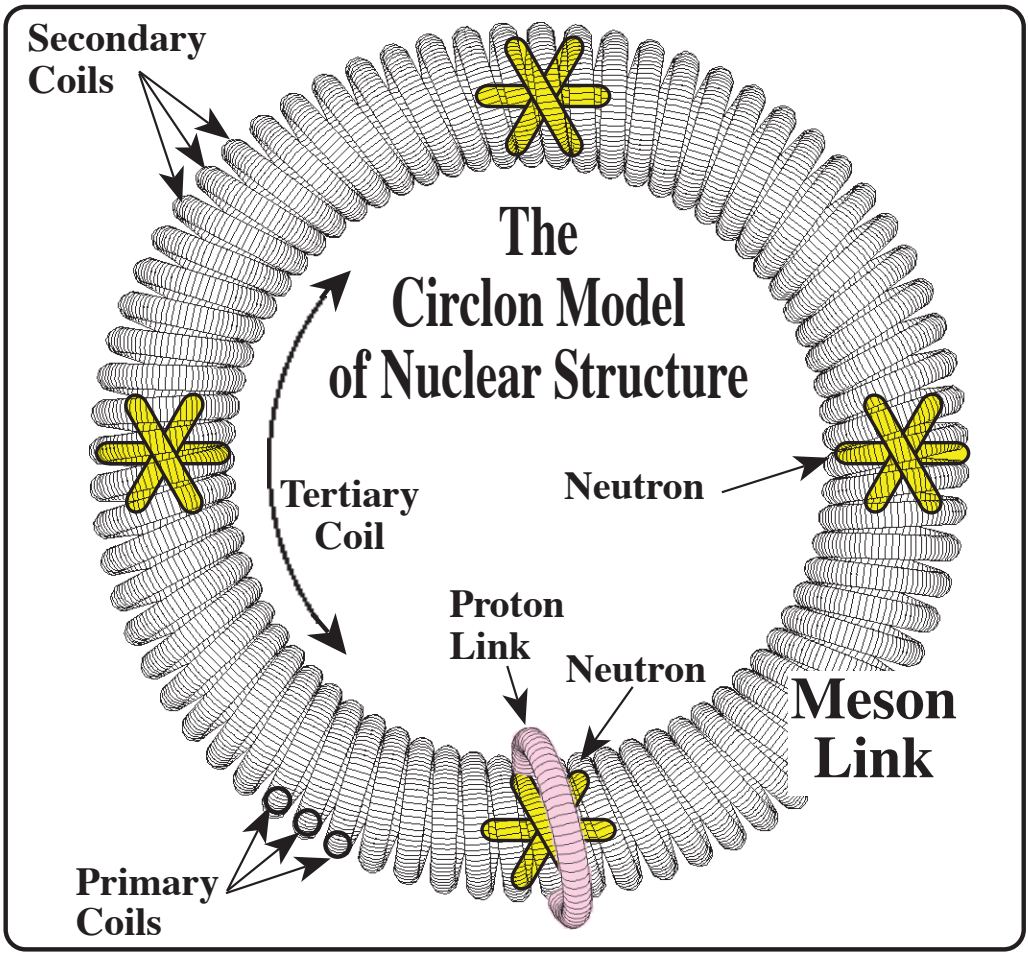


The Circlon Model of Nuclear Structure
by James Carter

The nuclear structures of the elements are formed by the mechanical interlocking of four particles of matter. These are Protons, Mesons, Neutrons, and Antineutrinos. The antineutrino is an internal structure within the neutron and is not shown in these mechanical diagrams of atomic nuclear structure. External electrons which mechanically attach to the mesons are also not shown. In these models, the protons, mesons, and neutrons, fit together like jigsaw puzzles and are held together mechanically somewhat like nuts and bolts. Metaphysical fields and forces such as the strong and weak forces are not assumed or needed in this explanation of nuclear physics. By following a few structural rules the most common and most stable nuclear isotope of each element is formed in a step by step process that also provides unique structural models of each of the 2000 or more radioactive isotopes that have been discovered.

The Circlon Shape

All particles of matter, are combinations or configurations of four basic stable particles. These are protons, electrons, photons, and neutrinos. All of these particles can be created when other particles of matter collide with one another at velocities near the speed of light. Each new particle is always created with an exact opposite antiparticle. These are the antiproton, positron, photon, and antineutrino. All eight of these particles are constructions of two basic kinds of hollow string that have mass, dimension, and shape. Particles with positive charge like protons and positrons are composed of positive magnetic string and particles with a negative charge like electrons and antiprotons are composed of negative electric string. Each photon is composed of an equal piece of both electric and magnetic string. Neutrinos are composed of a piece of magnetic string and antineutrinos are made of electric string.

To form the physical structure of each particle, this cosmic string is wound into several series of different sized coils that form a structure called a circlon shape. The circlon has the basic shape of a torus that is composed of several series of smaller structures with the circlon shape. The circlon has a *tertiary coil* that is composed of smaller circular-shaped *secondary coils* that are composed of smaller circular shaped *primary coils*. At this point we may assume that these coils are composed of a hollow string, which is the fundamental component of reality.

The circlon shape is fundamental to particles of matter in the universe. It exists in essentially two varieties; the proton (positive string) and the electron (negative string). These are identical except for oppositeness in internal spins (charge) and a difference in scale. The electron is 1,836 times larger than the proton and the proton is 1,836 times more massive than the electron.

The Electromagnetic Charge Chain

Protons and electrons are totally mechanical particles of matter that must touch to interact. It was long considered that each particle was attached to its own electromagnetic field that could be extended far out into the space around them. Instead of fields, the circlon shaped protons and electrons have potential sizes that are unlimited in scope. Once formed, protons and electrons immediately extend their size by creating a single chain of progressively larger links with the proton or electron at one end and the direction of infinity at the other. These chains never get close to infinite length because they soon interact with the single chain of another proton or electron. As soon as a proton and electron connect, their chains switch from expansion to contraction and they are pulled together. As the links in the chain get progressively smaller, the last links at the end of each chain combine to emit a pair of photons as the next smaller links in the chain connect. As the atom gets smaller and smaller it emits photons of shorter and shorter wavelengths. Each time an atom emits a photon it gives up a unit of angular momentum ($I\omega = h/2\pi$). An atom stops emitting photons when the angular momentum between the proton and electron is less than the one unit needed to produce a photon. At this ground state, the charge chains are at equilibrium and the proton and electron maintain a constant distance.

If angular momentum is added to a ground state atom the largest links in its chain will combine to produce photons. The charge chain of the proton has been called the "magnetic field" and the electron's charge chain is referred to as the "electric field".

The proton link is the first link in the proton's chain and contains most of its mass and maintains a position at the far edge of the circlon shaped particle. The meson link is the second link of the proton's chain and within an atom, its size and mass are ($1/\sqrt{\alpha}$) 11.7 times larger and 11.7 times less massive. The mass of a proton is 938 meV and the mass of a free pi-meson is 139.57 meV (938/139.57= 6.721)

A meson link forms spontaneously from within the circlon structure of a bare proton. As soon as the meson link is formed, a third muon link is formed from within the structure of the meson link. An unlimited number of ever larger links will continue to form until the charge chain comes in contact with the charge chain of another particle.

The Meson Link

When protons are bombarded with high energy particles, the meson link can be broken free to become a pi-meson. The pi-meson is more massive than a meson link because it acquired mass from the large amount of energy that it took to break it loose from the proton link. The pi-meson is a well known particle with a relativity long lifetime. It decays when this bare meson link spontaneously forms a second link that transforms it into a muon. A meson is simply a physical part of the proton. Its structure grew from within one of the bare proton's secondary coils. It grows into the next fractal layer of the positive mass string that makes up the circlon shaped mass structure of a proton.

The Neutron

A neutron is basically a Hydrogen atom that is turned inside out. When the bond between a proton and electron are subjected to enough energy, their mutual charge chains collapse to the point where the bare electron becomes trapped inside of the bare proton link. Where the circlon shape of the proton was spinning like a wheel the neutron is now spinning end over end more like a ball. In this condition, neither particle can extend a charge chain out to other particles. The neutron's extra mass comes from the energy that it took to force the electron inside of the proton's structure. This extra mass makes the neutron smaller than a proton. Without a meson link, the neutron is just the right size to fit inside of the secondary coils of another proton's meson link. This forms a deuterium nucleus. A free neutron will decay within about nineteen minutes. When this happens, a proton and electron are not "created". They are simply released from the bond that they shared within the neutron. The extra mass of the neutron is released as the decay energy of the particles.

The meson link is a hollow torus shaped physical structure. It holds the neutron simply because it is rolling around inside of the meson's secondary coils and can't get out. The proton is actually a part of the meson link's secondary coil structure. A proton and meson can be broken apart but they are not separate entities. Cut off a

piece of rope and both pieces are still the same rope.

Neutrons are actually formed inside of a meson link during the process of electron capture. When a nuclear isotope has fewer neutrons than it needs to be stable it will use some of its structural energy to collapse one of its electrons into a proton and form a neutron. I do not believe that a neutron can form in any way except through electron capture within a nucleus. A neutron can also be forced inside of a meson during neutron capture and in the process of nuclear fusion.

The neutrons are like rolling balls within an atom's meson. They remain unchanged within the meson until they undergo beta decay. When this happens, the electron is ejected and the proton remains within the nucleus and generates a new magnetic charge chain that eventually couples to the electric charge chain of an external electron. This process is called beta decay.

The alpha particle (He-4 nucleus) is the most stable and has the highest binding energy of any nuclear particle. Its formation takes preference over the formation of any other nuclei. An extreme example of this is the almost instant decay of Beryllium-8. When the structure of a nuclei is disrupted through a decay or a collision, an alpha particle can form spontaneously and become ejected. An alpha particle exists at the center of every nucleus but a nucleus can contain only one alpha particle. Whenever an alpha particle is formed spontaneously from other weak bonds within a nucleus it is immediately ejected.

Fusion is the process by which an alpha particle is formed or a proton is added to a nucleus. Fission is when the bonds between a proton and a neutron come apart. Beta decay results from the splitting of a neutron back into a proton and electron. In the process of beta decay, there is sometimes enough extra energy for the formation of a positron/electron pair. When this happens, the positron soon couples to an electron to form a Positronium atom. Positronium atoms are very well studied low energy combinations of an electron and positron that exist for a short period of time before they annihilate into a number of photons. Positronium exists in the two spin states. Para-positronium has anti-parallel spins and has a lifetime of (1.25×10^{-10} sec) It decays through the emission of an even number of photons. Ortho-positronium has parallel spins and has a lifetime of (1.42×10^{-7} sec). It decays through an odd number of photons.

It is through radiation chains that protons and electrons interact with one another and are able to produce photons by combining the last links in both chains. However, for the purpose of understanding the Circlon Model of Nuclear Structure, it is only necessary to consider the first two links in the proton's radiation chain. These are the *proton link* and the *meson link*, which together form the *promestone*. The proton link is identical in size to the meson's secondary coils. These three particles are assembled to form the approximately 2,000 nuclear isotopes of all the elements. These isotopes are constructed according to the Rules Circlon Nuclear Structure.

The Rules of Circlon Nuclear Structure

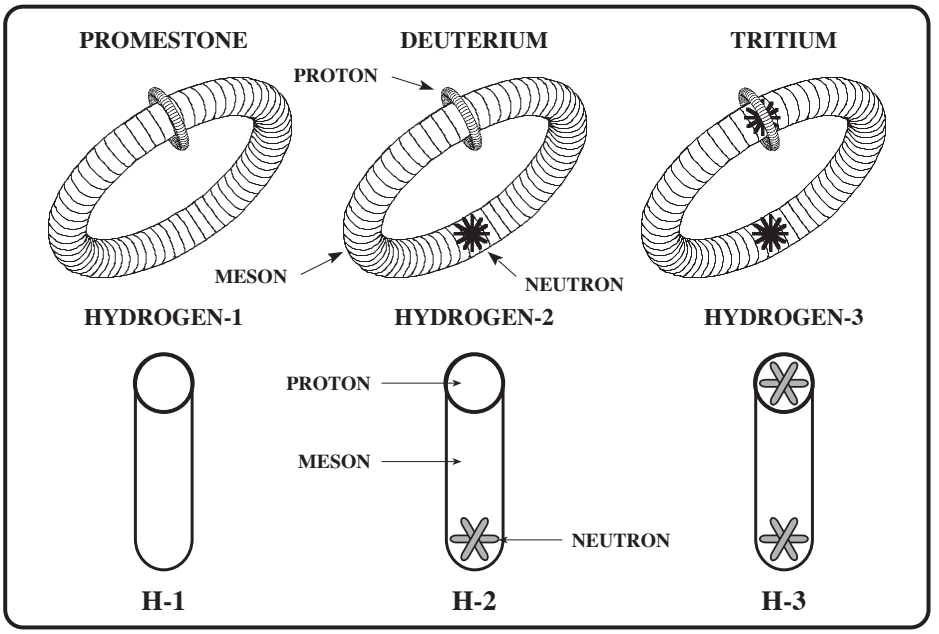
The following Nuclear Structure Rules describe how Promestones are added, one at a time, to form the nuclear structures of successive elements from Hydrogen (#1) through Circlonium (#118).

To form a stable nucleus, one or more neutrons must be added with each Promestone. As the nucleus grows, one element at a time, its structure must obey the Hydrogen and Alpha Center Rules, and, as structural complexity increases, one or more of the ten other rules.

Hydrogen Rule

Each meson has four Nucleon Receptors equally spaced along its circumference. One of the meson's four Nucleon Receptors must always be occupied by a proton. The other three Nucleon Receptors are spaced at 90 degree intervals from the proton. In the hydrogen nucleus, the Nucleon Receptors at 90 degrees from the proton must remain vacant.

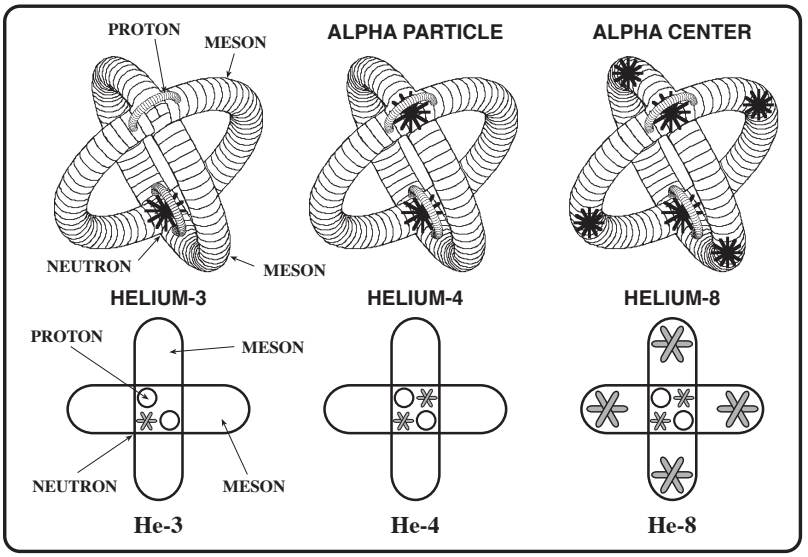
Nucleon Receptors are not physical structures in that they "look" no different from the rest of the meson's circumference; they merely represent the four places where nucleons (protons and neutrons) and other mesons can attach to a meson within a nucleus.



The Alpha Center Rule

The center of each nucleus heavier than Hydrogen is formed by an Alpha Center. The structure of the Alpha Center, which is essentially an alpha particle, consists of two mesons crossed at right angles to one another, with a proton and neutron at each intersection.

The two remaining Nucleon Receptors of each meson are vacant so that the He-4 nucleus has four vacant Nucleon Receptors. These four Receptors all contain neutrons in He-8, which is the heaviest unstable isotope of Helium.



Meson Rules

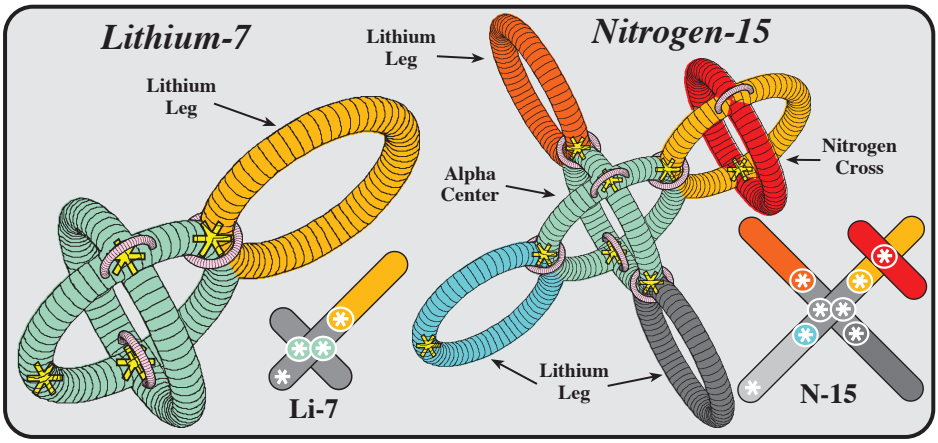
Four simple rules govern the configuration of protons and neutrons within the mesons that form the completed inner structure of all nuclei large enough for the rules to apply.

Rule of Four The two mesons that form the Alpha Center of a nucleus will each contain four neutrons and four protons when their structure is complete. These two mesons will have one neutron and one proton at each joint where they connect. (This rule applies to all elements from Carbon on.)

Rule of Three All mesons outside of the Alpha Center will contain three neutrons when their structure is complete. (This rule applies to all elements from Sodium on.)

Rule of Two Whenever two mesons are joined together at one point they will contain two nucleons (one neutron and one proton) at this joint when their structure is complete. (This rule applies to all elements from Lithium on.)

Rule of One Whenever two mesons outside of the alpha center are crossed so that they are joined in two places, they will have one proton at one joint and one neutron at the other joint when their structure is complete.
(This rule applies to all elements from Nitrogen on.)



Lithium

Lithium forms when a Promestone attaches to one of the Alpha Center's vacant nucleon receptors. This structure is called a Lithium Leg, and all elements except palladium and the noble gases have at least one. This process is repeated in successive elements, until the Alpha Center's three other vacant receptors are filled with Lithium Legs, forming Carbon.

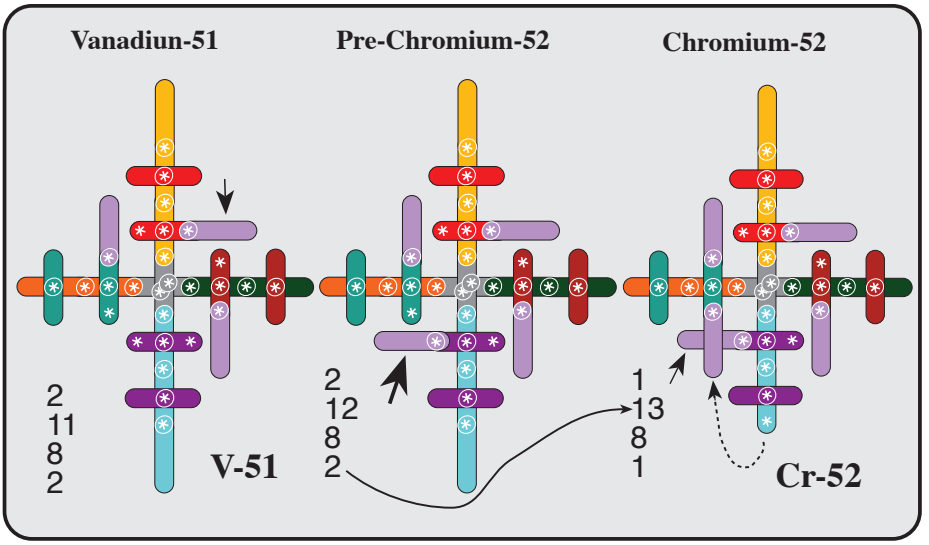
Nitrogen

Nitrogen forms when a Promestone is attached in a cross formation with one of carbon's four Lithium Legs to form a Nitrogen Cross. Lithium Legs and Nitrogen Crosses hold the electrons of an atom's outermost electron shell.

In a Nitrogen Cross, the proton occupies one pair of crossed nucleon receptors, and the neutron occupies the other pair. The Nitrogen Cross is similar in structure to the Alpha Center, except that its structure is complete when it has one proton at one of the junctions of its crossed mesons, and one neutron at the other junction. This process is repeated with successive elements, until the three remaining Lithium Legs are converted to Nitrogen Crosses to form Neon.

At this point, a second Lithium Process begins with Sodium and ends at Argon to form another outer layer of nuclear structure. This step-by-step building of outer layers of nuclear structure is called the Lithium Process. There are five Lithium Processes, ending with Neon, Argon, Krypton, Xenon, and Radon respectively.

A sixth Lithium Process begins with francium and radium, but is interrupted by the third Scandium Process, and cannot be expected to resume formation until Copernicium #112 and then complete that process at element #118 (Circlonium).



The Dual Event Transformation

When a fourth Scandium Ear is added to a Vanadium nucleus, it causes a Promestone from one of its Lithium Legs to immediately move from the third Lithium Layer down into the first Scandium Layer, where it combines with a Scandium Ear to form a Chromium Cross. This is a Dual Event Transformation, and it occurs in the formation of twelve other elements, namely Copper, Niobium, Ruthenium, Palladium, Cerium, Terbium, Gold, Protactinium, Uranium, Neptunium, Plutonium, and Berkelium.

The need for a Dual Event Transformation is indicated in the electron configuration for these elements (see the vertical row of numbers at the lower left of each isotope). These numbers indicate the number of electrons in each of the atom's electron shells. Since each Promestone holds an electron, it shows up in the electron configuration when a Promestone moves from an upper position in the nucleus to a lower one, as the electron held by that Promestone is likewise pulled down into an inner shell.

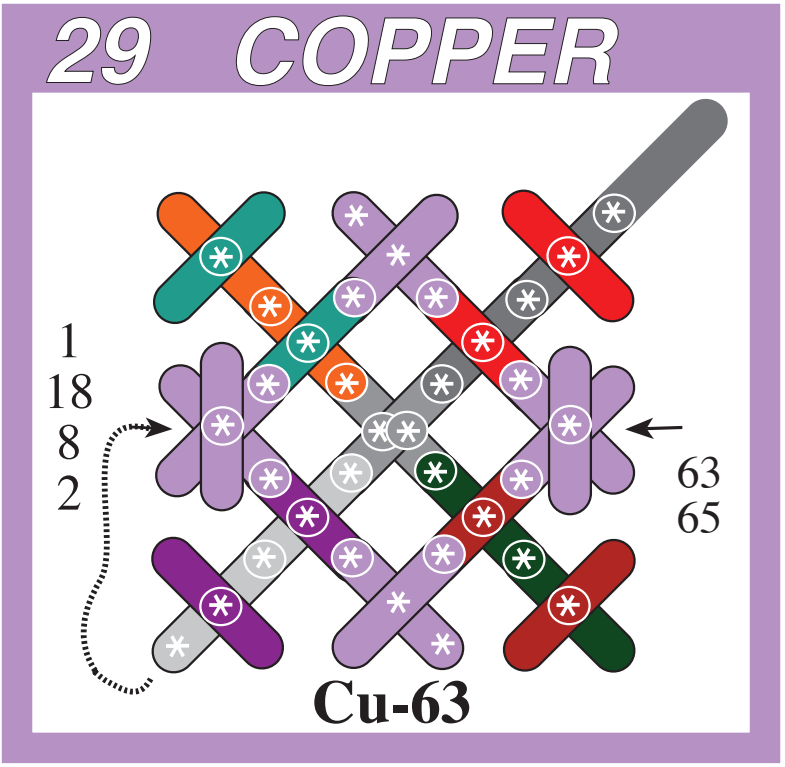
Dual Event Transformation Rules

Chromium Rule Twenty-five percent of any layer of Chromium Crosses must form in one step and be the result of a Dual Event Transformation. Thus, one Chromium Cross is formed in Chromium and two Chromium Crosses are formed in Cerium and Protactinium.

Niobium Rule When a layer of first four, then three, and finally six Scandium Ears are formed, it immediately initiates a Dual Event Transformation, in which a Promestone moves down into the internal structure of the nucleus from a Lithium Leg.

This forms a Chromium Cross in the case of chromium, a fourth Scandium Ear in the case of Niobium, and a seventh Scandium Ear in the case of Ruthenium. This rule is not obeyed by elements heavier than Ruthenium.

This is a copy of the Copper block from the
Periodic Table of the Circlon Model of Nuclear Structure

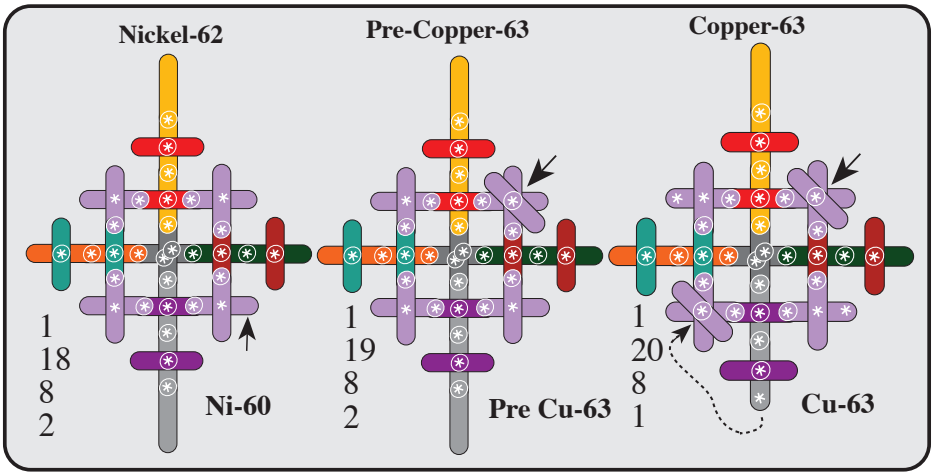


Copper Balls

Like Chromium, Copper is formed in a Dual Event Transformation, when a Promestone is added to one of Nickel's Chromium Crosses to form a Copper Ball. This creates a dynamical imbalance that causes a Promestone to move down from the Lithium Layer to the Scandium Layer, and form a second Copper Ball opposite the first. In a Copper Ball, the third meson is attached to where the two mesons of the Chromium Cross cross and attach to each other. One of these two junctions contains three mesons and a proton, while the other contains three mesons and a neutron. These two Copper Balls both begin and complete the first layer of two Copper Balls. At this point the third Lithium Process resumes with the addition of a Lithium Leg to form Zinc. Copper's two remaining Chromium Crosses do not become Copper Balls until the formation of Palladium.

Copper Rule

Whenever the last ball in a layer of two, four, or eight Copper Balls is formed, it does so as the result of a Dual Event Transformation, initiated by the formation of either the first, the third, or the seventh ball in the layer. This rule applies to Copper, Palladium, Gold, and Roentgenium.

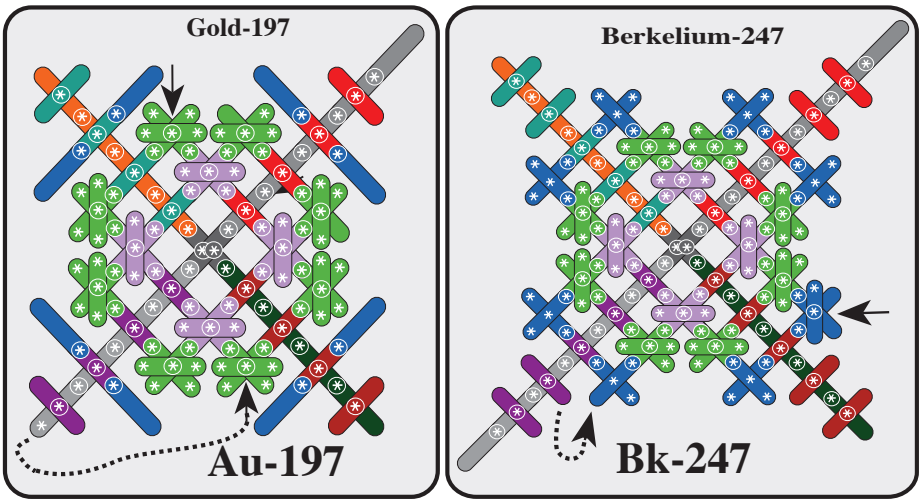


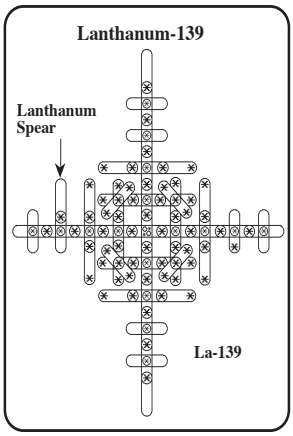
Palladium Rule

The last two balls in a layer of four or eight Copper Balls cannot form until the layer of Scandium Ears of the next Scandium Process has completed its formation. This rule applies to Palladium, Gold, and Roentgenium.

Terbium Rule

Whenever the first ball in a layer of eight Copper Balls is formed, it does so as a result of a Dual Event Transformation, as in the case of Terbium and Berkelium.





Lanthanum Rule

A Lanthanum Spear will always occur in the element prior to the beginning, and completion, of a layer of eight Chromium Crosses. This rule applies to Lanthanum, Gadolinium, Actinium, and Curium.

A Lanthanum Spear, which is essentially a false start at the third Scandium Process, is always a temporary nuclear structure that eventually moves down into the internal nuclear structure in a Dual Event Transformation. Lanthanum is formed when a Promestone is attached to one of barium's Nitrogen Legs to form a Lanthanum Spear.

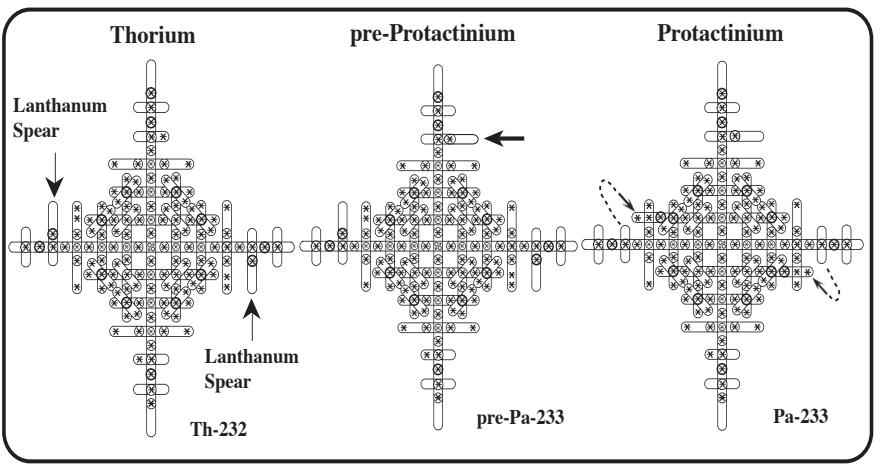
Thorium Rule

In order for the first five Chromium Crosses in the Actinide Group to form, the "pressure" of one Lanthanum Spear must be maintained in the external structure of the nucleus.

When a Promestone is added to a Thorium nucleus, it forms a third Lanthanum Spear. As soon as this resulting pre-Protactinium nucleus is formed, the two other Lanthanum Spears move down into the third Scandium Layer to form two Chromium Crosses opposite each other. The resulting protactinium nucleus is transformed into Uranium by the addition of another Promestone, which first momentarily forms a second Lanthanum Spear and then either it or the Lanthanum Spear opposite falls down into the third Scandium Layer to form a third Chromium Cross.

When a Promestone is added to a neptunium nucleus to form a fifth Chromium Cross, the Lanthanum Spear then moves down to form the sixth Chromium Cross of Plutonium.

This rule applies to Thorium, Protactinium, Uranium, Neptunium. and Plutonium.



NUCLEAR GLOSSARY

Archetope Symmetry Principle

All elements have at least 3 known isotopes and some have as many as twenty-nine. The 112 named elements contain nearly two thousand known isotopes. Of these about 280 are stable or have very long lifetimes. Each element has a particular isotope that is most representative of that element. This archetypal isotope is called the element's Archetope. The primary consideration in determining an element's Archetope is symmetry. An Archtope's balance neutrons must maintain an internal symmetry that matches the Archetopes surrounding it on the periodic table. Most Archetopes obey all three Archetope Rules.

Chromium Cross

The nuclear structure that is formed by the crossing and linking together of two adjacent Scandium Ears.

Copper Ball

The nuclear structure that is formed when a Promestone is attached to a Chromium Cross, at a 45 degree angle to that Cross's two component Promestones.

Dual Event Transformation

Dual Event Transformations occur as interruptions in the natural flow of the Scandium Process. When a Dual Event Transformation occurs, the Lithium Process moves one step backwards, enabling the Scandium Process to move two steps forward. They occur at the beginnings and endings of layers and sub-layers in the internal nuclear structure. One explanation of why this occurs, is that the weight of the external nuclear structure is too great for the resistance of the internal nuclear structure, and a Promestone from the external structure "falls" into the internal structure.

Lanthanum Spear

The nuclear structure formed when a Promestone is attached to the side of one of the legs of a nucleus. A Lanthanum Spear is just like a Scandium Ear, except that it attaches farther out on the nuclear leg while it "waits" to migrate down into the internal nuclear structure, to join with a Scandium Ear, to form a Chromium Cross. Lanthanum, Gadolinium, Actinium, Protactinium, Uranium, Neptunium, and Curium each have one Lanthanum Spear, and Thorium is the only element with two.

Lithium Leg

The nuclear structure formed by the attachment of a Promestone to one of helium's vacant nucleon receptors. This process transforms an alpha particle to a lithium nucleus. All elements except the noble gases and Palladium have at least one Lithium Leg in their outer nuclear structure.

Lithium Process

The sequence by which an outer layer of nuclear structure is formed. This is a two-step process, in which first a layer of four Lithium Legs is formed, and then each is transformed into a Nitrogen Cross with the addition of a Promestone.

Meson

The second link in a proton's radiation chain. In the nucleus of the atom, the neutrons fit within the secondary coils of the mesons, and lock the nucleus together.

Nitrogen Cross

The nuclear structure that is formed by the attachment of a Promestone at right angles to the Promestone that forms a Lithium Leg. From Nitrogen on, all elements contain at

least one Nitrogen Cross in their outer structure, except Silicon, Germanium, Tin, and Lead.

Nucleon Receptors

The four places on the meson where it can attach to protons, neutrons, and other mesons. A proton is always located at one of a meson's Nucleon Receptors and the others are located at 90 degree intervals from the proton.

Promestone

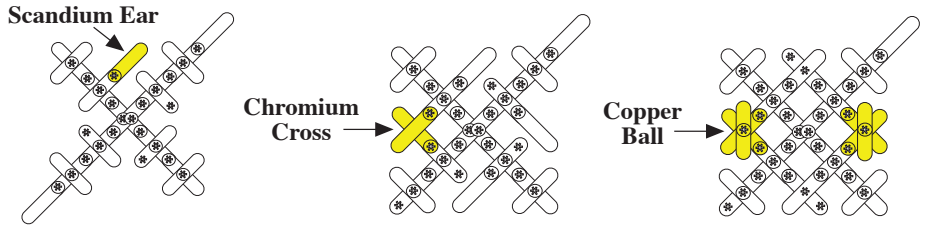
The first two links in the proton's radiation chain. The Promestone is the nucleus of the Hydrogen-1 atom, and as such, along with the neutron, is the basic building block of all the elements. A Promestone with a neutron trapped within the secondary coils of its Meson link is a Deuteron, or Hydrogen-2 nucleus. A Promestone with two neutrons is a Triton, or Hydrogen-3 nucleus.

Scandium Ear

The nuclear structure that is formed when a Promestone is attached to the side of one of the legs of a nucleus and becomes part of its internal nuclear structure.

Scandium Process

The sequence by which an internal layer of nuclear structure is formed. This is a three-step process, in which first a layer of Scandium Ears is formed, which is then converted into a layer of Chromium Crosses, which is then converted into a layer of Copper Balls.

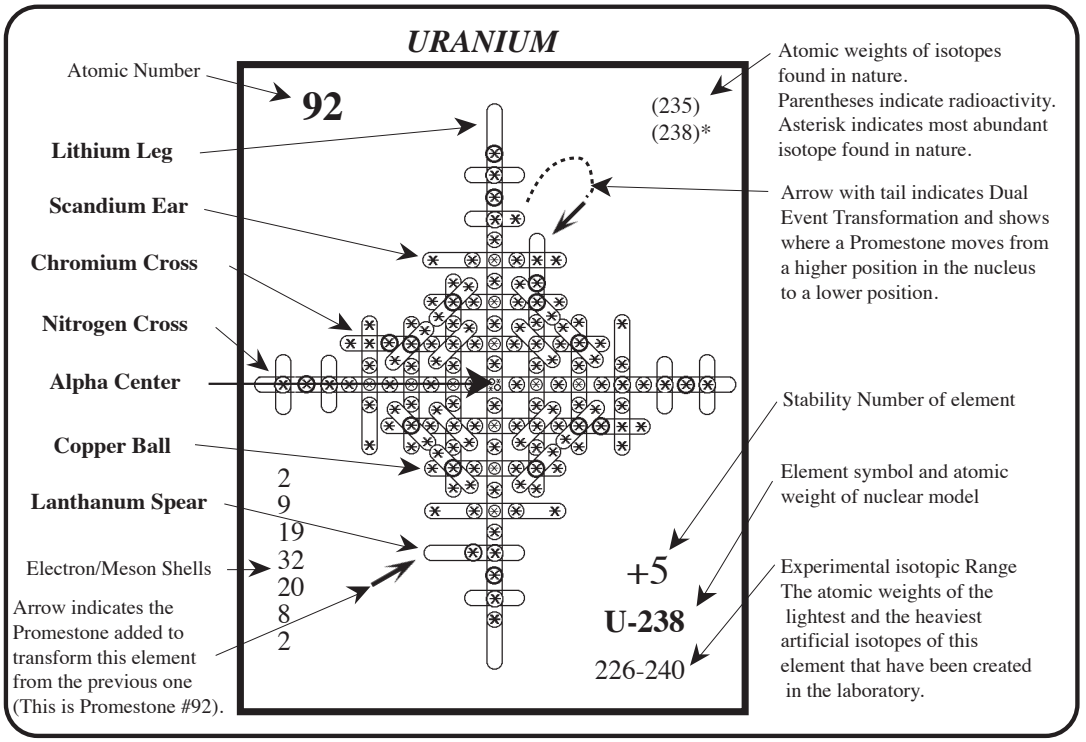


Nuclear Stability Number

The idea of the Nuclear Stability Number is a new concept for the classification of the structure of atomic nuclei. It is a very simple system that matches nuclear structures with a superior degree of accuracy. This system fits the whole range of elements very well. Elements that fall outside of these rules have what are called Stability Anomalies, and provide a means of testing the idea of circlon nuclear structure. These anomalies must be explained in terms of the unique nuclear structure of the elements exhibiting them.

The Stability Number for each element is the increase in mass that its Archetope has over the Archetope of the previous element. This difference in mass is measured in whole units of proton or neutron mass.

For most elements, the Archetope is quite unambiguous, since almost half of the elements have either only one stable isotope or no stable isotopes, and thus only one longest-lived isotope. For most of the other elements with more than one stable isotope, the choice of Archetope is quite straightforward, since the relative natural abundance of the various isotopes of a particular element will usually, quite overwhelmingly, point to a single isotope. These most abundant isotopes almost invariably match the neutron patterns of the Archetopes closely associated with their particular element on the periodic table.



Archetope Rules

1. The Atomic Weight of Archetopes will be even for even numbered elements and odd for the odd numbered elements.

2. The Archetope of an element is that isotope which is most abundant in nature, or in the case of elements which have no stable isotopes, it is the longest lived isotope.

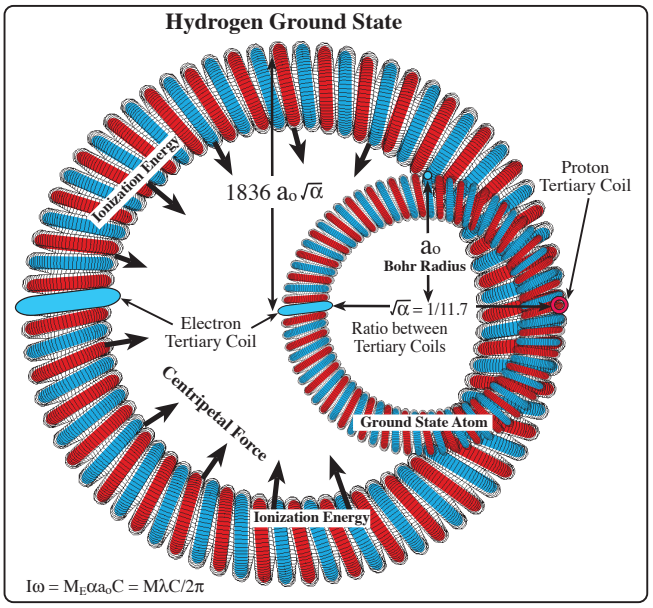
Number Rules

1. The Stability Number of odd numbered elements to Arsenic is +3, and the Stability Number of odd numbered elements from Arsenic on is +1.

2. The Stability Number of even numbered elements up to Zinc is +1, and the Stability Number of even numbered elements from Zinc on is either +3 or +5.

Stability Anomalies

Any element that violates either the Stability Number Rules or the Archetope Rules has a Stability Anomaly which must be explained in terms of that element's unique nuclear structure, and also in terms of that element's place in the sequential process of nuclear structure.



When the electron and proton couple together they begin to wind down as they produce photons from ionization energy and release units of angular momentum.

The atom reaches equilibrium and stops producing photons when it reaches the Bohr radius a_o and the secondary coils of the electron mesh with the proton's tertiary coil. The ratio between their tertiary coils is $\sqrt{\alpha}$.

