

TECHNICAL PRESS RELEASE

First Man Made Neutrons Synthesized

Neutrons, originally believed to be fundamental atomic particles, were synthesized from hydrogen on July 12, 2003 by a research team under the direction of William Gray. The 11 month project was based on research by Gray which predicted that neutrons are 0.78233 MeV quantum states of hydrogen atoms by incorporating relativistic and magnetic energy effects into Bohr's analysis of hydrogen atoms. (The theory, "Lab Notes - A Unitary Field Theory," has 3 parts: The Superposition States of Planck's Constant, Radioactive Decay, and Electrons, Neutrinos and Mesons, and is available at mqnf.com)

A neutron decays into a proton, electron, anti-neutrino and 0.78233 MeV in energy. Under equilibrium the 0.78233 MeV divides equally between the kinetic, electric and magnetic energy domains to yield a 2.76136 fm Bohr orbital electron radius (magnetic field energy is orthogonal to the orbital plane and does not affect radius). Since the 0.78233 MeV also increases electron mass 2.531 times it causes relativistic contraction of the 2.76136 fm orbital by 2.531 to form the actual 1.091 fm neutron radius that independent observers see.

To validate this reasoning the correct proton and neutron magneton values were calculated by showing that, while mass reduces magnetic moment, lower energy density increases a particle's magneton value by reducing its internal relativistic contraction and changing its permeability relative to surrounding space. Since protons are 4.837 times less dense than electrons their magneton is $4.837/3^{\frac{1}{2}} = 2.7928$ times greater than the calculated nuclear magneton based on mass.

As a quantum hydrogen state the neutron's orbital electron behaves as a negative surface charge with proton mass and density center so it has a negative magneton value. Because the electron's observed 1.091 fm surface radius is 2.531 times less than its actual 2.76136 fm radius the proton's 4.387 lower density is factored by the 2.531 relativistic contraction to yield a -1.9111 neutron magneton value.

Normally orbitals have a spin-1 angular magnetic moment. However in neutrons the 0.78233 MeV energy contracts the distance between the electron orbital and proton surface. Since observers can only see the orbital's surface, the mass center relativistically shifts from a 2.76136 fm to 1.091 fm center from the surface. On the particle's other side the relativistic orbital shift is away from the observer so the neutron mass center appears 1.091 fm from its surface while the generated magneton appears at 2.76136 fm. The electron, proton and orbital $\frac{1}{2}$ -spin magnetons combine to a $\frac{1}{2}$ -spin neutron magneton.

On a neutron's decay the $\frac{1}{2}$ -spin relativistic orbital contraction is conserved as a $\frac{1}{2}$ -spin electron anti-neutrino. From our perspective the electron has a 1.091 fm orbital radius but from its perspective it has 2.76136 fm radius with a proton 1.091 fm away because of the

0.3951 relativistic contraction. So instead of falling 2.76136 fm and traversing 2.76136 fm, it falls 2.76136 fm and traverses 1.091 fm because of the added relativistic angular momentum effect.

Geometrically this gives it a $\tan^{-1} (2.76136/1.091) = 68.44^\circ$ angle of curvature, instead of a normal $\tan^{-1} (2.76136/2.76136) = 45^\circ$ for orbitals, or an added $68.44^\circ - 45^\circ = 23.44^\circ$ degree of curvature. The natural state of an electron in a Bohr orbital is -13.6 eV with a 45° angle of curvature. On decay, the neutron's electron returns to this ground state, its 0.78233 MeV coulomb, kinetic and magnetic energy releases, and its added $\frac{1}{2}$ -spin 23.44° angle of curvature orbital energy releases. This last energy forms the neutrino but it can't be seen solely in terms of the electric and kinetic energies.

The premise behind Gray's Unitary Field Theory is that a continuous relation exists between energy, space, time and kinetic, electric, magnetic and relativistic energy forms. By using Einstein's $ds^2 = dx_1^2 + dx_2^2 + dx_3^2 + dx_4^2 = 0$ and $ds^2 = 1/\mu\nu \sum g_{\mu\nu} dx^\mu dx^\nu$ Euclidean and Reimannian space equations it was shown that during transition phases the energy fields extending beyond the geometric boundaries of matter may be described by a relativistic fractal calculus and during stasis phases the potential energy difference between two quantum states equals the sum of these transition region energies.

More simply, this means that matter forms a recursive pattern, from photons to particles, atoms, molecules, etc., and as Wittgenstein stated, "The totality of existent atomic facts is the world." The math, "Recursive Mathematical Modeling," utilizes the principles that in an evolving recursive pattern, a, b, c, d..., each element adds permuted behaviors, a, ab, ba, abc, etc., that depend on the behaviors in prior elements. These behaviors define the elements in a series because they are differentiations of the characteristics of the elements and the elements are integrations of the behaviors.

Specifically these principles were used to determine the neutrino's behaviors. Bohr didn't include relativistic or magnetic energies in his analysis because they weren't significant compared to electric and kinetic effects. But they are permuted behaviors, and in the neutron analysis the magnetic energy is significant since it is 1/3 of the total 0.78233 MeV energy. The kinetic and electric energies determine the 2.76136 fm radius but it's the relativistic effect of all 3 energies, the total 0.78233 MeV, that results in the 1.091 fm neutron radius. And it was the significance of the relativistic and magnetic behaviors in the neutron's structure that led to discovery of the proton density permeability effect on the neutron magneton.

Similarly, the neutrino energy was determined to result from decay of a 3-dimensional relativistic to a 2-dimensional classical energy by the relativistic differentiation of an $x^3/3$ to $x^2/2$ energy form with reduced magnetic and orbital angle of curvature behaviors. The 3-dimensional 0.78233 MeV energy decays to a 2-dimensional hydrogen ground state because the electron goes from a 1.09×10^{-15} m orbital with a 0.3951 contraction to a classical 0.529×10^{-10} m orbital with the proton permeability effect reduced by 2×10^5 . So a 3-dimensional

kinetic, electric and magnetic 0.78233 MeV relativistic energy goes to a 2-dimensional electric and kinetic energy, 13.6 eV each with a combined $(2 \times 13.6^2)^{\frac{1}{2}} = 19.2$ eV 2-dimensional resultant value.

The neutrino is the residual in the relativistic 3-dimensional to classical 2-dimensional energy transform, like a complex variable's "imaginary" domain component. All information (i.e. energy, angular momentum, etc.) conserves in energy transforms so a neutrino is the 3rd dimension's energy if the classical 2-dimensional 19.2 eV was a relativistic 3-dimensional one, or $19.2^{1/3}/0.3951 = 6.78$ eV. Since this energy has a $\frac{1}{2}$ -spin effect on a spin-1 orbital, neutrinos are $\frac{1}{2}$ -spin energies, like relativistically contracted propellers with Left-Hand-Rule rotation about the axis of motion, since it derives from an orbital electron, as Lee and Yang measured in 1957.

A neutrino also has mass, or momentum, but is massless to observers because its energy oscillates. This is the basis of negative energy wells and nuclear binding. An inertial mass creates a contraction gradient in its direction of motion. In an oscillation it creates contraction gradients in both directions that persist after the mass reverses direction because of relativistic time dilation. The faster it oscillates the stronger this attraction force, but since its inertial moments are equal and opposite they cancel so no net mass increase occurs as energy is added. When attraction increases without mass increase a negative binding energy well results.

This concept was used to derive the nuclear binding energies based on the "neutron" quantum state of hydrogen model. A deuterium model was developed in which the neutron's electron resonated between it and a proton that resulted in a negative binding energy well that calculated to within 1% of its empirical 2.224 MeV value and formed a relativistic separation gap of 0.3951 fm. The deuterium bond was then applied to 2 and 3-dimensional structures to calculate tritium and helium-3 and 4 bonding energies to within 1% of their values. And a general $3^{1/d} (p \times 2.224)^n$ binding energy equation was derived where d, p and n are the dimensions and proton and neutron numbers.

These helion-triton models were used to calculate binding energies and magnetons, along with correct spin values, for 9 neutron-proton configurations (H-2, H-3, He-3, He-4, Li-6, Li-7, C-12, C-14, N-14) to within 1% of their empirical values. Gray's theory also derived the origin of the tau, pion and muon energies from nuclear orbital electron quantum states, showed why their decay paths occurred, and calculated their neutrino energies. The theory also explained why only matter, not antimatter, forms in the Universe and why only low energy thermal radiation escapes from Black Holes.

The synthesis of neutrons on 7/12/03 from specific energy electrons and protons verified the neutron model and the underlying relations between the inertial, electromagnetic and nuclear forces developed in Gray's Unitary Field Theory.