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#### ABSTRACT

We propose a simple universal theory/model of the atom composed of anti-neutrons, electrons, positrons, and neutrinos which better explains fusion, fission, radioactivity, electromagnetic radiation, gravity, electric force, magnetic force, and the strong force.

REFERENCES: Not So Fast, Dr. Einstein, by Glenn A. Baxter, P.E. [www.k1man.com/b](http://www.k1man.com/b) and [www.k1man.com/c](http://www.k1man.com/c)

Ernest Rutherford from New Zealand, and working in England when he discovered that most of the mass of an atom was contained in the nucleus, was uncomfortable with elaborate theories and was known to say that he did not want to hear any physics that could not be explained to a barmaid.

The so called "Standard Model" of matter is just such an elaborate theory, yet it does not elegantly explain why four hydrogen atoms (four protons with their four electrons) can combine in fusion (like in the sun) to form a helium atom with its two protons and their electrons plus two neutrons, given that helium is lighter than the original four hydrogen atoms yet the two neutrons in helium are heavier than protons.

The anti-neutron model of the atom, introduced here for the first time, does explain all this plus much more. All matter is composed of anti-neutrons, electrons, positrons, and a host of neutrinos. All these particles exhibit a quantum quantity of energy called "spin" in units and half units of Planck's constant divided by  $2\pi$  known as " $\hbar$  bar." An anti-neutron (spin 0) and a positron (spin  $\frac{1}{2}$ ) form a proton (spin  $\frac{1}{2}$ ). An anti-neutron (spin 0) and an electron (spin  $\frac{1}{2}$ ) form an anti-proton (spin  $\frac{1}{2}$ ). An anti-neutron (spin 0) plus an electron (spin  $\frac{1}{2}$ ) and positron (spin  $\frac{1}{2}$ ) form a neutron (spin  $\frac{1}{2}$ ) plus a neutron neutrino (spin  $\frac{1}{2}$ ). An electron (spin  $\frac{1}{2}$ ) and a positron (spin  $\frac{1}{2}$ ) form a photon (spin 1). All other elementary particles are either contained within the anti-neutron itself, or are formed by combinations of particles within the anti-neutron plus electrons and positrons. That's it!

Note that the so called anti-neutron discovered by Bruce Cork in 1956 has a reported spin of  $\frac{1}{2}$  and an isospin of  $\frac{1}{2}$ . The effective spin of the anti-neutron in this model is defined as  $\frac{1}{2}$  minus  $\frac{1}{2} = 0$ . The Bruce Cork anti-neutron lives in the "Standard Model" anti quark domain, but the newly defined anti-neutron described here lives in the "Anti-Neutron Theory/Model of the Atom" domain.

When four hydrogen atoms combine to form helium in the fusion process, two positrons are excited into higher energy levels and annihilate the two electrons of its atoms to leave behind two anti-neutrons in a nucleus which attach to the nuclei of the other two hydrogen atoms to form helium, the new nucleus being held together by the strong force. Since the two positive protons in the new nucleus

strongly repel each other by electric forces, there remains substantial fission energy (like a compressed spring) in the helium nucleus that was obtained (squeezed in) during the original fusion process.

The helium atom formed in fusion is quite a stable atom and, indeed, the helium nucleus is actually a particle in its own right, the alpha particle referenced above, first observed in 1896 when Henri Becquerel noticed that tightly packaged photographic plates were being fogged by radioactive uranium ores. Also being ejected from the uranium were electrons which were called beta "rays."

Now in a star, further hydrogen atoms experience fusion, some completely to form anti-neutrons, and some less completely to form ordinary neutrons. In the neutron forming process, rather than positrons being excited up to combine with electrons, the electrons drop down in energy level, do not annihilate with a positron, and do not form the very high energy annihilation photon which carries off great energy plus the photon spin energy of 1. They stick together by the strong force, and this builds up all the higher elements which contain protons, anti-neutrons, and neutrons. The ordinary neutrons are less stable, and some eject electrons (beta "rays") and antineutrinos during beta decay (the electrons were being held in by the so called weak force which, in the anti-neutron model, is actually just an ordinary electric force such as positive being attracted to negative) thus transmuting the atom to the next higher element since the ordinary neutron thus becomes a proton. Other neutrons combine their electrons with their positrons, emit photons, become anti-neutrons, and thus form more stable (lower energy) isotopes of the same element.

In uranium fission (like the Hiroshima bomb), a neutron smashing into the uranium atom splits it apart, and this releases huge electrostatic energy (as opposed to commonly and incorrectly assumed  $E = MC^2$  energy) as the positive pieces strongly repel and violently separate. During this mayhem, many other re-combinations occur, including the shooting out of ordinary neutrons, which strike other uranium atoms and cause the well known chain reaction and also leave a rather radioactive mess behind. Radioactivity is simply neutrons slowly changing to (lower energy) protons and/or anti-neutrons.

Anti-neutrons only exist inside the nucleus. Theoretically, a proton could decay by ejecting a positron to become an anti-neutron, but proton decay has never been observed. Similarly, a proton could absorb an electron to become a free neutron, and free neutrons are fairly common. The closest you can probably come to observing an anti-neutron is as a component part of an alpha particle or helium nucleus, referenced above.

The Copenhagen interpretation of quantum physics is that if something cannot be measured or seen, it does not exist and should not even be discussed. The elementary particle zoo of hundreds of observed atomic particles is just that sort of thing which is covered by the all encompassing anti-neutron. You can smash sub atomic particles together and create all sorts of these observed sub atomic particles as shattered pieces and recombinations of those pieces together with electrons, positrons, and neutrinos, but we will never be able to figure out how such pieces fit together internally to construct the anti-neutron according to the anti-neutron theory or model. Any particle that does not seem to fit within

this model can be considered to be “rogue particles in waiting” which will perhaps someday reveal some role that they might have to play in the scheme of things in particle physics.

## THE MISSING HIGGS PARTICLE

Still missing in the so called “Standard Model” is finding the Higgs particle (the “God particle”) which, like the anti-neutron, is postulated to also have a spin of 0. Note that in the anti-neutron model of helium, the two positively charged (and therefore strongly repelling) protons are apparently held together by the strong force in the presence of the two anti-neutrons, also in the nucleus. The anti-neutron (and ordinary neutrons, for that matter) thus seem to be intimately associated with the strong force as well as being a majority contributor to the atom’s mass as is also postulated for the Higgs particle. It could be that we have thus found the Higgs particle after all. The Higgs particle is simply the anti-neutron, right in front of our noses!

## NUCLEAR FUSION CALCULATIONS

A proton has a mass of 938.3 MeV and a positron has the same mass as an electron of 0.511 MeV. An anti-neutron, therefore, has a mass of 938.3 MeV minus 0.511 MeV = 937.789 MeV. So, four hydrogen atoms combine as follows in the fusion process:  $4(938.3)$  hydrogen atoms  $>$   $2(938.3)$  hydrogen atoms +  $2(937.789)$  anti-neutron atoms + 2 photons. Notice that the helium atom on the right hand side of this equation is lighter by the masses of an electron and a positron which have combined and thus annihilated their two masses completely to form 2 photons of pure energy which just happens to agree with Dr. Einstein’s postulated (for the wrong reasons) formula,  $E = MC$  squared. See [www.k1man.com/b](http://www.k1man.com/b) and [www.k1man.com/c](http://www.k1man.com/c)

# FORCES

The fundamental forces, in order of strength, are gravity (10 to the 40<sup>th</sup> as strong as the so called weak force), the so called weak force (1/1000 the strength of electric or magnetic forces), the electric force, the magnetic force, and the strong force (forty times stronger than the electric or the magnetic force). As seen above, the weak force is just an electric force, and the term and concept of the weak force is really superfluous. Thus, the anti-neutron model of the atom uses only gravity, electric, magnetic, and the strong forces.

## GRAVITY

There are actually three kinds of gravity. First is ordinary Newtonian gravity that is caused by matter, just as certain types of matter cause electric forces. The second type of gravity is caused by linear acceleration (such as being thrown back in your airplane seat). The third type of gravity is caused by circular motion (such as whirling a tennis ball around at the end of a string). Contrary to Dr. Einstein, linear acceleration gravity and Newtonian mass caused gravity are not equivalent because they are not EXACTLY the same. Mass caused gravity gets weaker as you go away from the mass causing it, or opposite to the direction of the gravity force. Linear acceleration gravity does not weaken as you move in the opposite direction to the direction of the gravity force. Circular motion caused gravity does weaken as you move in a direction opposite to the direction of the gravity force. But gravity seems, nevertheless, to be closely related to motion, and that is why gravity bends light in the same way that motion appears to bend light. It is unclear just how gravity is able to work, and both Newton's and Dr. Einstein's models of gravity just explain what gravity does without explaining how gravity does it. Nor do Maxwell's equations explain how electric and magnetic fields do what they do. Dr. Feynman's diagrams show what particles and so called photons appear to be doing but do not explain how the particles and so called photons manage to do it. Dr. Einstein's geometric model of gravity is a bit more precise than Newton's classic model that is, nevertheless, a very accurate model of gravity and was good enough to get astronauts to and back from the moon. Dr. Einstein's artificial concept of curved space does, however, seem to show that the path of travelling light energy, without mass (so called photons), is bent, since the light, without mass, is simply following a straight line in what is postulated to be curved space which is somehow curved by the presence of mass.

The similarity between gravity, accelerated motion, and the bending of light is intriguing, however. Imagine being in a space ship accelerating upward. A light beam shined crosswise inside the ship would appear to bend downward just as the same beam would also appear to be bent by gravity if the ship were subject to ordinary gravity by simply sitting on the surface of the earth or some other massive body.

But since ordinary mass gravity is not really equivalent to acceleration gravity as Dr. Einstein suggests, this intriguing similarity between accelerated motion and ordinary gravity does not provide any more of an understanding than his curved space explanation does. Mathematically describing a geometrically curved space is one thing, but just how matter generates such curving of empty space is a mystery just as great or greater than what is trying to be explained in the first place.

Dr. Einstein spent his entire life trying to unify the forces of gravity with electric and magnetic forces, but without any success. Dr. Einstein paid little or no attention to the strong force and died long before the foolishness about the so called weak force was invented and Nobel prized time and again.

## ELECTRIC AND MAGNETIC FORCES SIMILAR TO GRAVITY AND THE STRONG FORCE

Electric forces seem to be invisible forces of attraction and repulsion. Plus and minus charges attract. Plus and plus or negative and negative repel. Similarly, magnetic forces both attract and repel. Gravitational forces caused by mass only attract. Gravitational forces caused by linear acceleration and

circular motion can both attract and repel. How these forces manage to accomplish these attractions and repelling is unclear, even in the standard model, if not much more unclear in the standard model. It is not surprising that how the strong force manages to exert its attractive influence on positively charged protons as well as anti-neutrons and ordinary neutrons in the nucleus is equally if not even more unclear. No theory really explains how any of these forces work satisfactorily. They explain what they do and how much they do it but not how they do it.

See also [www.k1man.com/t](http://www.k1man.com/t) (110710 12:55P updated 110711, 110712, 110713, 110715, 110716)

## ELECTROMAGNETIC RADIATION

A steady electric current through a wire causes magnetic field “lines” at right angles to the direction of flow of the current and circling around the wire. This is Ampere’s law. But a steady electric current through the primary of a transformer will not cause a current to flow through the secondary of the transformer. There is induction from primary to secondary only when the primary current is changing, thus causing a change in the magnetic field, according to Faraday’s law:  $E = -d(\phi)/dt$

Now consider fig.1. An alternating voltage and thus alternating current (ac) at some radio frequency is applied at the center of the half wave dipole antenna at the left of the diagram. Through infinitesimal segment  $ds$  flows the current  $di/dt$  thus giving rise to a magnetic line of force being generated which “moves” (at the speed of light) from left to right until it strikes the other dipole wire at the right of the diagram at the corresponding infinitesimal length  $ds'$ , thus generating an identical but weaker current,  $di'/dt$  at that point. The net result of this system is an exact reproduction at the “receiver” connected to the right hand dipole of the signal that was applied to the center of the left hand dipole in fig. 1.

$di/dt$  consists of many electrons being accelerated and decelerated, and thus, the “travelling” magnetic field attributed to a single one of those electrons through one complete cycle would be what we call a photon. The frequency of the “radio” signal applied to the dipole at the left is quite similar to the “frequency” of “light photon” as calculated by  $e = hf$ . The energy ( $e$ ) of a radio photon is quite low as compared to the light, X-ray, or gamma ray photons which are generated by non free electrons associated with atomic activity. In the case of light, the activity is electrons changing their “orbital” energy levels which give rise to most chemical reactions. In the case of X-rays and gamma rays, the activity is electrons changing much greater energy levels within the nucleus. The idea of “orbits” (outside of the nucleus) is a huge stretch but serves well as a model for chemists to use to explain chemical activity, rather well actually. Explaining nuclear activity is similar, with the same idea of electrons changing energy levels. The basic idea is that a faster accelerating or decelerating electron is responsible for the higher energy “photons” as calculated by  $e = hf$ .

We have a way (above) of gradually turning a magnetic field on and off. The field exhibits its influence at a distance at the speed of light, as we measure the speed of radio “waves” and the speed of light

“waves.” As we have seen, radio and light are not really waves at all but rather a “moving” magnetic field which spreads out as the distance increases, a full cycle of the originating accelerating, decelerating, reversing direction and accelerating and decelerating being called a “photon” or single “packet” of moving energy and also a wave. This is how a single photon can go through two separated slits in Young’s experiment. A photon doesn’t really become a complete photon until its expanding magnetic line of force finds an electron to act upon. Coming out of the other side of the two slits in Young’s experiment, are two “new” moving magnetic fields which can interfere like waves when encountering a receiving electron.

If we could turn an electric field and a gravitational on and off in a similar manner, we would find that the field lines of force also travel in a similar manner at the speed of light.

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