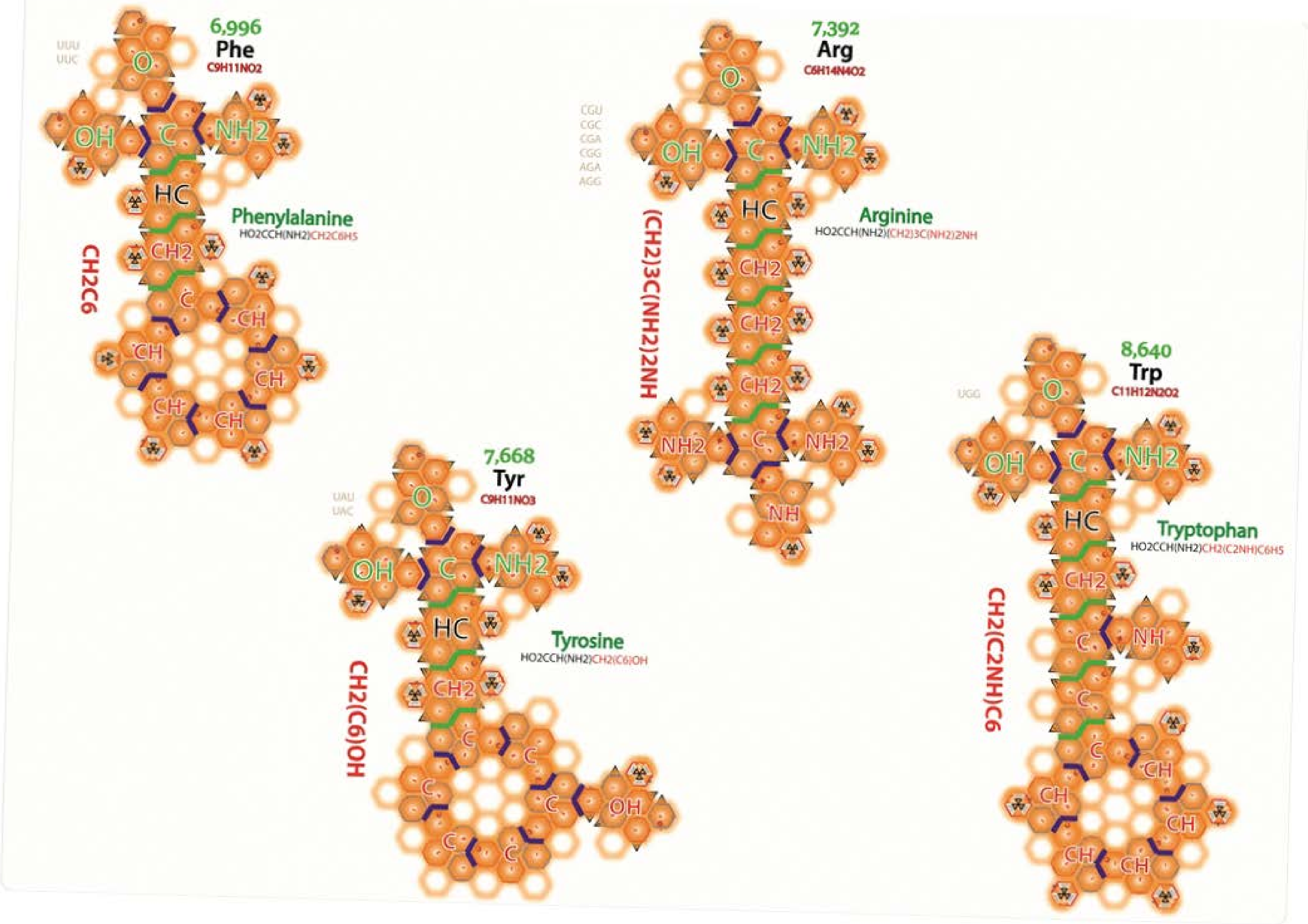


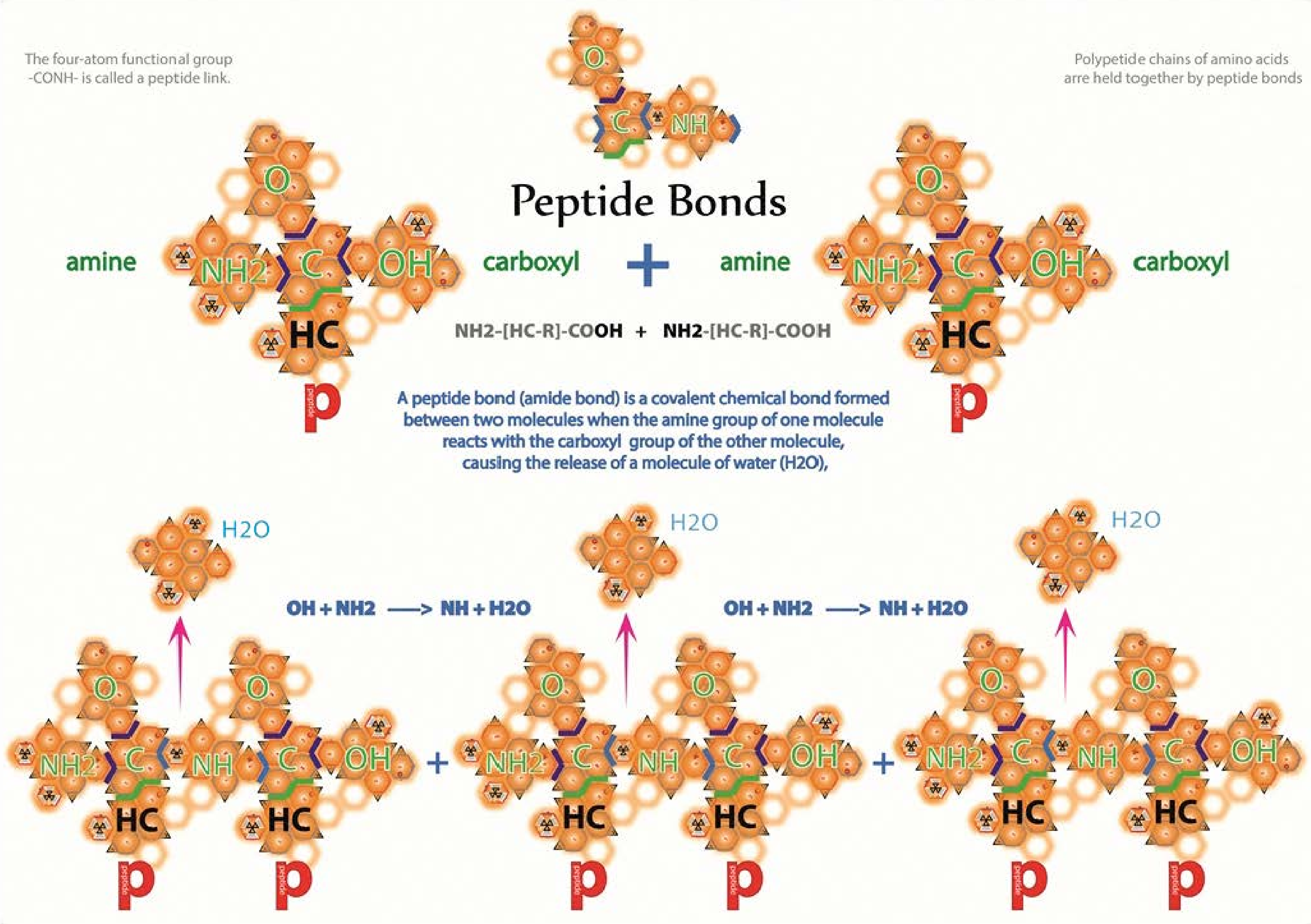
Tetryonics 59.10 - Peptide side chains.jpg


GGU
GGC
GGA
GGG
3,180
Gly
C2H5NO2
O
OH
C
NH2
HCH
Glycine
HO2CCH2(NH2)
HCH
amino acid
amino acid
amino acid
peptide bond
peptide bond
NH2
C
NH
C
NH
C
OH
HC
HC
HC
p
p
p
poly-peptide chains
GCU
GCC
GCA
GCG
3,780
Ala
C3H7NO2
OH
C
NH2
HC
CH3
Alanine
HO2CCH(NH2)CH3
CH3
UCU
UCC
UCA
UCG
AGU
AGC
4,452
Ser
C3H7NO3
OH
C
NH2
HC
CH2
OH
Serine
HO2CCH(NH2)CH2OH
CH2OH
CCU
CCC
CCA
CCG
4,884
Pro
C5H9NO2
OH
C
NH2
HC
CH2
CH2
CH2
Proline
HO2CCH(NH)(CH2)3
(CH2)3
GUU
GUC
GUA
GUG
4,980
Val
C5H11NO2
OH
C
NH2
HC
CH
CH3
CH3
Valine
HO2CCH(NH2)CH(CH3)2
CH(CH3)2

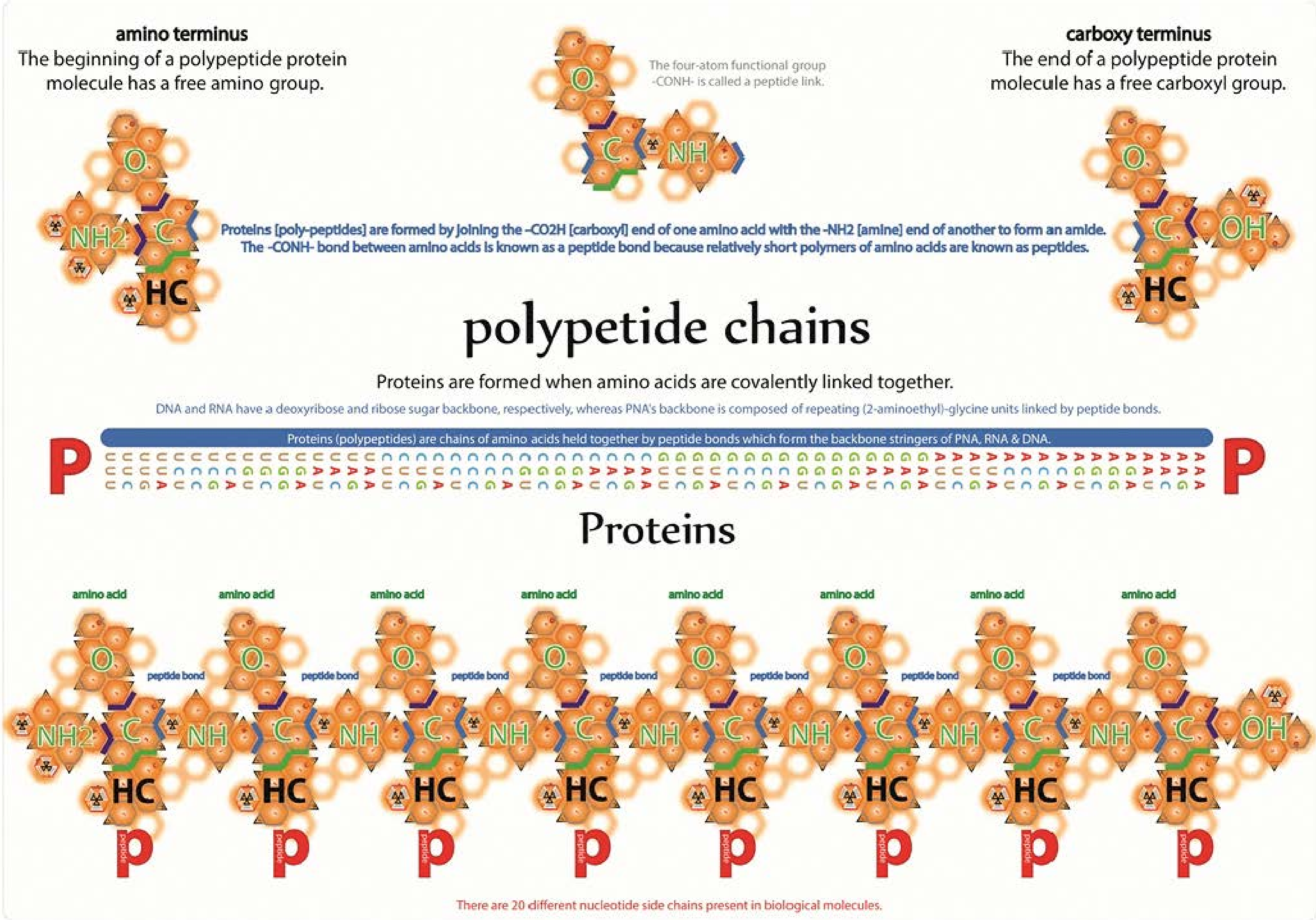

ACU
ACC
ACA
ACG
5,052
Thr
C4H9NO3
Threonine
HO2CCH(NH2)CH(OH)CH3
CH(OH)CH3
UGU
UGC
5,124
Cys
C3H7NO2S
Cysteine
HO2CCH(NH2)CH2SH
CH2SH
AUU
AUC
AUA
5,580
Lle
C6H13NO2
Isoleucine
HO2CCH(NH2)CH(CH3)CH2CH3
CH(CH3)CH2CH3
UUA
UUG
CUU
CUC
CUA
CUG
5,580
Leu
C6H13NO2
Leucine
HO2CCH(NH2)CH2CH(CH3)2
CH2CH(CH3)2
AAU
AAC
5,592
Asn
C4H8N2O3
Asparagine
HO2CCH(NH2)CH2CO(NH2)
CH2CO(NH2)
GAU
GAC
5,628
Asp
C4H7NO4
Aspartate
HO2CCH(NH2)CH2COO
CH2COO

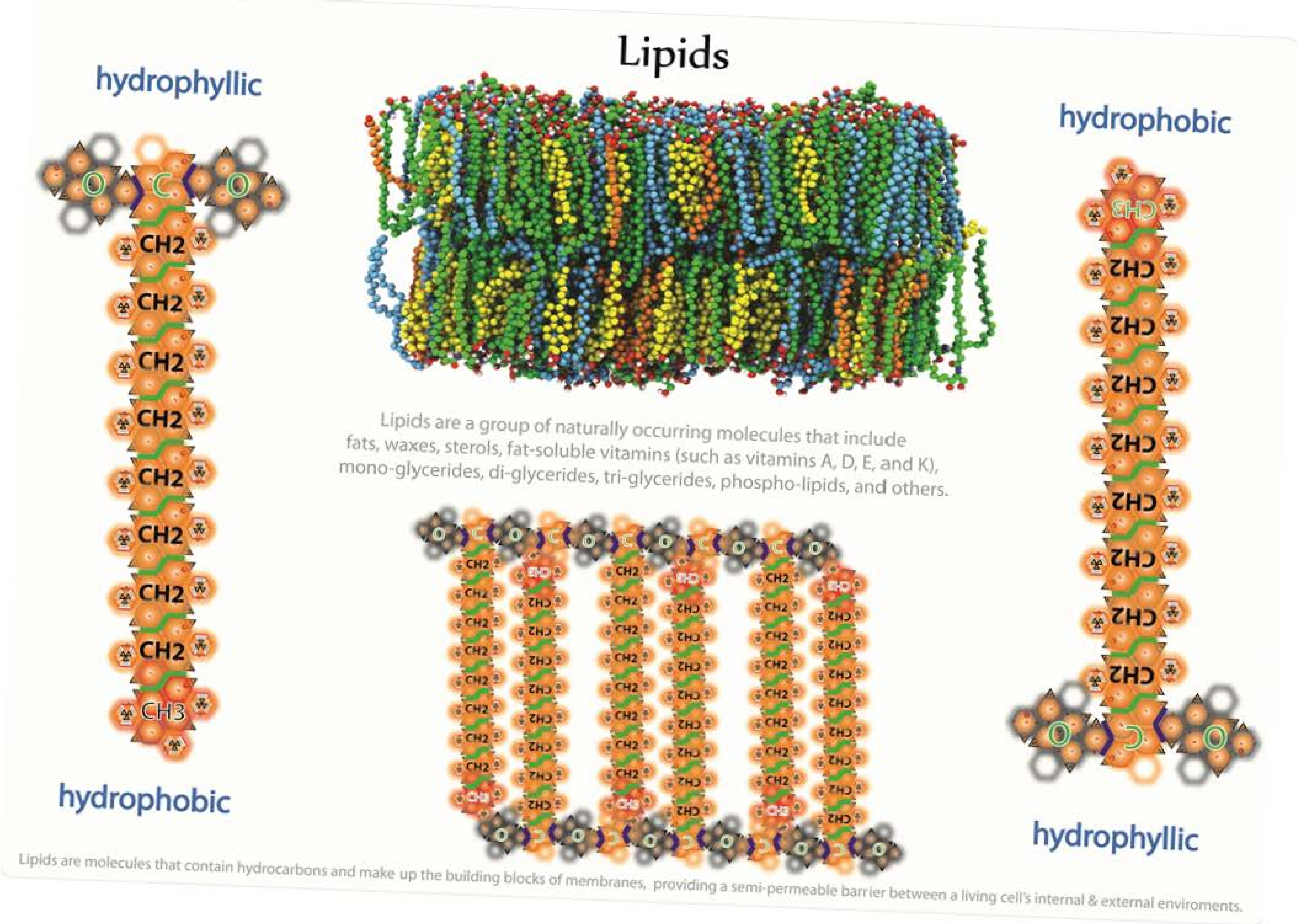

6,192
Gln
C5H10N2O3
CAA
CAG
Glutamine
HO2CCH(NH2)(CH2)COHN2
(CH2)2CONH2
6,216
Lys
C6H14N2O2
AAA
AAG
Lysine
HO2CCH(NH2)(CH2)4NH2
(CH2)4NH2
6,228
Glu
C5H9NO4
GAA
GAG
Glutamate
HO2CCH(NH2)(CH2)2COO
(CH2)2COO
6,324
Met
C5H11NO2S
AUG
Methionine
HO2CCH(NH2)(CH2)2SCH3
(CH2)2SCH3
6,564
His
C6H9N3O2
CAU
CAC
Histidine
HO2CCH(NH2)CH2NH(CH2)2N
CH2NH(CH2)2N

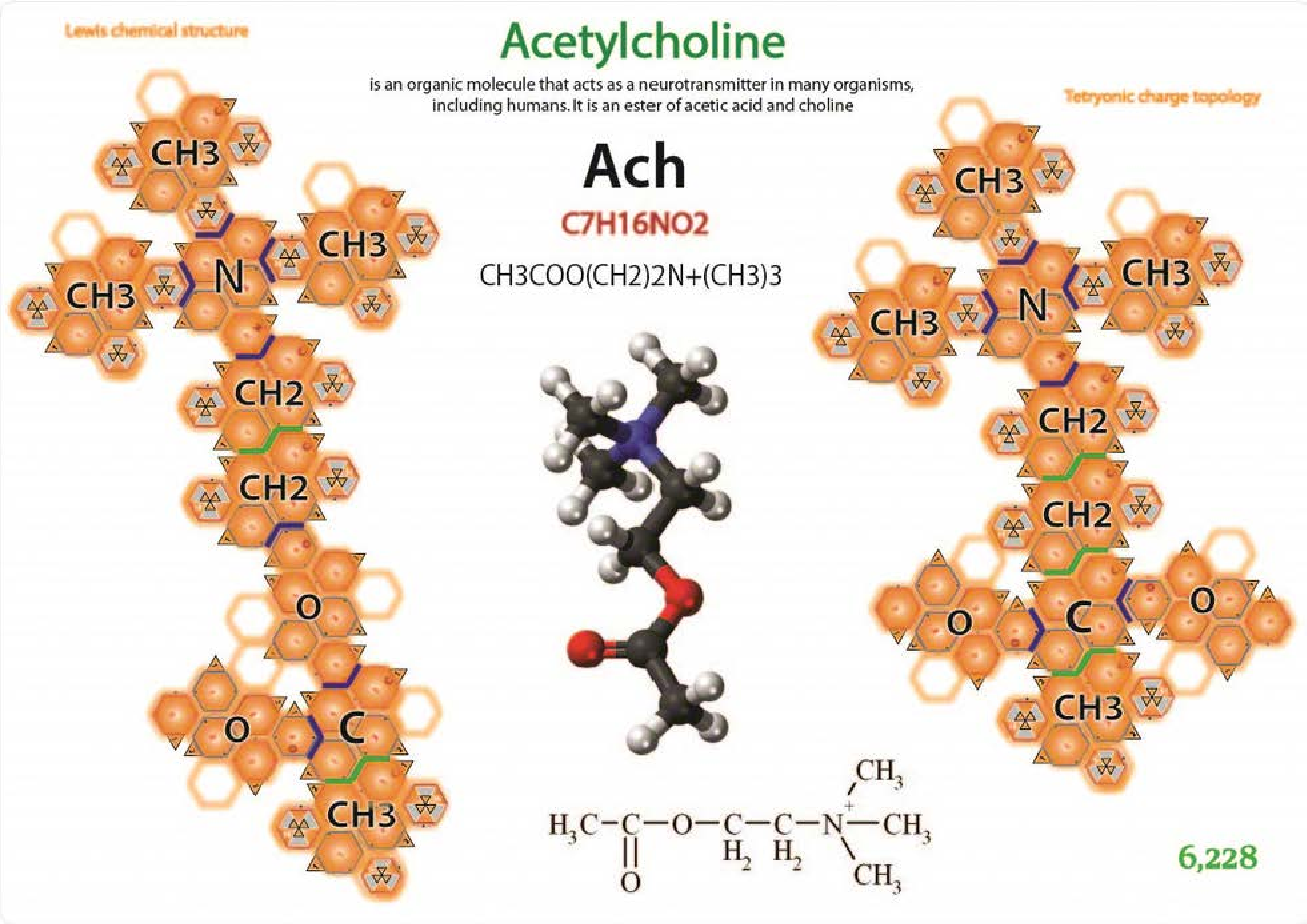

6,996
Phe
C9H11NO2
UUU
UUC
Phenylalanine
HO2CCH(NH2)CH2C6H5
CH2C6
7,392
Arg
C6H14N4O2
CGU
CGC
CGA
CGG
AGA
AGG
Arginine
HO2CCH(NH2)(CH2)3C(NH2)2NH
(CH2)3C(NH2)2NH
7,668
Tyr
C9H11NO3
UAU
UAC
Tyrosine
HO2CCH(NH2)CH2(C6)OH
CH2(C6)OH
8,640
Trp
C11H12N2O2
UGG
Tryptophan
HO2CCH(NH2)CH2(C2NH)C6H5
CH2(C2NH)C6



Tetryonics 59.15 - Peptide bonds


amino terminus
The beginning of a polypeptide protein molecule has a free amino group.
The four-atom functional group -CONH- is called a peptide link.
carboxy terminus
The end of a polypeptide protein molecule has a free carboxyl group.
Proteins [poly-peptides] are formed by joining the -CO2H [carboxyl] end of one amino acid with the -NH2 [amine] end of another to form an amide.
The -CONH- bond between amino acids is known as a peptide bond because relatively short polymers of amino acids are known as peptides.
polypetide chains
Proteins are formed when amino acids are covalently linked together.
DNA and RNA have a deoxyribose and ribose sugar backbone, respectively, whereas PNA's backbone is composed of repeating (2-aminoethyl)-glycine units linked by peptide bonds.
Proteins (polypeptides) are chains of amino acids held together by peptide bonds which form the backbone stringers of PNA, RNA & DNA.
P
P
Proteins
amino acid
peptide bond
NH2
NH
C
O
HC
OH
peptide
There are 20 different nucleotide side chains present in biological molecules.


Lipids
hydrophyllic
hydrophobic
O
C
CH2
CH3
Lipids are a group of naturally occurring molecules that include
fats, waxes, sterols, fat-soluble vitamins (such as vitamins A, D, E, and K),
mono-glycerides, di-glycerides, tri-glycerides, phospho-lipids, and others.
hydrophobic
hydrophyllic
Lipids are molecules that contain hydrocarbons and make up the building blocks of membranes, providing a semi-permeable barrier between a living cell's internal & external enviroments.


Lewis chemical structure
Acetylcholine
is an organic molecule that acts as a neurotransmitter in many organisms, including humans. It is an ester of acetic acid and choline
Ach
C7H16NO2
CH3COO(CH2)2N+(CH3)3
Tetryonic charge topology
CH3
N
CH2
O
C
6,228

Ribose

6,360

[3,180-3,180]

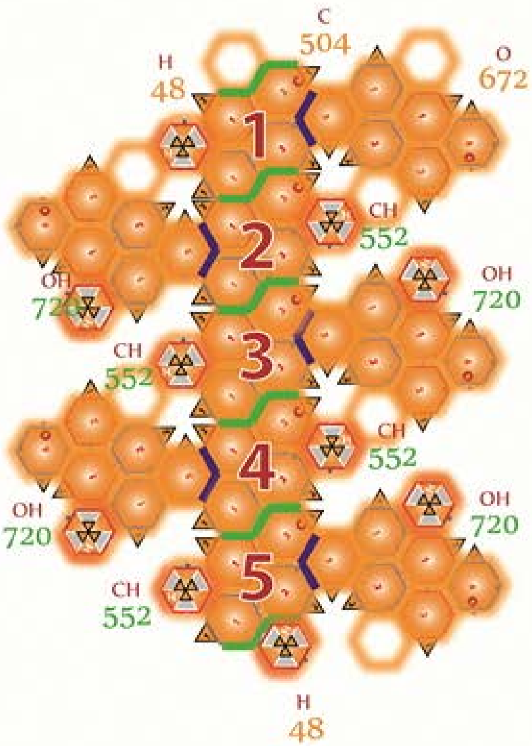
C5-H10-O5

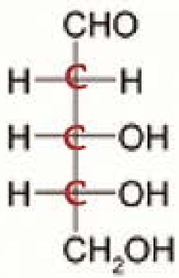
Carbohydrate compounds can form acyclic sugars

Carbohydrate compounds can also form cyclic sugars

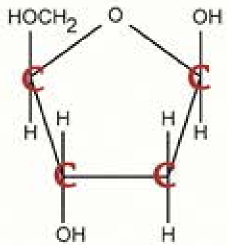
Ribose is an organic compound with the formula C5H10O5; specifically, a monosaccharide (simple sugar) with linear form H–(C=O)–(CHOH)4–H

C(H2O)5
ribose
C5-H10-O5

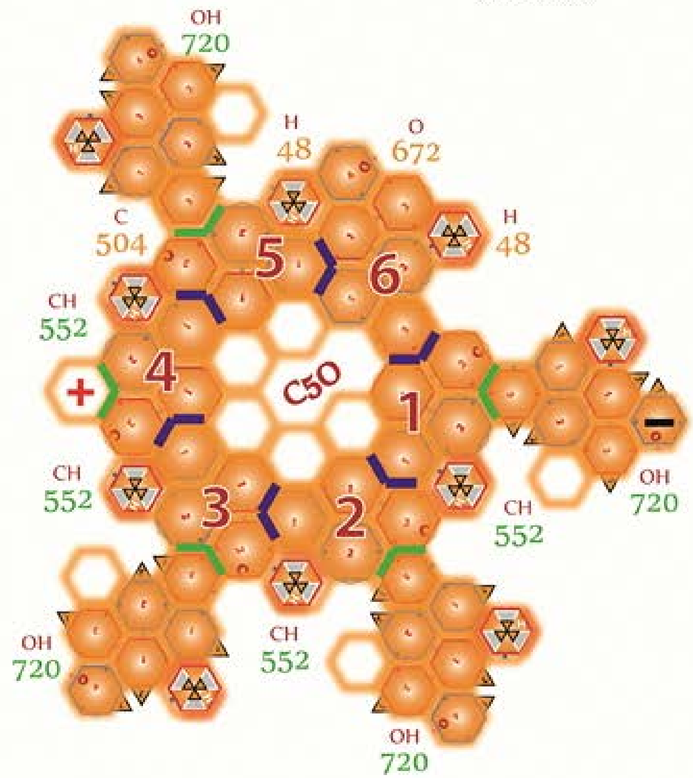




H-(CO)-(CHOH)4-H



C(H2O)5
ribose
C5-H10-O5



Ribose forms part of the backbone of RNA.
It is related to deoxyribose, which is found in DNA.

Ribose is present within every living cell of the body and is used to manufacture ATP (the energy currency of the cell) from scratch. Whilst the body can manufacture its own ribose from glucose, this requires energy and is a very slow process.

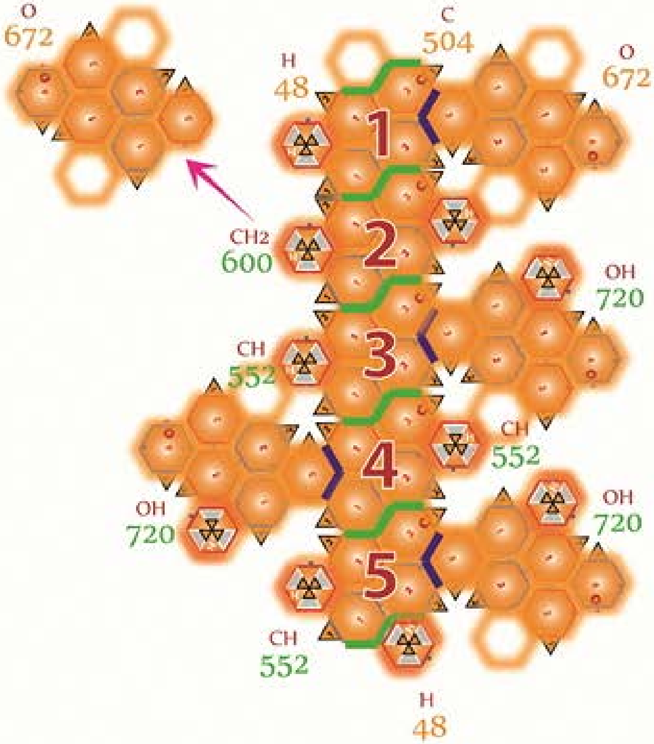
As its name indicates it is a deoxygenated sugar, meaning that it is derived from the sugar ribose by loss of an oxygen atom

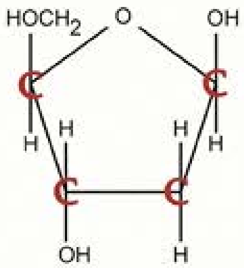
Deoxyribose

5,688
[2,844-2,844]

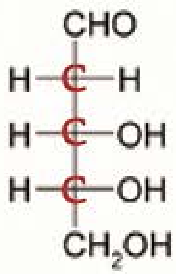
As a component of DNA, 2-deoxyribose derivatives have an important role in biology

The DNA (deoxyribonucleic acid) molecule, which is the main repository of genetic information in life, consists of a long chain of deoxyribose-containing units called nucleotides, linked via phosphate groups

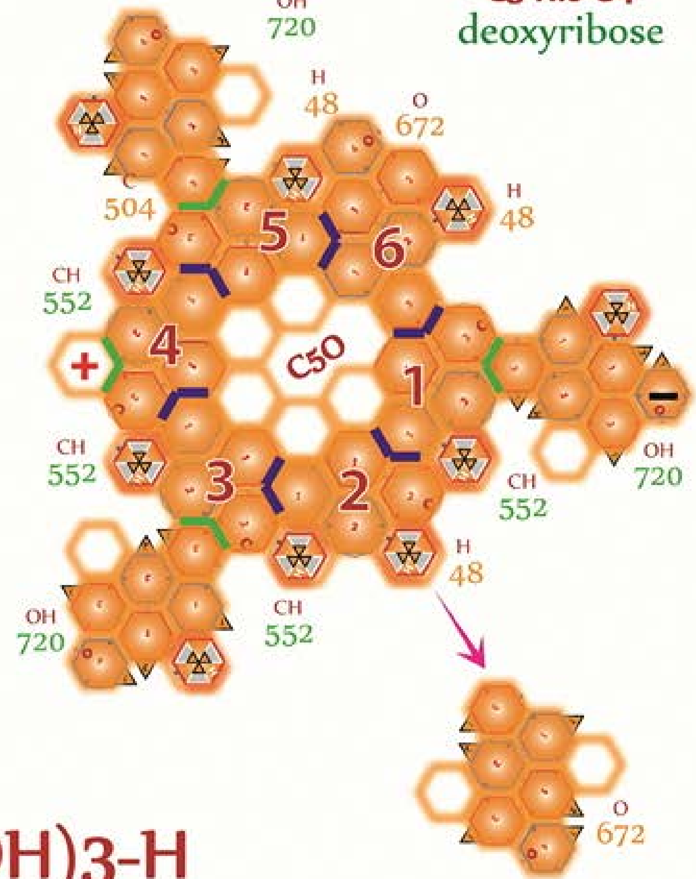




Deoxyribose, more, precisely 2-deoxyribose, is a monosaccharide



C5-H10-O4
deoxyribose

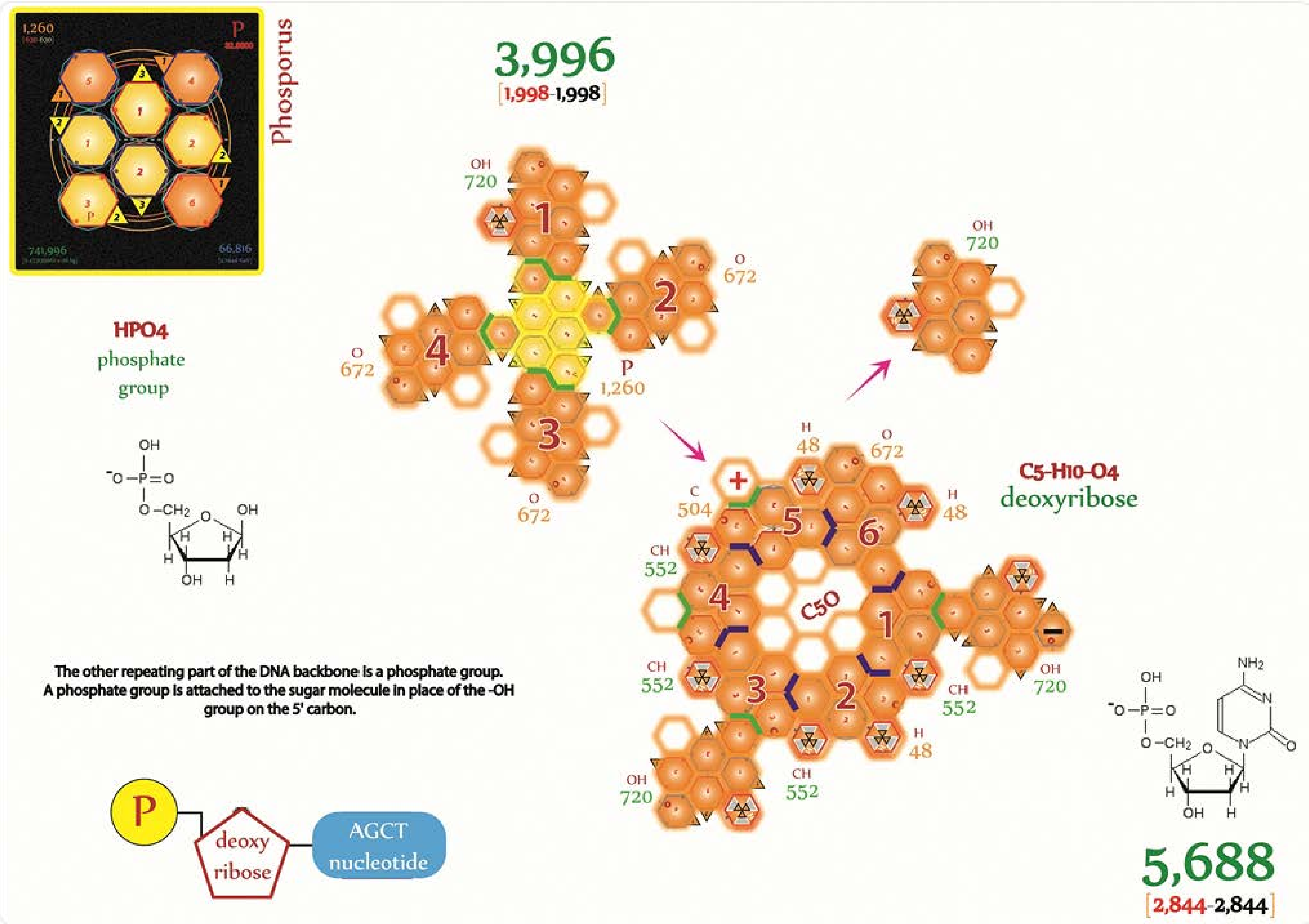


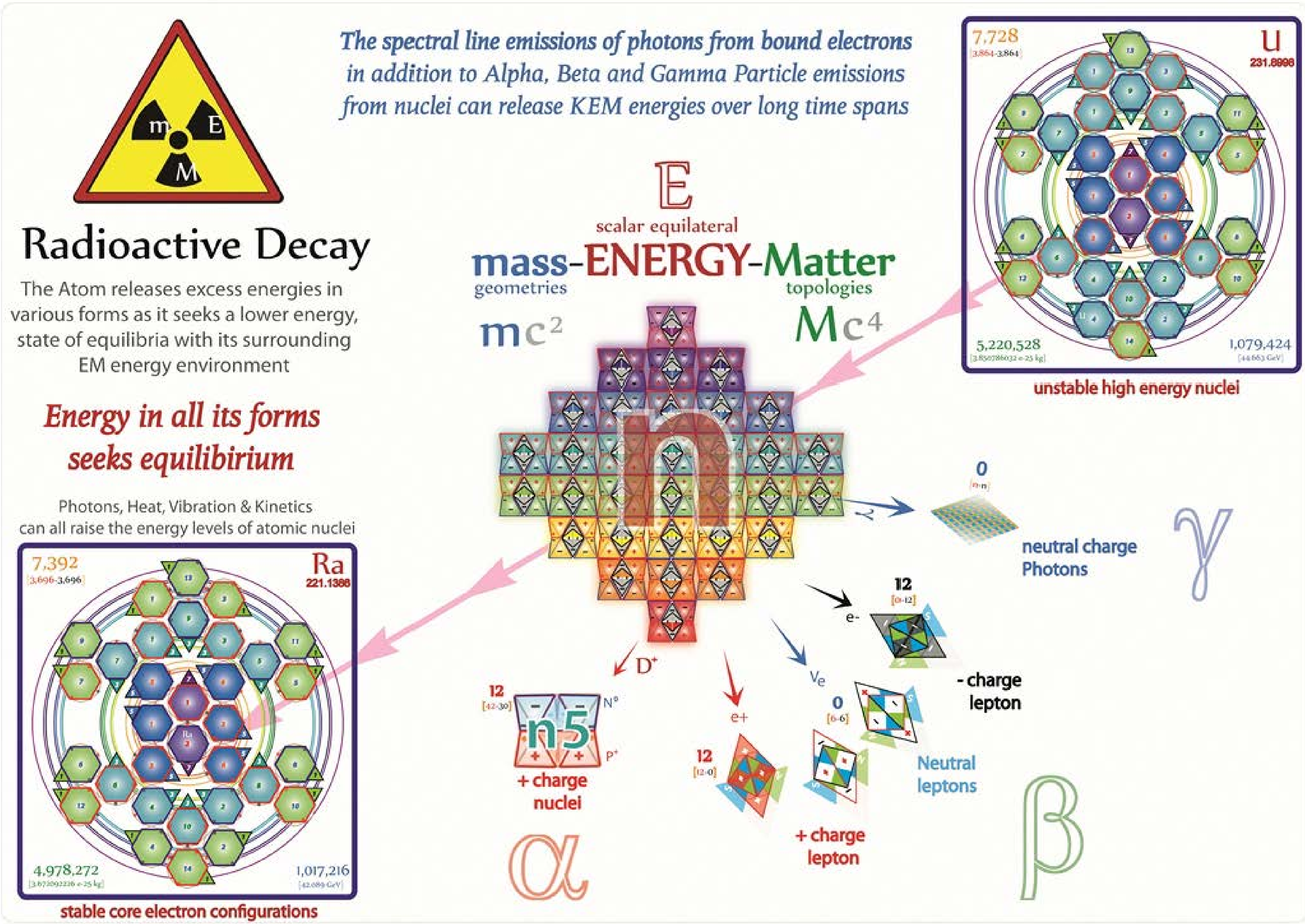
C5-H10-O4
deoxyribose

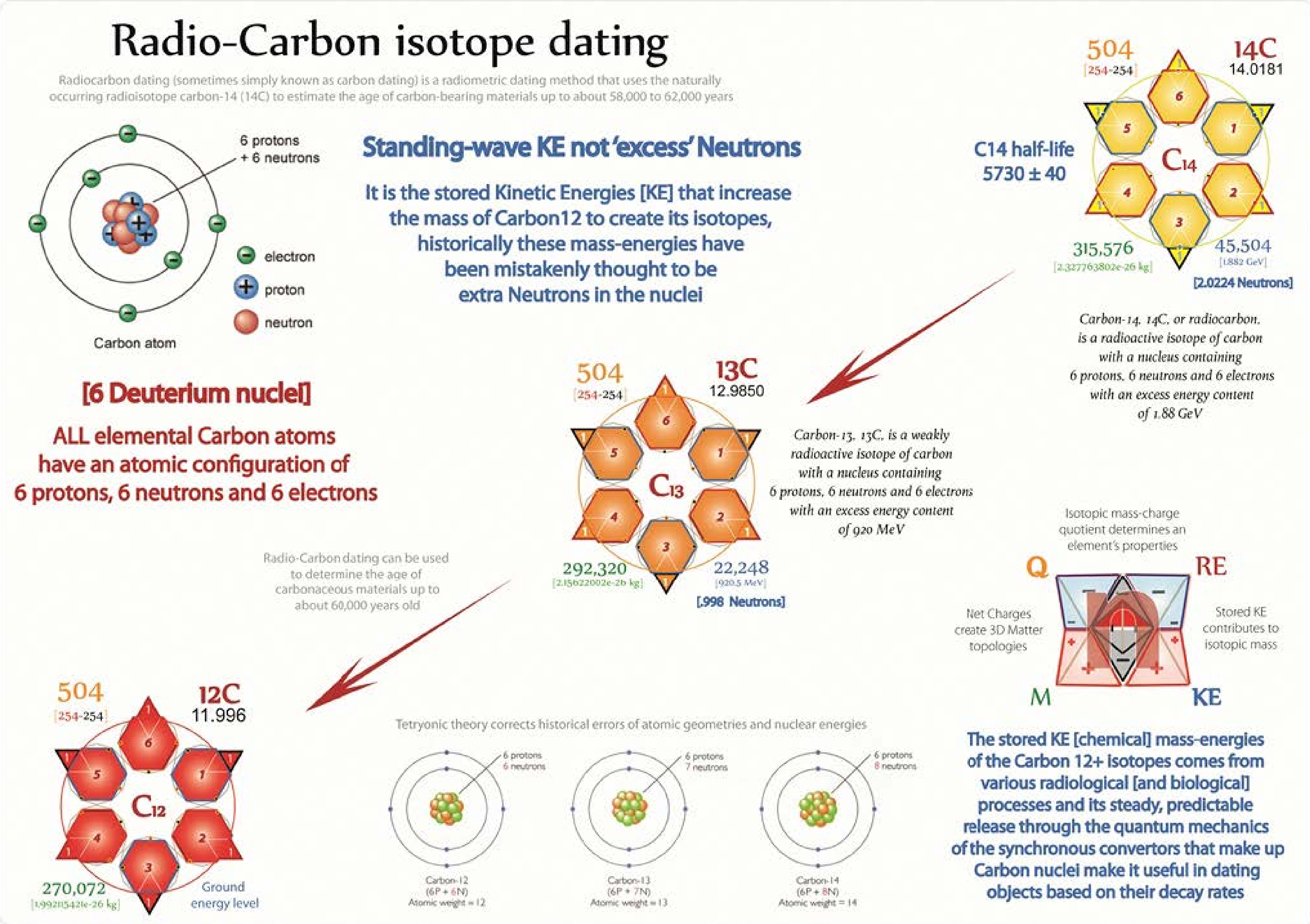
$H-(CO)-(CH_2)-(CHOH)_3-H$

Hermann Emil Fischer won the Nobel Prize in Chemistry (1902) for his work in determining the structure of the D-aldohexoses.

However, the linear, free-aldehyde structures that Fischer proposed represent a very minor percentage of the forms that hexose sugars adopt in solution. It was Edmund Hirst and Clifford Purves, in the research group of Walter Haworth, who conclusively determined that the hexose sugars preferentially form a pyranose, or six-membered, ring. Haworth drew the ring as a flat hexagon with groups above and below the plane of the ring – the Haworth projection

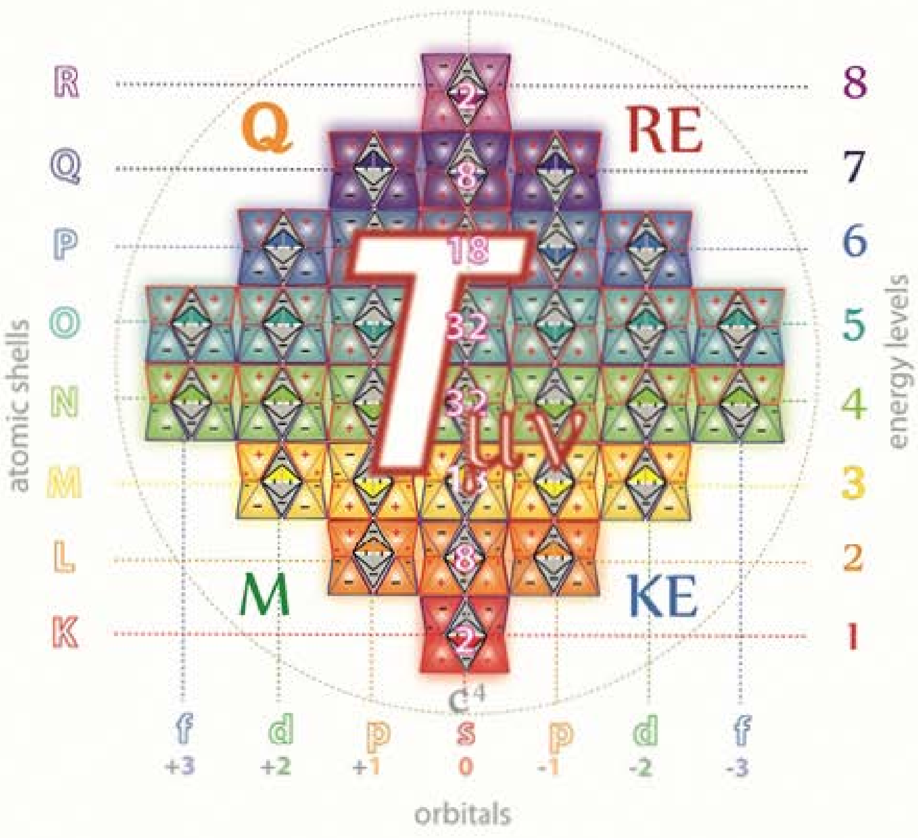

1,260
P
741,996
66,816
Phosporus
3,996
[1,998-1,998]
OH
720
1
O
672
2
4
P
1,260
3
HPO4
phosphate
group
OH
720
H
48
O
672
C
504
5
6
H
48
C5-H10-O4
deoxyribose
CH
552
4
C5O
1
3
2
OH
720
CH
552
H
48
CH
552
The other repeating part of the DNA backbone is a phosphate group.
A phosphate group is attached to the sugar molecule in place of the -OH group on the 5' carbon.
P
deoxy
ribose
AGCT
nucleotide
5,688
[2,844-2,844]


The spectral line emissions of photons from bound electrons
in addition to Alpha, Beta and Gamma Particle emissions
from nuclei can release KEM energies over long time spans
m
E
M
Radioactive Decay
The Atom releases excess energies in various forms as it seeks a lower energy, state of equilibria with its surrounding EM energy environment
Energy in all its forms
seeks equilibirium
Photons, Heat, Vibration & Kinetics
can all raise the energy levels of atomic nuclei
7,392
Ra
4,978,272
1,017,216
stable core electron configurations
E
scalar equilateral
mass-ENERGY-Matter
geometries
topologies
mc²
Mc⁴
7,728
U
5,220,528
1,079,424
unstable high energy nuclei
0
neutral charge
Photons
γ
12
e-
- charge
lepton
Ve
0
Neutral
leptons
β
D⁺
12
n5
N°
P⁺
+ charge
nuclei
α
e+
12
+ charge
lepton


Radio-Carbon isotope dating
Radiocarbon dating (sometimes simply known as carbon dating) is a radiometric dating method that uses the naturally occurring radioisotope carbon-14 (14C) to estimate the age of carbon-bearing materials up to about 58,000 to 62,000 years
6 protons
+ 6 neutrons
electron
proton
neutron
Carbon atom
Standing-wave KE not 'excess' Neutrons
It is the stored Kinetic Energies [KE] that increase the mass of Carbon12 to create its isotopes, historically these mass-energies have been mistakenly thought to be extra Neutrons in the nuclei
C14 half-life
5730 ± 40
504
[254-254]
14C
14.0181
C14
315,576
[2.327763802e-26 kg]
45,504
[1.882 GeV]
[2.0224 Neutrons]
Carbon-14, 14C, or radiocarbon, is a radioactive isotope of carbon with a nucleus containing 6 protons, 6 neutrons and 6 electrons with an excess energy content of 1.88 GeV
[6 Deuterium nuclei]
ALL elemental Carbon atoms have an atomic configuration of 6 protons, 6 neutrons and 6 electrons
504
[254-254]
13C
12.9850
C13
292,320
[2.15622002e-26 kg]
22,248
[920.5 MeV]
[.998 Neutrons]
Carbon-13, 13C, is a weakly radioactive isotope of carbon with a nucleus containing 6 protons, 6 neutrons and 6 electrons with an excess energy content of 920 MeV
Isotopic mass-charge quotient determines an element's properties
Q
RE
M
KE
Net Charges create 3D Matter topologies
Stored KE contributes to isotopic mass
Radio-Carbon dating can be used to determine the age of carbonaceous materials up to about 60,000 years old
504
[254-254]
12C
11.996
C12
270,072
Ground energy level
Tetryonic theory corrects historical errors of atomic geometries and nuclear energies
6 protons
6 neutrons
Carbon-12
(6P + 6N)
Atomic weight = 12
6 protons
7 neutrons
Carbon-13
(6P + 7N)
Atomic weight = 13
6 protons
8 neutrons
Carbon-14
(6P + 8N)
Atomic weight = 14
The stored KE [chemical] mass-energies of the Carbon 12+ isotopes comes from various radiological [and biological] processes and its steady, predictable release through the quantum mechanics of the synchronous convertors that make up Carbon nuclei make it useful in dating objects based on their decay rates

Radioactive Isotopes

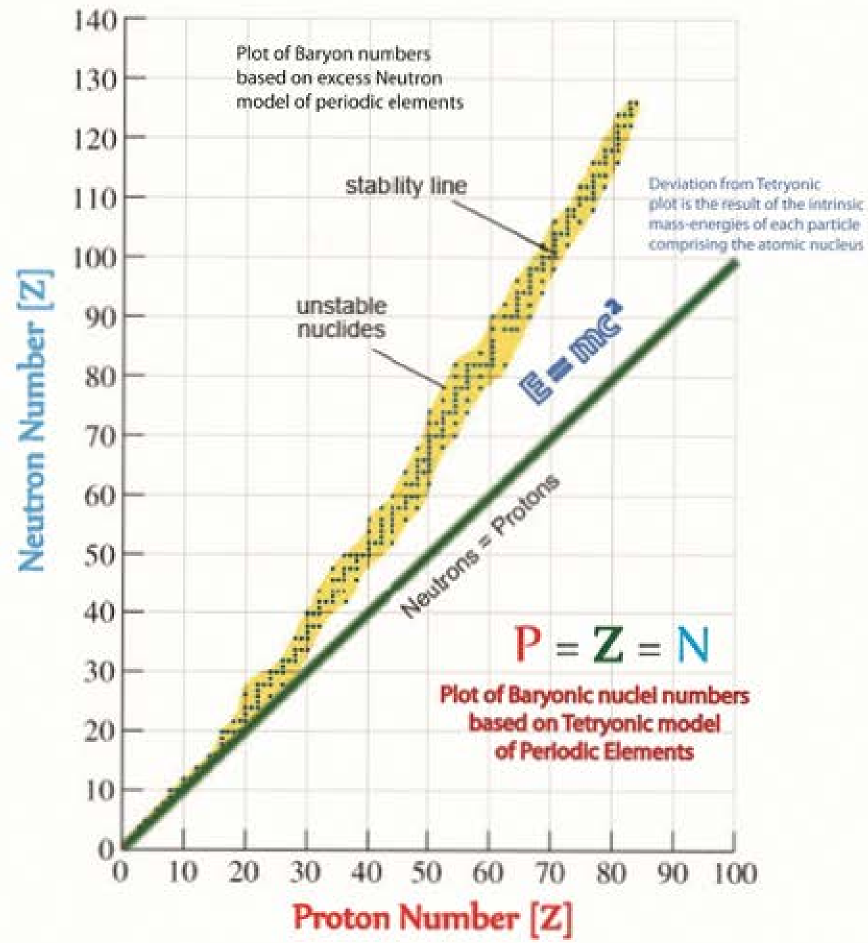
Where the elementary nuclei's Deuteron energy levels are raised from their ground levels radioactive isotopes are created



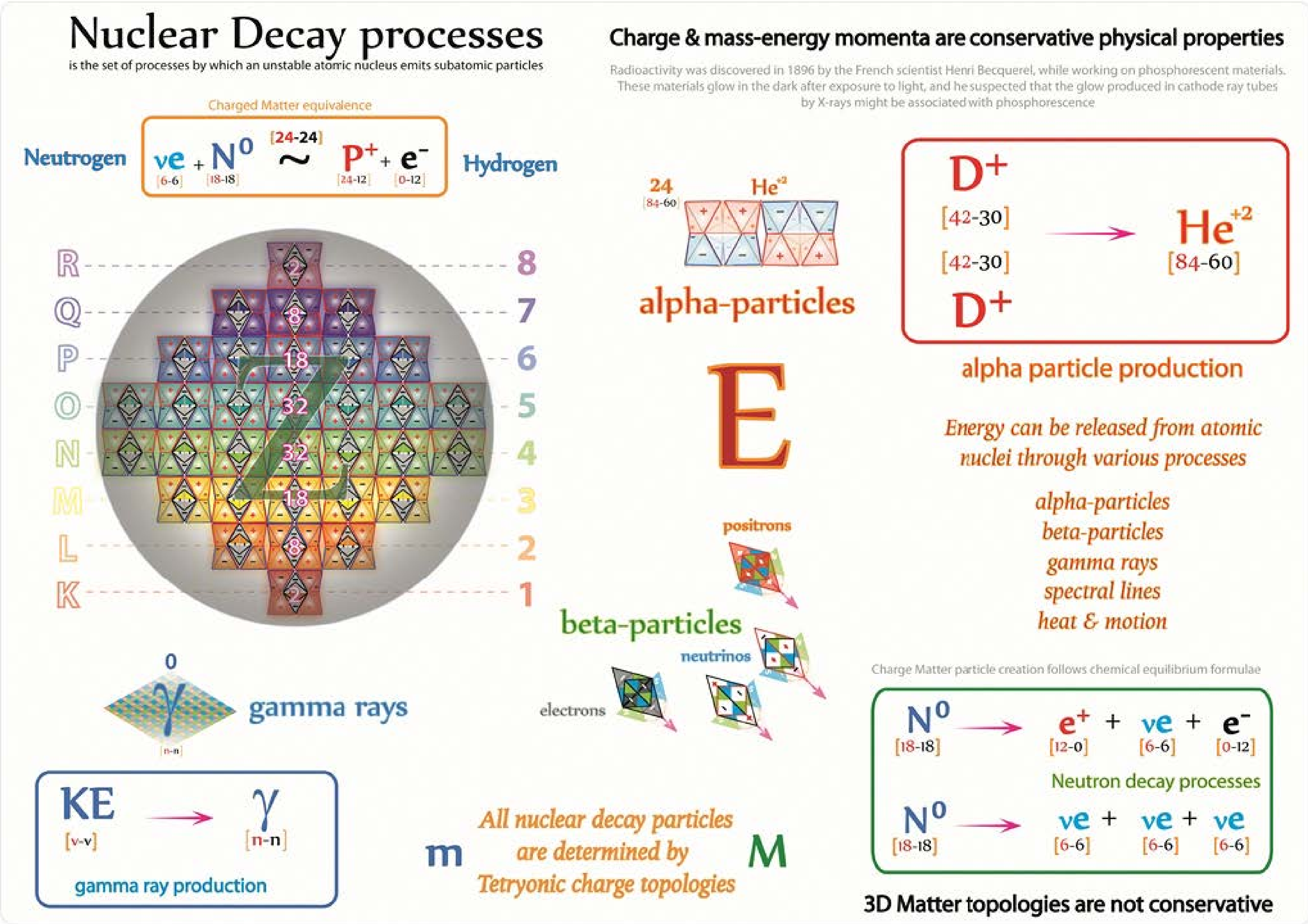
Each periodic element is comprised of an EQUAL number of Protons, Neutrons & electrons that form each element's unique 2D mass-energy geometries & 3D Matter topology and contribute to its observed properties

The $\frac{\text{mass}}{c^2}$ ~ $\frac{\text{energy}}{c^4}$ content of Matter

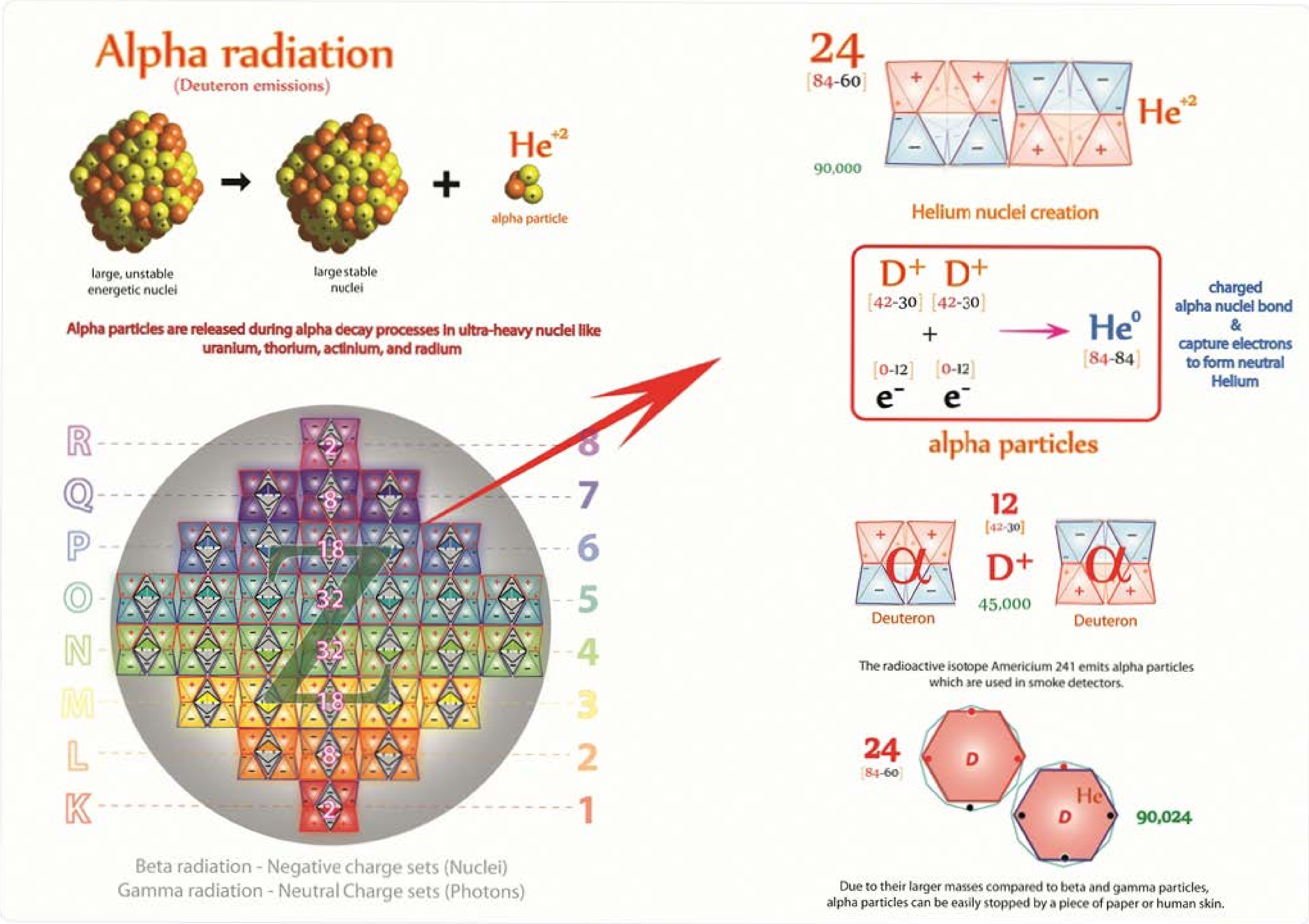
Einstein's relativistic stress energy tensor models mass-energy-Matter as a nebulous energy-momenta density-pressure gradient

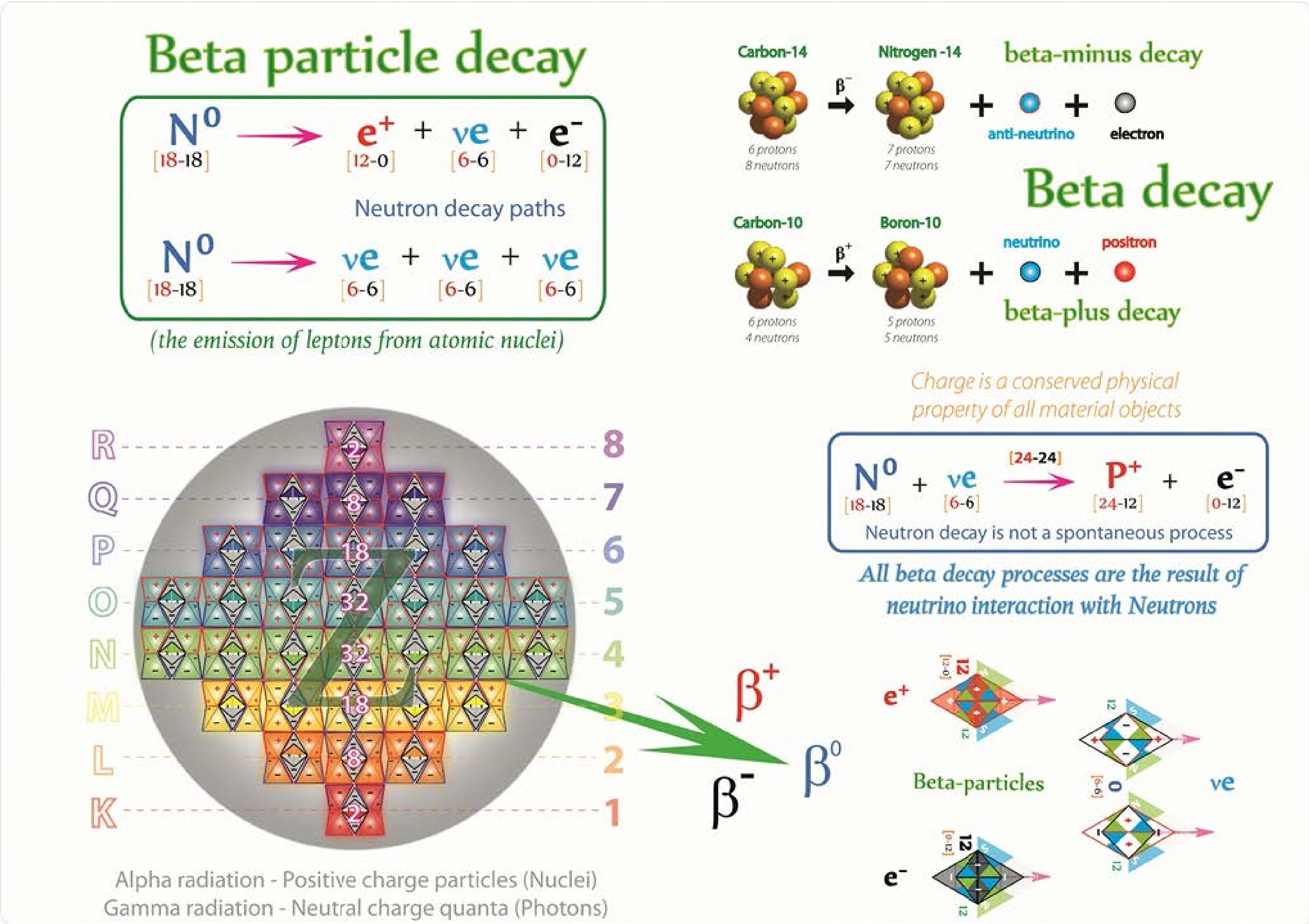


Tetryonic theory redefines the relativistic stress energy tensor [$T_{\mu\nu}$] into a geometric measure of the charged 2D electromagnetic mass-energies & 3D Matter topologies within any spatial co-ordinate system



Nuclear Decay processes
is the set of processes by which an unstable atomic nucleus emits subatomic particles
Charge & mass-energy momenta are conservative physical properties
Radioactivity was discovered in 1896 by the French scientist Henri Becquerel, while working on phosphorescent materials. These materials glow in the dark after exposure to light, and he suspected that the glow produced in cathode ray tubes by X-rays might be associated with phosphorescence
Charged Matter equivalence
Neutrogen
ve [6-6] + N0 [18-18] [24-24] ~ P+ [24-12] + e- [0-12]
Hydrogen
R Q P O N M L K
8 7 6 5 4 3 2 1
2 8 18 32 32 18 8 2
Z
24 [84-60]
He+2
alpha-particles
D+ [42-30]
[42-30] D+
He+2 [84-60]
alpha particle production
E
Energy can be released from atomic nuclei through various processes
alpha-particles
beta-particles
gamma rays
spectral lines
heat & motion
positrons
beta-particles
neutrinos
electrons
0
γ
[n-n]
gamma rays
KE [v-v] → γ [n-n]
gamma ray production
m
All nuclear decay particles are determined by Tetryonic charge topologies
M
Charge Matter particle creation follows chemical equilibrium formulae
N0 [18-18] → e+ [12-0] + ve [6-6] + e- [0-12]
Neutron decay processes
N0 [18-18] → ve [6-6] + ve [6-6] + ve [6-6]
3D Matter topologies are not conservative


Alpha radiation
(Deuteron emissions)
He+2
alpha particle
large, unstable energetic nuclei
large stable nuclei
Alpha particles are released during alpha decay processes in ultra-heavy nuclei like uranium, thorium, actinium, and radium
R Q P O N M L K
8 7 6 5 4 3 2 1
2 8 18 32 32 18 8 2
Z
Beta radiation - Negative charge sets (Nuclei)
Gamma radiation - Neutral Charge sets (Photons)
24
[84-60]
90,000
He+2
Helium nuclei creation
D+ D+
[42-30] [42-30]
+
[0-12] [0-12]
e- e-
He0
[84-84]
charged alpha nuclei bond & capture electrons to form neutral Helium
alpha particles
12
[42-30]
D+
45,000
Deuteron
Deuteron
The radioactive isotope Americium 241 emits alpha particles which are used in smoke detectors.
24
[84-60]
D
D
He
90,024
Due to their larger masses compared to beta and gamma particles, alpha particles can be easily stopped by a piece of paper or human skin.



Beta particle decay
N0 [18-18] → e+ [12-0] + ve [6-6] + e- [0-12]
Neutron decay paths
N0 [18-18] → ve [6-6] + ve [6-6] + ve [6-6]
(the emission of leptons from atomic nuclei)
Carbon-14
6 protons
8 neutrons
β-
Nitrogen -14
7 protons
7 neutrons
beta-minus decay
anti-neutrino
electron
Beta decay
Carbon-10
6 protons
4 neutrons
β+
Boron-10
5 protons
5 neutrons
neutrino
positron
beta-plus decay
Charge is a conserved physical property of all material objects
N0 [18-18] + ve [6-6] [24-24] → P+ [24-12] + e- [0-12]
Neutron decay is not a spontaneous process
All beta decay processes are the result of neutrino interaction with Neutrons
R Q P O N M L K
8 7 6 5 4 3 2 1
2 8 18 32 32 18 8 2
Z
β+
β0
β-
e+
Beta-particles
ve
e-
Alpha radiation - Positive charge particles (Nuclei)
Gamma radiation - Neutral charge quanta (Photons)

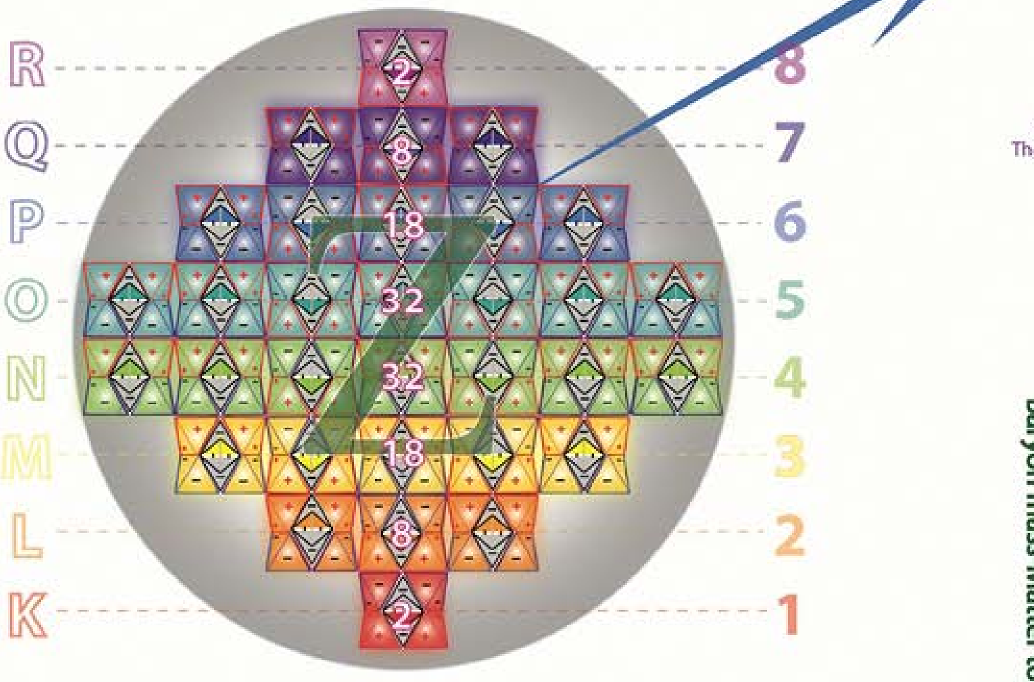
Gamma Radiation

(high energy photon emission)

Natural sources of gamma rays on Earth include gamma decay from naturally occurring radioisotopes, and secondary radiation from atmospheric interactions with cosmic ray particles.

λ [f] *All ejected gamma ray photons are neutral energy quanta sets [photons / EM waves]* [f] λ

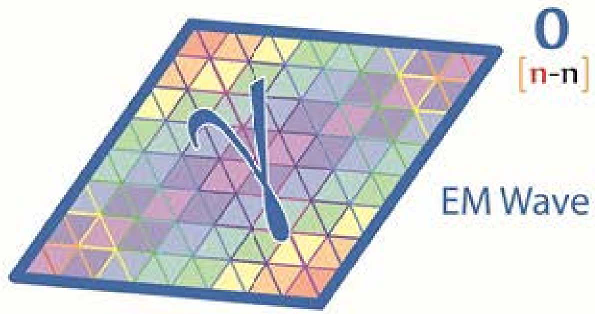
Gamma rays typically have frequencies above 10 exahertz (or >10^19 Hz), and therefore generally have energies above 100 keV and wavelengths less than 10 picometers (less than the diameter of an atom)



Alpha radiation - Positive charge particles (nuclei)
Beta radiation - Negative charge particles (leptons)

gamma rays

Gamma decay produces rays with energies of only a few hundred keV, and almost always less than 10MeV



$$2\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

Photons — EM Field — ElectroMagnetic — Planck quanta — mass — velocity

Gamma rays are a form of ionizing radiation, and they have very good penetrating power. They result from the release of atomic energies and will cause biological damage to living tissue.

$$2hv = E = hf$$

Care must always be taken to distingush between charged Planck quanta [v] and photons [f]

gamma ray bursts

Baryon mass-Matter topology

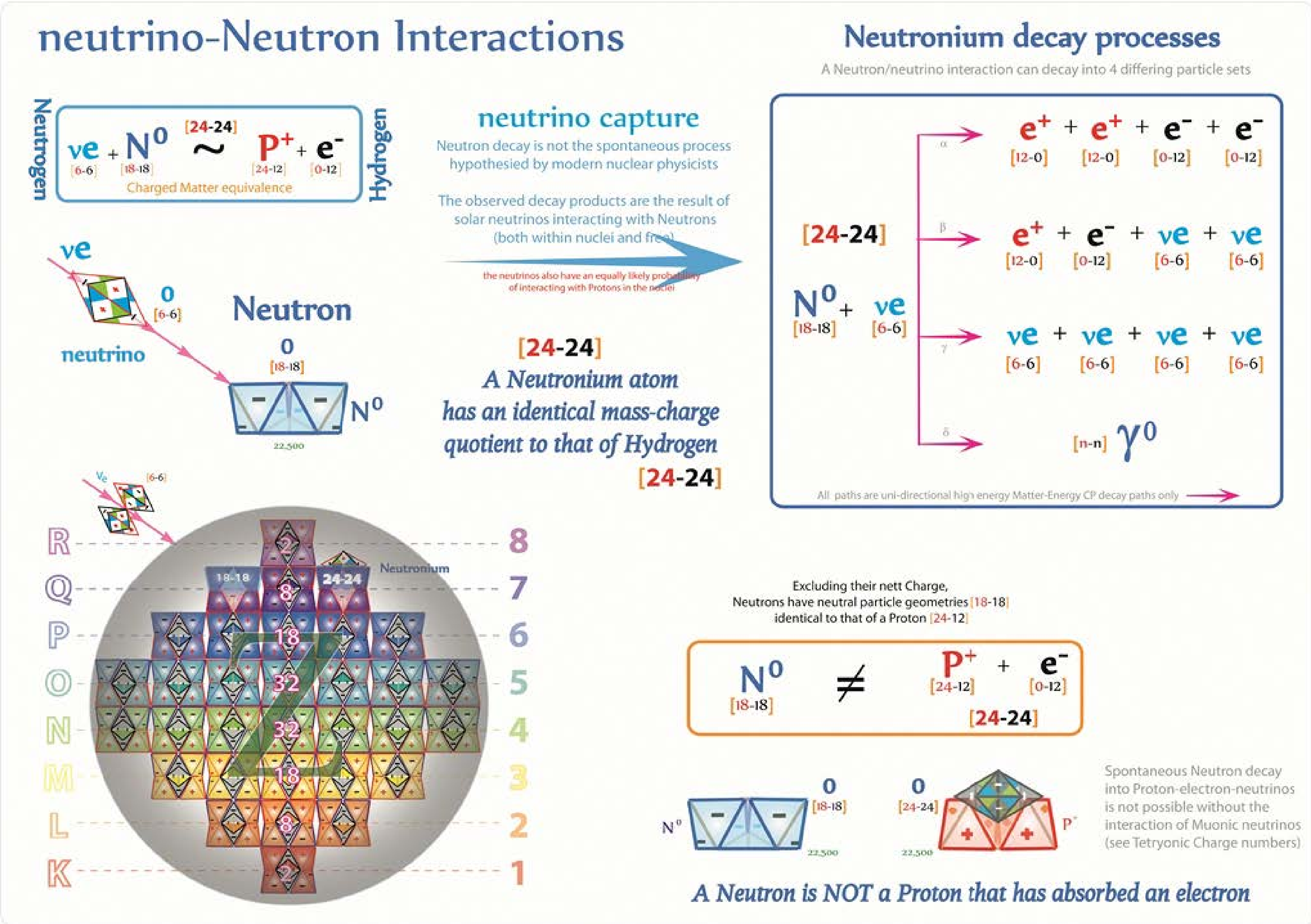
N^0 [18-18] → [2.25 e23] [v-v]

$$E = 2mc^2 = hf$$

930 MeV — 930 MeV

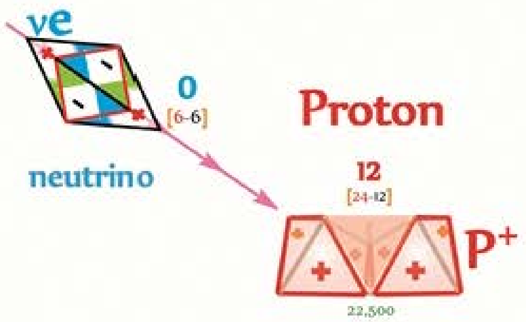
gamma ray mass-energy geometry

are the result of the stored KEM mass-energies of Matter topologies being released as mass-energy momenta geometries



neutrino-Neutron Interactions
Neutrogen
ve + N0 [24-24] ~ P+ + e-
[6-6] [18-18] [24-12] [0-12]
Charged Matter equivalence
Hydrogen
ve
0
[6-6]
neutrino
Neutron
0
[18-18]
N0
22,500
neutrino capture
Neutron decay is not the spontaneous process hypothesied by modern nuclear physicists
The observed decay products are the result of solar neutrinos interacting with Neutrons (both within nuclei and free)
the neutrinos also have an equally likely probability of interacting with Protons in the nuclei
[24-24]
A Neutronium atom has an identical mass-charge quotient to that of Hydrogen
[24-24]
Neutronium decay processes
A Neutron/neutrino interaction can decay into 4 differing particle sets
[24-24]
N0 + ve
[18-18] [6-6]
α
e+ + e+ + e- + e-
[12-0] [12-0] [0-12] [0-12]
β
e+ + e- + ve + ve
[12-0] [0-12] [6-6] [6-6]
γ
ve + ve + ve + ve
[6-6] [6-6] [6-6] [6-6]
δ
[n-n] γ0
All paths are uni-directional high energy Matter-Energy CP decay paths only
[6-6]
R 8
Q 7
P 6
O 5
N 4
M 3
L 2
K 1
18-18
24-24
Neutronium
2
8
18
32
32
18
8
2
Excluding their nett Charge,
Neutrons have neutral particle geometries [18-18]
identical to that of a Proton [24-12]
N0 ≠ P+ + e-
[18-18] [24-12] [0-12]
[24-24]
N0
0
[18-18]
22,500
0
[24-24]
P+
22,500
Spontaneous Neutron decay into Proton-electron-neutrinos is not possible without the interaction of Muonic neutrinos (see Tetryonic Charge numbers)
A Neutron is NOT a Proton that has absorbed an electron

neutrino-Proton Interactions



neutrino capture

Neutron decay is not the spontaneous process hypothesied by modern nuclear physicists

The observed decay products are the result of solar neutrinos interacting with Neutrons (both within nuclei and free)

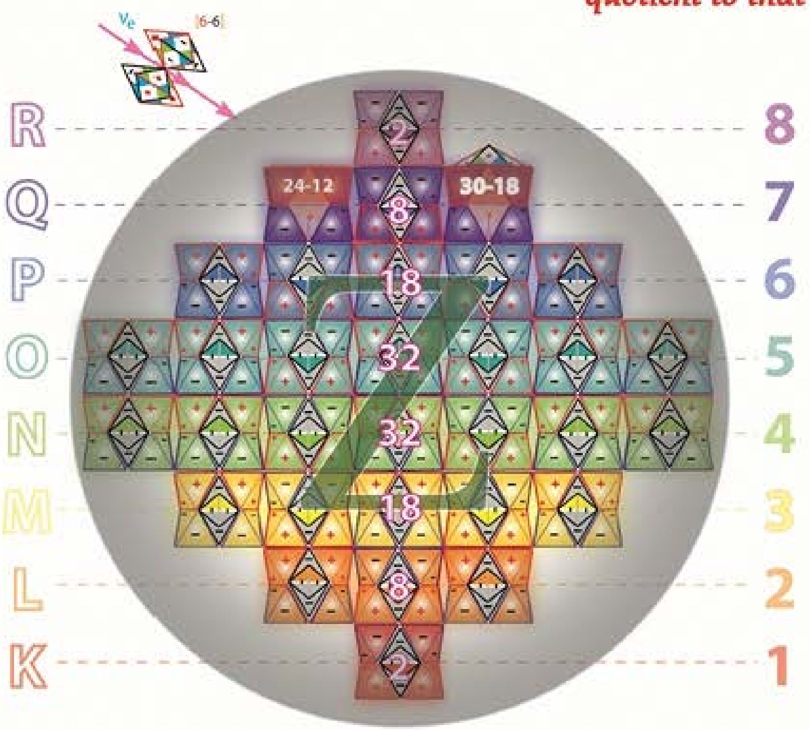
the neutrinos also have an equally likely probability of interacting with Neutrons in the nuclei

Although very weakly interacting, neutrinos can still be attracted to and bind to Protons via their negative charge fascia

[30-18]

A Proton-neutrino atom would have an identical charge quotient to that of a Proton

[24-12]



Proton decay paths

A Proton/Neutrino interaction can decay into 4 differing particle sets

[30-18]

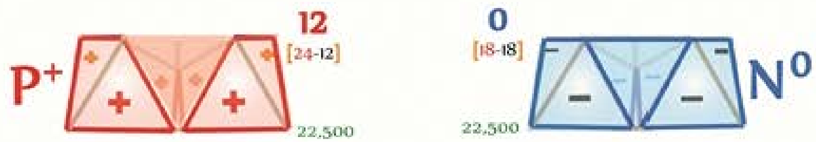
P^+ [24-12] + ve [6-6]

- α → N^0 [18-18] + e^+ [12-0]
- β → e^+ [12-0] + e^+ [12-0] + e^- [0-2] + ve [6-6]
- γ → ve [6-6] + ve [6-6] + ve [6-6] + e^+ [12-0]
- δ → [n-n] γ^0 + e^+ [12-0]

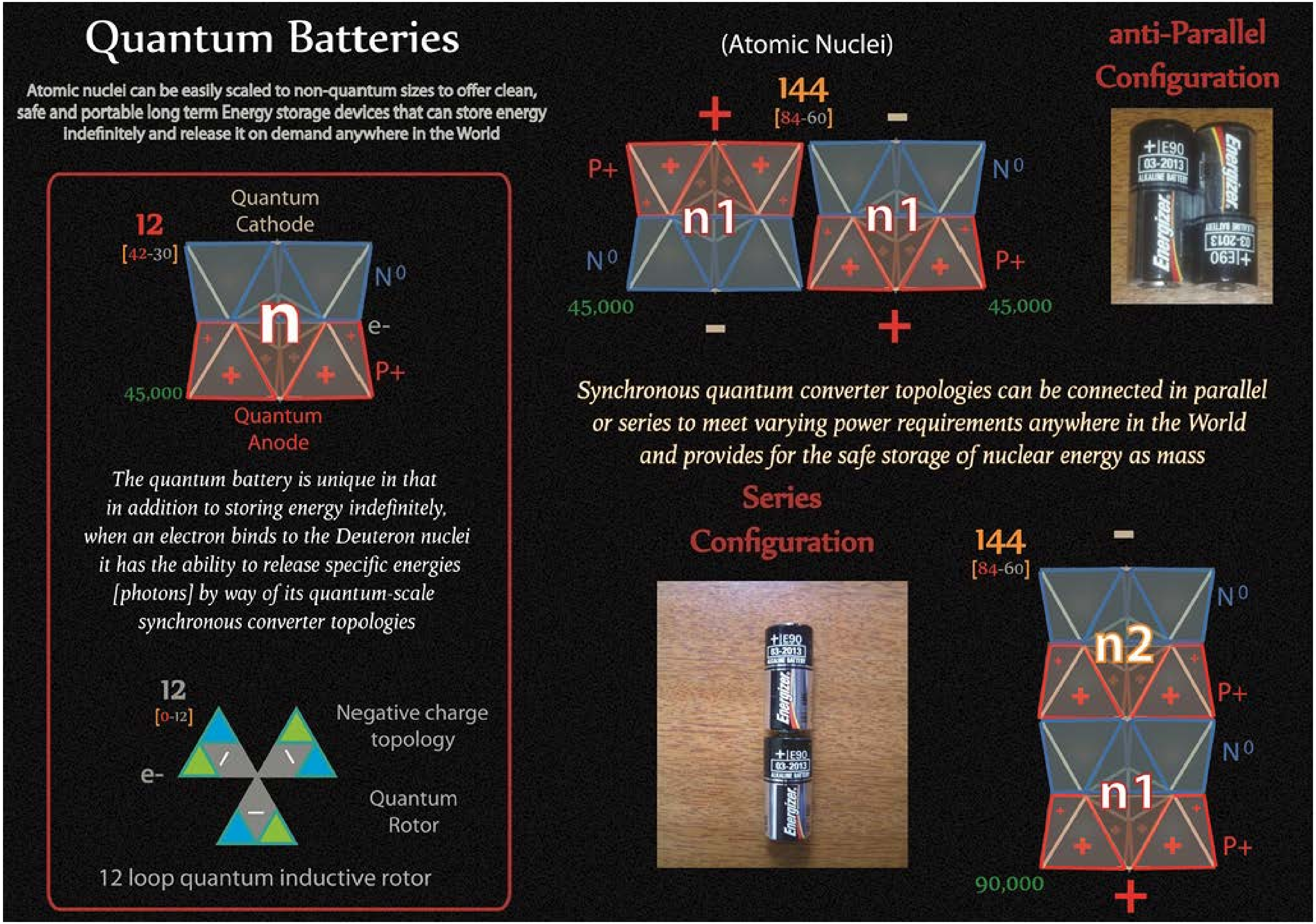
All paths are uni-directional high energy Matter-Energy CP decay paths only →

If they exist, Proton-neutrino particle couplings would function in a manner identical to that of Proton-electron couplings and could be detected by the anomalous spin measurements that would result

A Proton has a Positive charge geometry [24-12] equivalent to that of a Neutral Neutron [18-18]



A Proton is topologically identical to a Neutron (differing only in the net charge created)

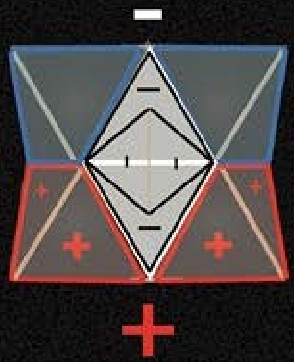

Quantum Batteries
Atomic nuclei can be easily scaled to non-quantum sizes to offer clean, safe and portable long term Energy storage devices that can store energy indefinitely and release it on demand anywhere in the World
Quantum Cathode
12
[42-30]
N 0
n
e-
P+
45,000
Quantum Anode
The quantum battery is unique in that in addition to storing energy indefinitely, when an electron binds to the Deuteron nuclei it has the ability to release specific energies [photons] by way of its quantum-scale synchronous converter topologies
12
[0-12]
e-
Negative charge topology
Quantum Rotor
12 loop quantum inductive rotor
(Atomic Nuclei)
144
[84-60]
P+
N 0
n1
n1
N 0
P+
45,000
45,000
anti-Parallel Configuration
Synchronous quantum converter topologies can be connected in parallel or series to meet varying power requirements anywhere in the World and provides for the safe storage of nuclear energy as mass
Series Configuration
144
[84-60]
N 0
n2
P+
N 0
n1
P+
90,000

Quantum synchronous Converters

Energy can be stored in macro-scaled quantum converters as mass

The electron has a charged Tetryonic Matter topology that is electrically equivalent to a 6 loop inductive rotor

Quantum Cathode



Quantum Anode

Energy

$$\frac{12\pi}{c^4}\left[\left[m\Omega v^2\right]\right]^{n8}_{n1}$$

Planck quanta, mass, velocity

momenta

Matter is radiant EM energy in a standing-waveform

Energy

$$\text{Nuclei } \frac{72\pi}{c^4}\left[\left[m\Omega v^2\right]\right]^{n32}_{n25}$$

Planck quanta, mass, velocity

momenta

Building on the charged topology of Deuterium nuclei, scaled electromechanical quantum converters can be manufactured to provide efficient electrical mass-energy storage & distribution devices

Energy

$$\text{Deuterons } \frac{84\pi}{c^4}{}^{n32}_{n25}\left[\left[m\Omega v^2\right]\right]^{n8}_{n1}$$

Planck quanta, mass, velocity

momenta

These devices can be transported any where demand requires them worldwide with their energies stored in the form of mass

Negating the need for centralised power stations and distribution lines extending vast distances to provide power to remote communities

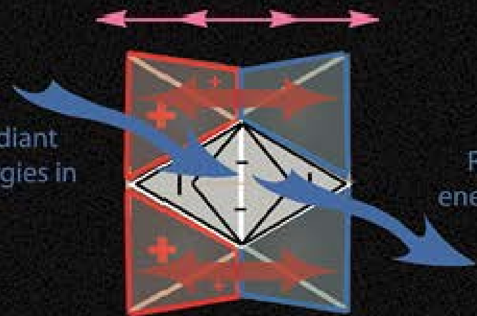
A quantum synchronous converter can store and release 3 forms of energy

Angular Momentum (motional energy)
square root linear momentum

Radiant Energy (emission/absorption)
of photon/boson mass-energy geometries

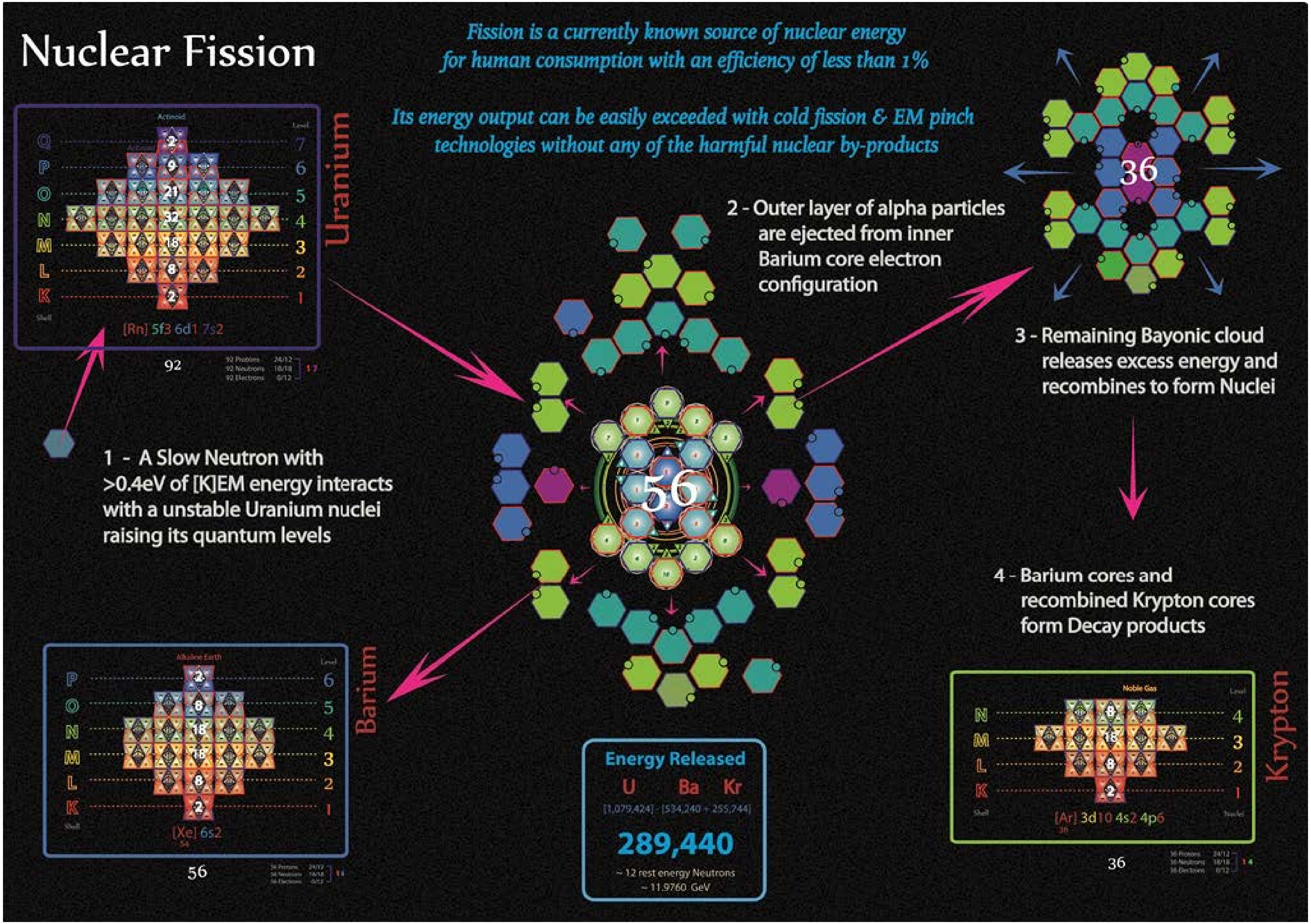
EM mass-Matter (stored masses in Matter topologies)
radiant EM mass-energies stored in standing wave Matter topologies

Radiant energies in

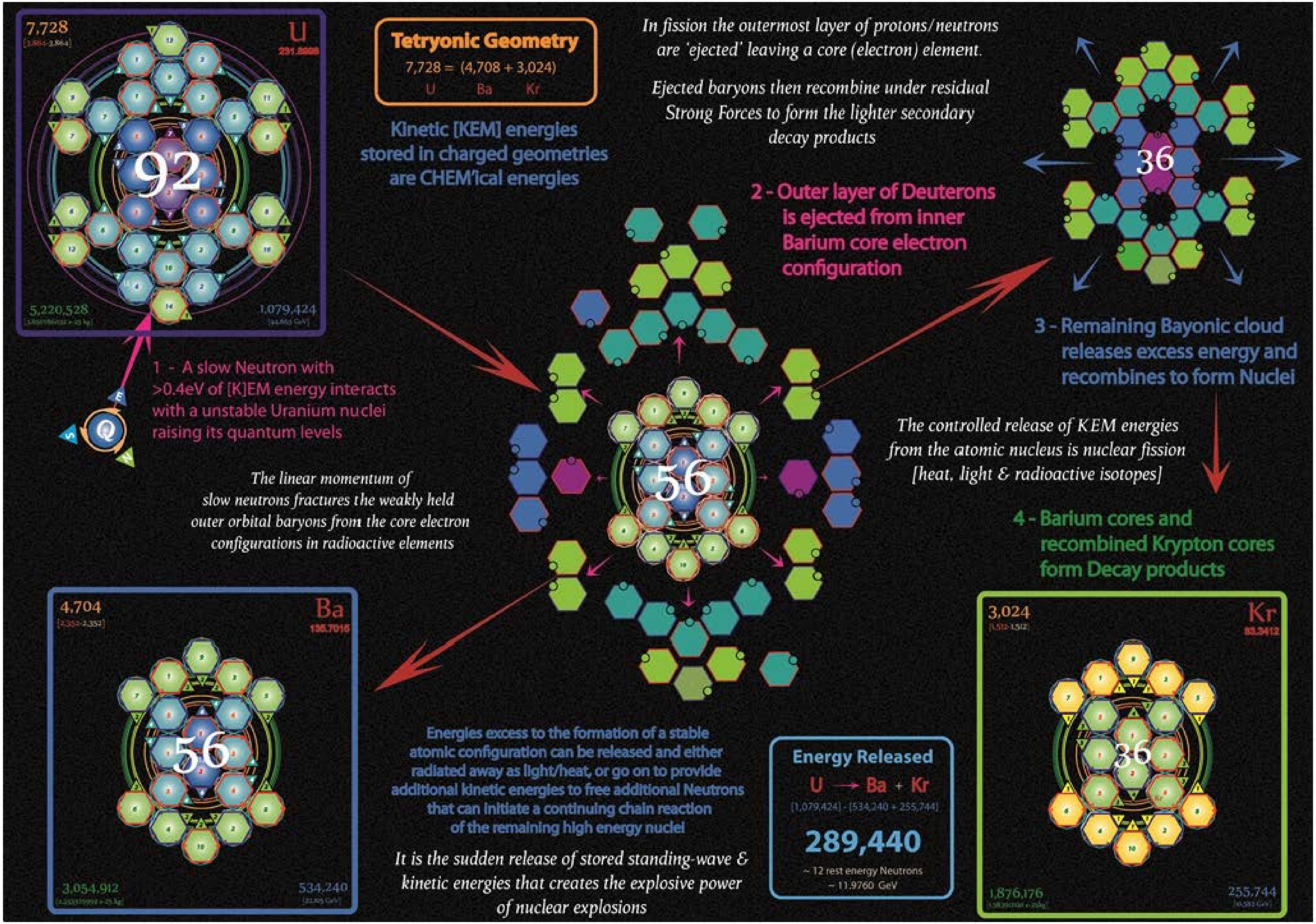


Radiant energies out

Leptons rotate within the Baryonic EM fields of the Nucleus



Nuclear Fission
Fission is a currently known source of nuclear energy for human consumption with an efficiency of less than 1%
Its energy output can be easily exceeded with cold fission & EM pinch technologies without any of the harmful nuclear by-products
Uranium
Q P O N M L K
7 6 5 4 3 2 1
[Rn] 5f3 6d1 7s2
92
1 - A Slow Neutron with >0.4eV of [K]EM energy interacts with a unstable Uranium nuclei raising its quantum levels
2 - Outer layer of alpha particles are ejected from inner Barium core electron configuration
56
36
3 - Remaining Bayonic cloud releases excess energy and recombines to form Nuclei
4 - Barium cores and recombined Krypton cores form Decay products
Barium
P O N M L K
6 5 4 3 2 1
[Xe] 6s2
56
Energy Released
U Ba Kr
[1,079,424] - [534,240 + 255,744]
289,440
~ 12 rest energy Neutrons
~ 11.9760 GeV
Krypton
N M L K
4 3 2 1
[Ar] 3d10 4s2 4p6
36



7,728
U
5,220,528
1,079,424
Tetryonic Geometry
7,728 = (4,708 + 3,024)
U Ba Kr
Kinetic [KEM] energies stored in charged geometries are CHEM'ical energies
In fission the outermost layer of protons/neutrons are 'ejected' leaving a core (electron) element.
Ejected baryons then recombine under residual Strong Forces to form the lighter secondary decay products
92
56
36
2 - Outer layer of Deuterons is ejected from inner Barium core electron configuration
3 - Remaining Bayonic cloud releases excess energy and recombines to form Nuclei
1 - A slow Neutron with >0.4eV of [K]EM energy interacts with a unstable Uranium nuclei raising its quantum levels
Q
The linear momentum of slow neutrons fractures the weakly held outer orbital baryons from the core electron configurations in radioactive elements
The controlled release of KEM energies from the atomic nucleus is nuclear fission [heat, light & radioactive isotopes]
4 - Barium cores and recombined Krypton cores form Decay products
4,704
Ba
3,054,912
534,240
Energies excess to the formation of a stable atomic configuration can be released and either radiated away as light/heat, or go on to provide additional kinetic energies to free additional Neutrons that can initiate a continuing chain reaction of the remaining high energy nuclei
It is the sudden release of stored standing-wave & kinetic energies that creates the explosive power of nuclear explosions
Energy Released
U → Ba + Kr
[1,079,424] - [534,240 + 255,744]
289,440
~ 12 rest energy Neutrons
~ 11.9760 GeV
3,024
Kr
1,876,176
255,744

Sonoluminescence

Sonoluminescence is the first hint at the energies that can be released from Tetryonic collapse and involves the emission of short bursts of light from imploding bubbles in a liquid when excited by sound.

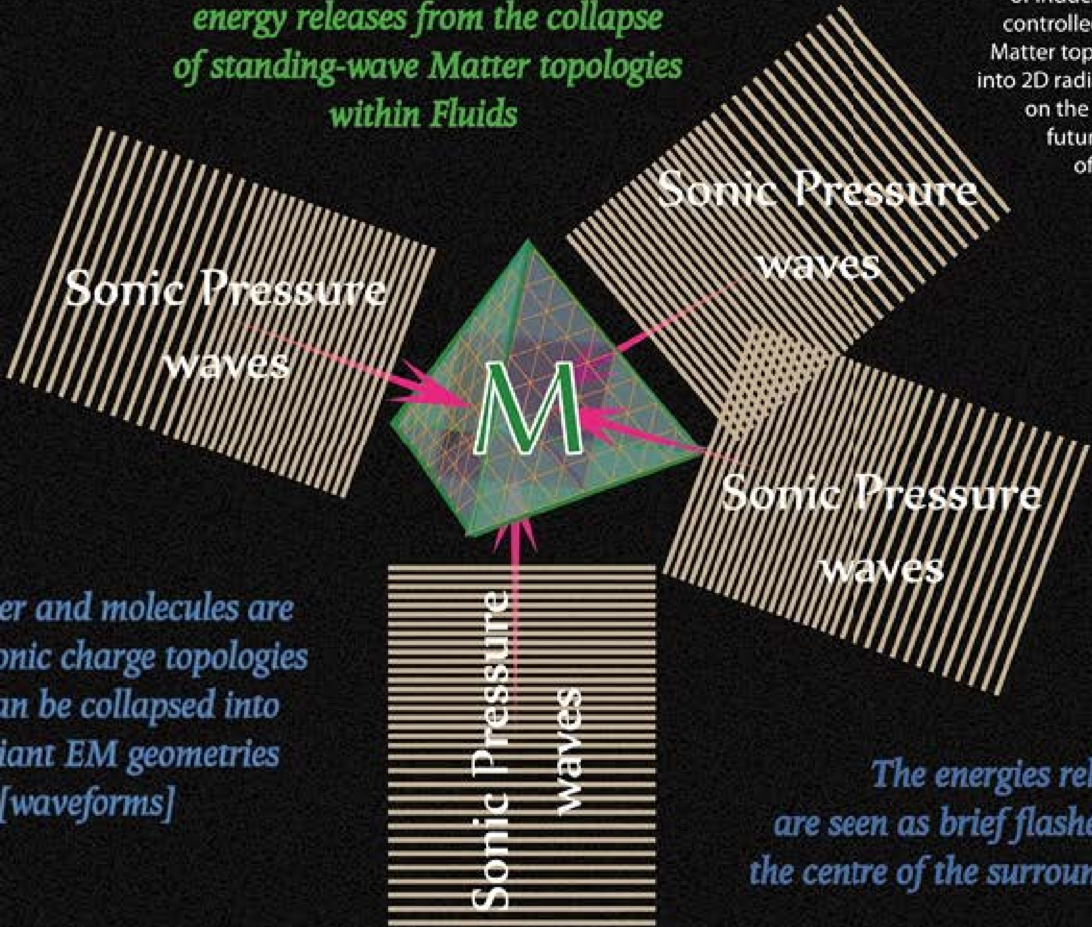
The production of light as a result of the passing of sound waves through a liquid medium.

The sound waves cause the formation of bubbles that emit bright flashes of light when they collapse.

It is a key step on the road to realising technologies that can provide Humanity with clean, safe, efficient Energy production through the conversion of Matter into various forms of EM radiation

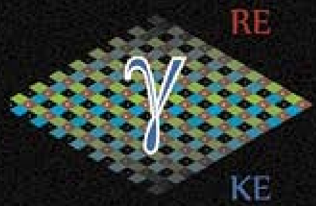
Sonoluminesence is the result of energy releases from the collapse of standing-wave Matter topologies within Fluids

Finding an efficient means of inducing and managing a controlled reaction where 3D Matter topologies are converted into 2D radiant energy is a key step on the path to creating a future energy source of all Humanity

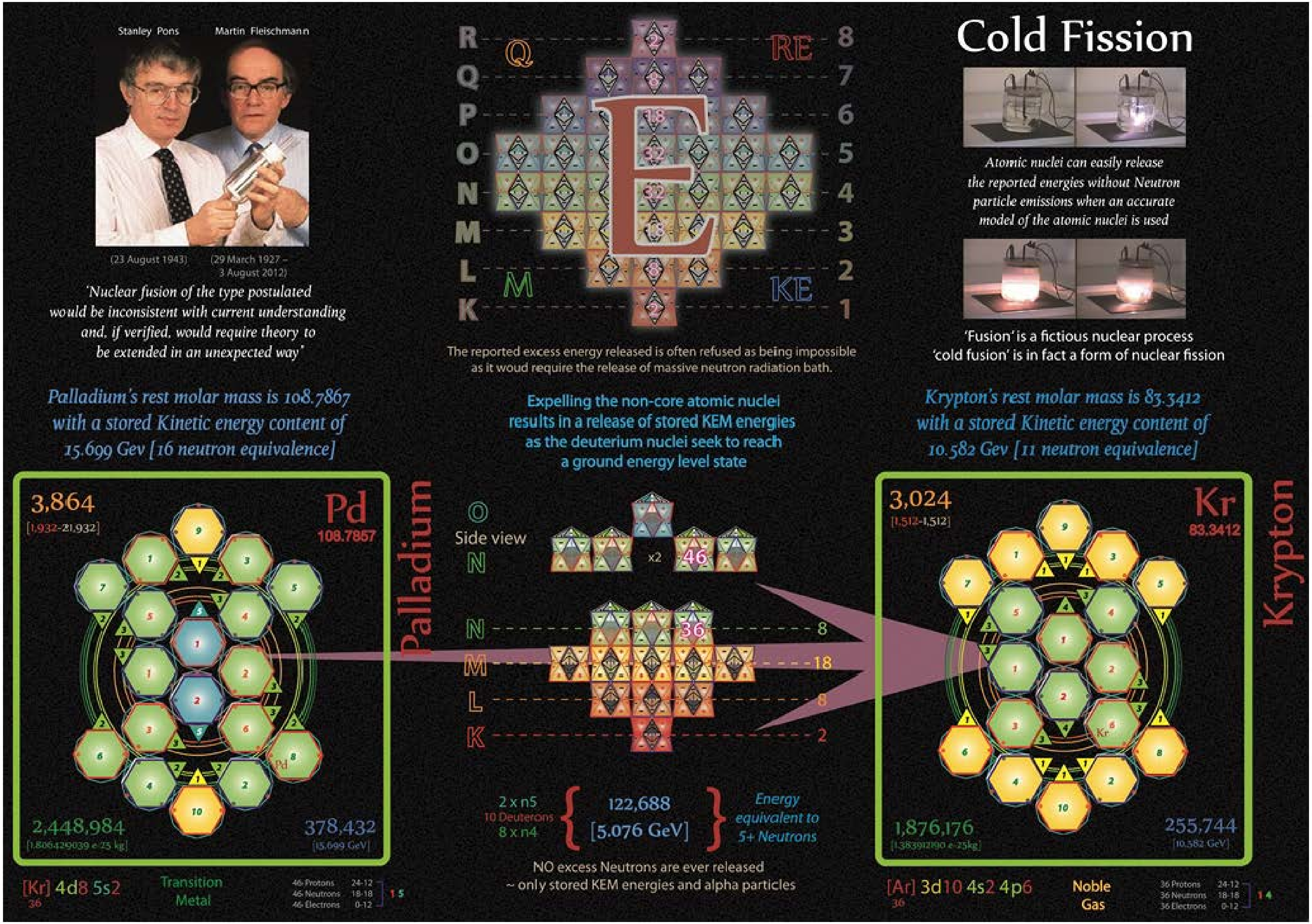


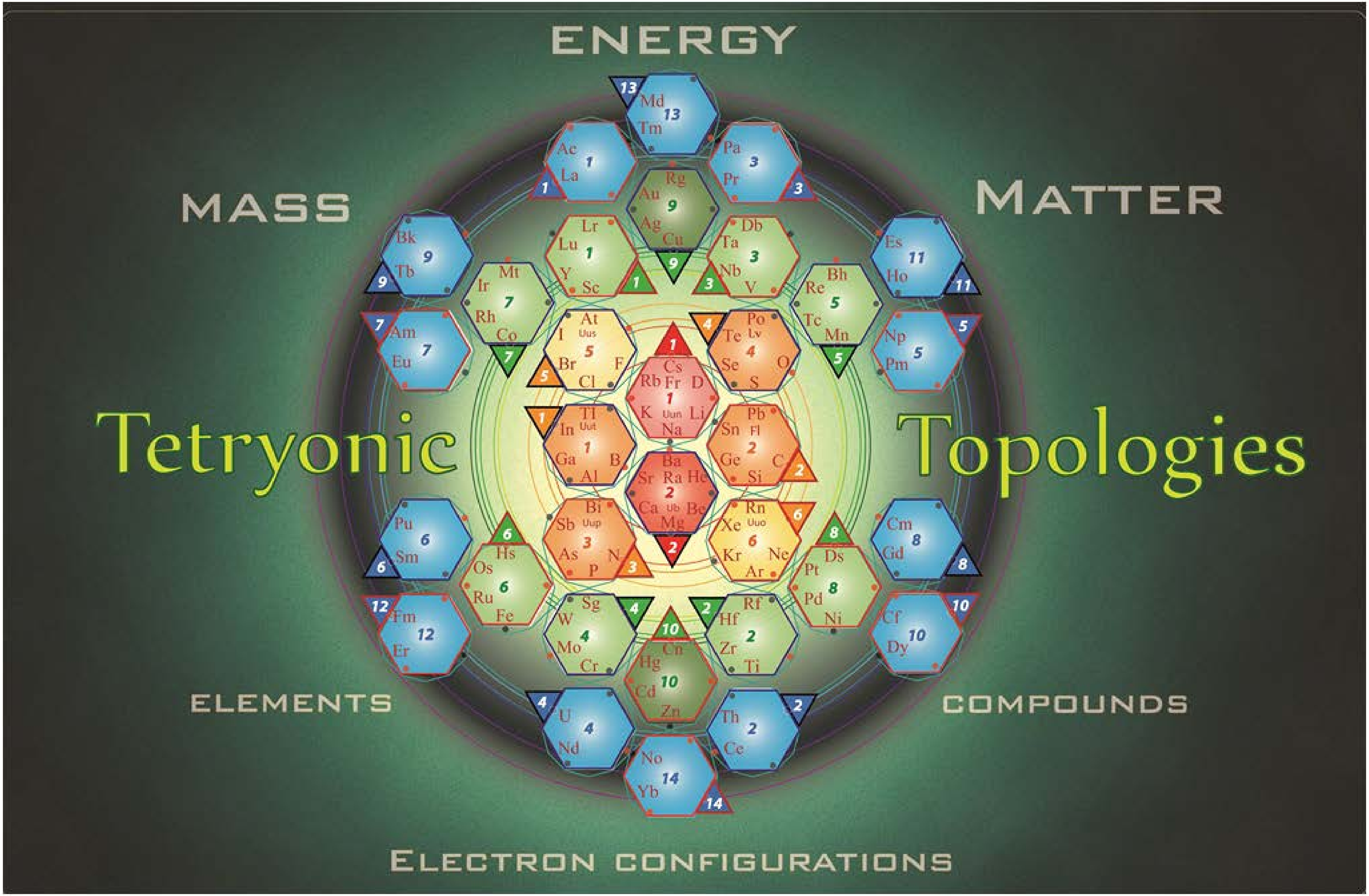
The gauge transformation of Matter into EM radiation is the most efficient form of energy release available to us

All Matter and molecules are 3D Tetryonic charge topologies which can be collapsed into 2D radiant EM geometries [waveforms]

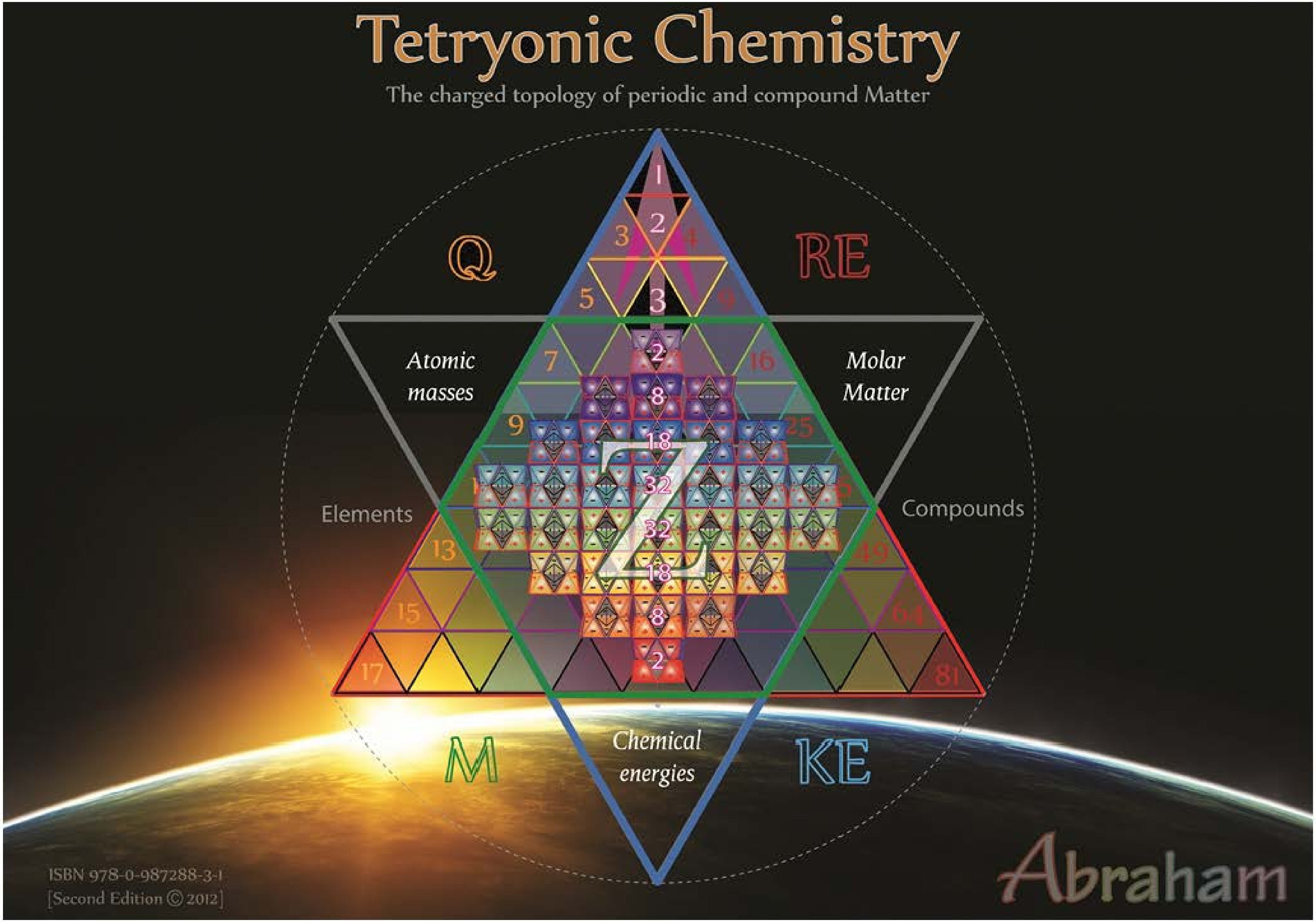


The energies released are seen as brief flashes of light at the centre of the surrounding medium


Stanley Pons
Martin Fleischmann
(23 August 1943)
(29 March 1927 – 3 August 2012)
'Nuclear fusion of the type postulated would be inconsistent with current understanding and, if verified, would require theory to be extended in an unexpected way'
R Q P O N M L K
Q
RE
M
KE
8 7 6 5 4 3 2 1
E
The reported excess energy released is often refused as being impossible as it woud require the release of massive neutron radiation bath.
Cold Fission
Atomic nuclei can easily release the reported energies without Neutron particle emissions when an accurate model of the atomic nuclei is used
'Fusion' is a fictious nuclear process 'cold fusion' is in fact a form of nuclear fission
Palladium's rest molar mass is 108.7867 with a stored Kinetic energy content of 15.699 Gev [16 neutron equivalence]
Expelling the non-core atomic nuclei results in a release of stored KEM energies as the deuterium nuclei seek to reach a ground energy level state
Krypton's rest molar mass is 83.3412 with a stored Kinetic energy content of 10.582 Gev [11 neutron equivalence]
3,864
[1,932-21,932]
Pd
108.7857
2,448,984
[1.806429039 e-25 kg]
378,432
[15.699 GeV]
Palladium
O
Side view
N
x2
46
N
M
L
K
36
8
18
8
2
2 x n5
10 Deuterons
8 x n4
122,688
[5.076 GeV]
Energy equivalent to 5+ Neutrons
NO excess Neutrons are ever released ~ only stored KEM energies and alpha particles
3,024
[1,512-1,512]
Kr
83.3412
1,876,176
[1.383912190 e-25kg]
255,744
[10.582 GeV]
Krypton
[Kr] 4d8 5s2
36
Transition Metal
46 Protons 24-12
46 Neutrons 18-18
46 Electrons 0-12
1 5
[Ar] 3d10 4s2 4p6
36
Noble Gas
36 Protons 24-12
36 Neutrons 18-18
36 Electrons 0-12
1 4



ENERGY
MASS
MATTER
Tetryonic
Topologies
ELEMENTS
COMPOUNDS
ELECTRON CONFIGURATIONS


Tetryonic Chemistry
The charged topology of periodic and compound Matter
Q
RE
Atomic masses
Molar Matter
Elements
Compounds
M
KE
Chemical energies
Z
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