FUSION AND BETA DECAY BOTH INVOLVE ELECTRON - POSITRON ANNHILATION AND *PAIR PRODUCTION* *Glenn A. Baxter, P.E.,*
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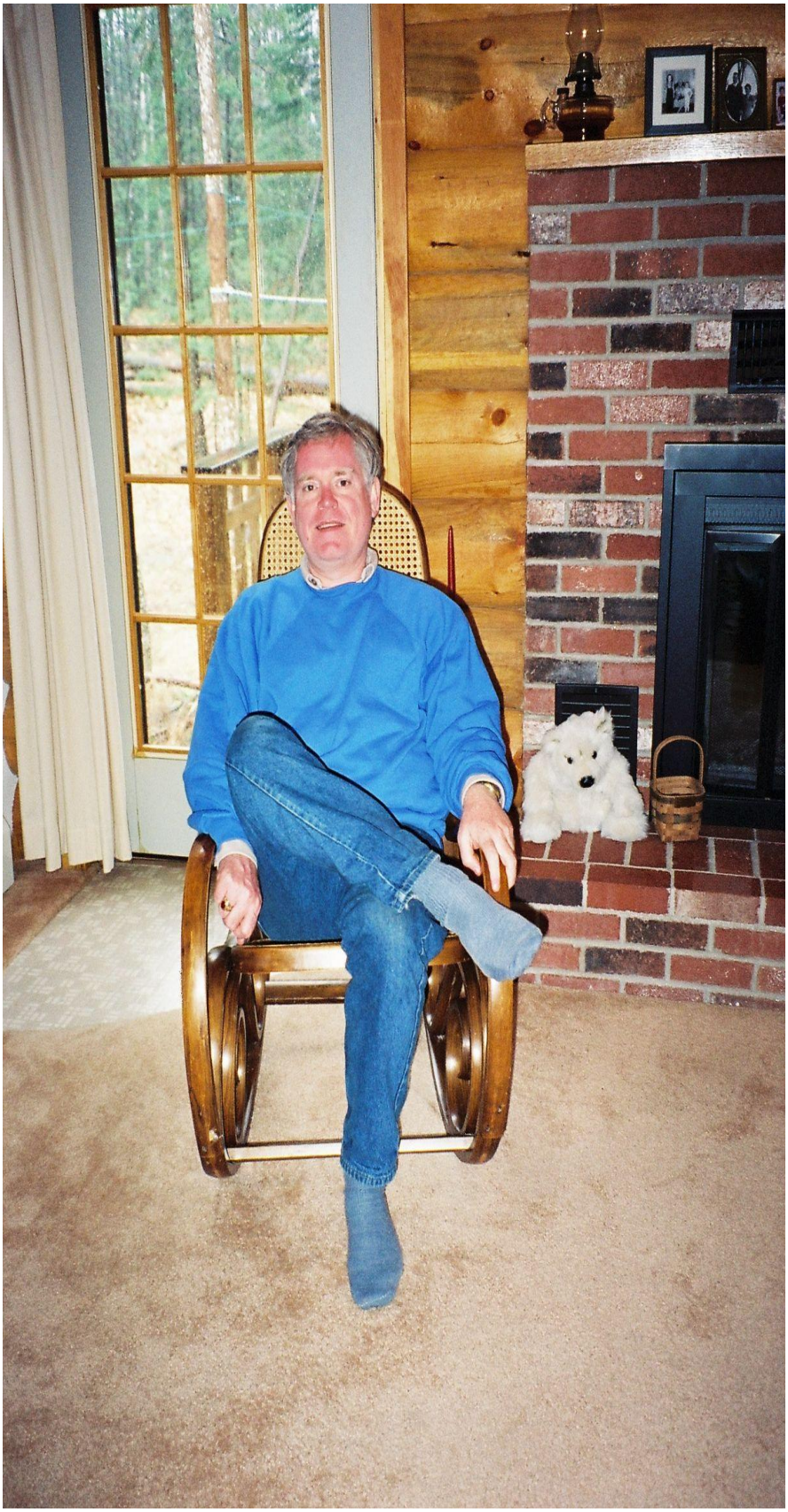
ABSTRACT

Beta decay is involved in all radioactivity. Pair annihilation, pair production, fusion, and Beta decay, are postulated to form all the elements on the periodic table as well as all particles and anti particles. Particles and anti particles reside, unseen, incorporated with neutrons in the nuclei of all elements.

ASSUMPTIOMS

We assume/postulate that mass – energy equivalence is incorrect. www.k1man.com/c72.pdf.



ARGUMENT

Fusion happens on a hot star when the electron in a hydrogen atom “mates” with the proton nucleus and releases a huge amount of energy stored in the Coulomb field between the two. The neutron formed also “incorporates” itself with a nearby positron – electron charge less annihilation particle (PEAP), that particle being very difficult to see or directly measure, since it is charge less and only has the tiny combined mass of two electrons. Thus, all 5000 entries on the table of isotopes are wrong since only neutron masses are considered to separate the isotopes from each other, when, actually, difficult to measure PEAP neutral masses are mixed in with the neutron mass as well.

This is where all the elementary particle - antiparticles “live;” inside the nucleus, incorporated with nucleus neutrons. Shoot particles together in a collider and/or “zap” them with radiation energy, and out will come pair production particles briefly, before returning to charge less tiny annihilation particles incorporated with a neutron in the nucleus or changing a neutron to a proton and thus transmuting that atom to a one of higher atomic number, while ejecting the pair produced electron, this being called beta decay.

THE HARD NUMBERS (in units of 10^ -27 kg.)

Electron 0.000910938215

Proton 1.672 621 637

Neutron 1.674 927 211

FUSION

1.672 621 637 proton

0.000 910 938 215 electron

1.673 532 575 215 proton plus electron

1.674 927 211 neutron

0.001394935786 difference (divided by) 0.000910938215 = **1.53131717** equivalent electron masses

The neutron is more massive than the assumed the proton and neutron component parts. It is proposed here, for the first time, that during fusion, two positron – electron neutral annihilation particles also participate in the formation of the neutron and are incorporated with the neutron. This happens all the way up the periodic table of the elements, and all the assumed neutron mass on that table is actually neutron mass plus incorporated (charge less) matter – antimatter annihilation particles that make up the so called “particle zoo.”

EXAMPLE

Two protons plus their two electrons plus two outside positron – electron annihilated pairs > 2 neutrons

(2) (1.672 621 637 protons) plus (2) (0.000 910 938 215 electrons) plus (2) (0.000910938215 positron-electron pairs) = 3.348887026 (two neutrons) (2) (1.674 927 211 listed neutron mass) = 3.349 854422 (which is off by 0.0967396 %) Not exact since the listed mass values are tainted (averaged) with small amounts of heavy hydrogen.

BETA DECAY

Beta decay is the reverse of the fusion process. When energy from radiation, such as a neutrino, Gamma, Delta, etc., hits one of these matter - antimatter annihilation particles incorporated with a neutron in the nucleus of an atom, there is pair production. When the annihilation particle was formed by a positron and electron and is hit with energy, out pops a liberated electron, or the beta ray of beta decay. This is a quite random event, and the timing cannot be exactly predicted for a neutron in a nucleus containing the annihilated pair. Outside the nucleus, beta decay happens in about 15 minutes, and this process is very poorly understood. The neutron is complicated and is not well understood. See www.com/c71.pdf .

TABLE OF THE ELEMENTS

Fusion reactions continue transmuting atoms up the table of the elements, giving off energy (exothermic) as they go, until iron, when beta decay and alpha emission then works further up the table of the elements, now taking in energy (endothermic) in order to do so.

Left on their own away from a star, all the elements will naturally decay back to the original hydrogen atoms. This long cycle continues forever while, simultaneously, galaxies are born and die. Radiation, light, etc., going out from stars, etc., is absorbed by hydrogen and helium atoms throughout the mostly empty universe and re-emits from this hydrogen and helium, which is in an equilibrium state, at the temperature of 2.7, degrees to produce the so called cosmic background radiation coming from every direction. .

Beta decay requires outside energy, such as neutrino energy, hitting the PEAP incorporated with a neutron. A positron and electron pair is then produced. The positron produced “mates” with the neutron, producing a proton, and the remaining electron appears to be ejected as a beta decay electron. It was not actually ejected from inside the neutron at all.

MEASURED MASS VALUES

(All in units of 10 ^ -27 kg) Source: Resnick and Halliday 9th edition Appendix B, page A-3

Electron 0.000910938215

Proton 1.672 621 637

Neutron 1.674 927 211

Helium 6.646 477 843

MAKING HELIUM

Four hydrogen atoms:

(4) (1.672 621 637) protons + (4) (0.000910938215) electrons + **(3)** (0.000910938215) **PEAPs** = **6.696 863 114** (minus 6.698 741 442 = 0.000056943 (divided by 0.000910938) = .062 510 291 equivalent electron masses.

Component parts of helium:

(2) (1.672 621 637) protons + (2) (0.000910938215) electrons + (2) (1.674 927 211) neutrons + = **6.696 919 572** minus **6.696 863 114** = 0.000056458 (divided by .000910938 = 0.061977873 equivalent electron masses) and thus very close.

TABLE 1 - HELIUM MASS

From four hydrogen atoms:	**6.696 863 114** x 10 ^ -27 kg	
From component parts of helium:	**6.696 919 572** x 10 ^ -27 kg	Inconsistent with E = mc^2
Mass published in Resnick and Halliday:	**6.646 477 843 x 10 ^ -27 kg**	Consistent with E = mc^2

FUDGED DATA

Resnick and Halliday 9th edition lists helium mass at 6.646 477 843 x 10 ^ -27 kg, apparently fudged to be consistent with Albert Einstein. This is consistent with helium mass on the periodic table in any chemistry book; the helium mass being quietly fudged in 1933 by a single person at the Natural Bureau of standards to be consistent with incorrect Albert Einstein and Special Relativity E = mc^2 mass – energy equivalence.

The helium mass in Resnick and Halliday 9th edition, Appendix B, has to be "dug out" by multiplying 4.0026032 on the chart by 1.660538782 x 10 ^ - 27 kg listed in small print on the bottom of the page. Sort of sweeping the fudge "under the rug." The cover up is always worse than the original "crime."

SUMMARY

Thus, a totally new science of the nucleus is established in this paper. The neutron actually has a much more sophisticated and greater role in the table of the elements than previously thought. Explained here is the location in the universe where particles and antiparticles reside – incorporated with neutrons inside the nuclei of all the atoms on the periodic table . Pair production plays a much larger role in the nucleus than previously understood. E = mc^2 and mass – energy equivalence is shown to be wrong and thus holding up progress in 21st century physics.

"To kill an error is as good a service, and sometimes even better, than establishing a new truth or fact."

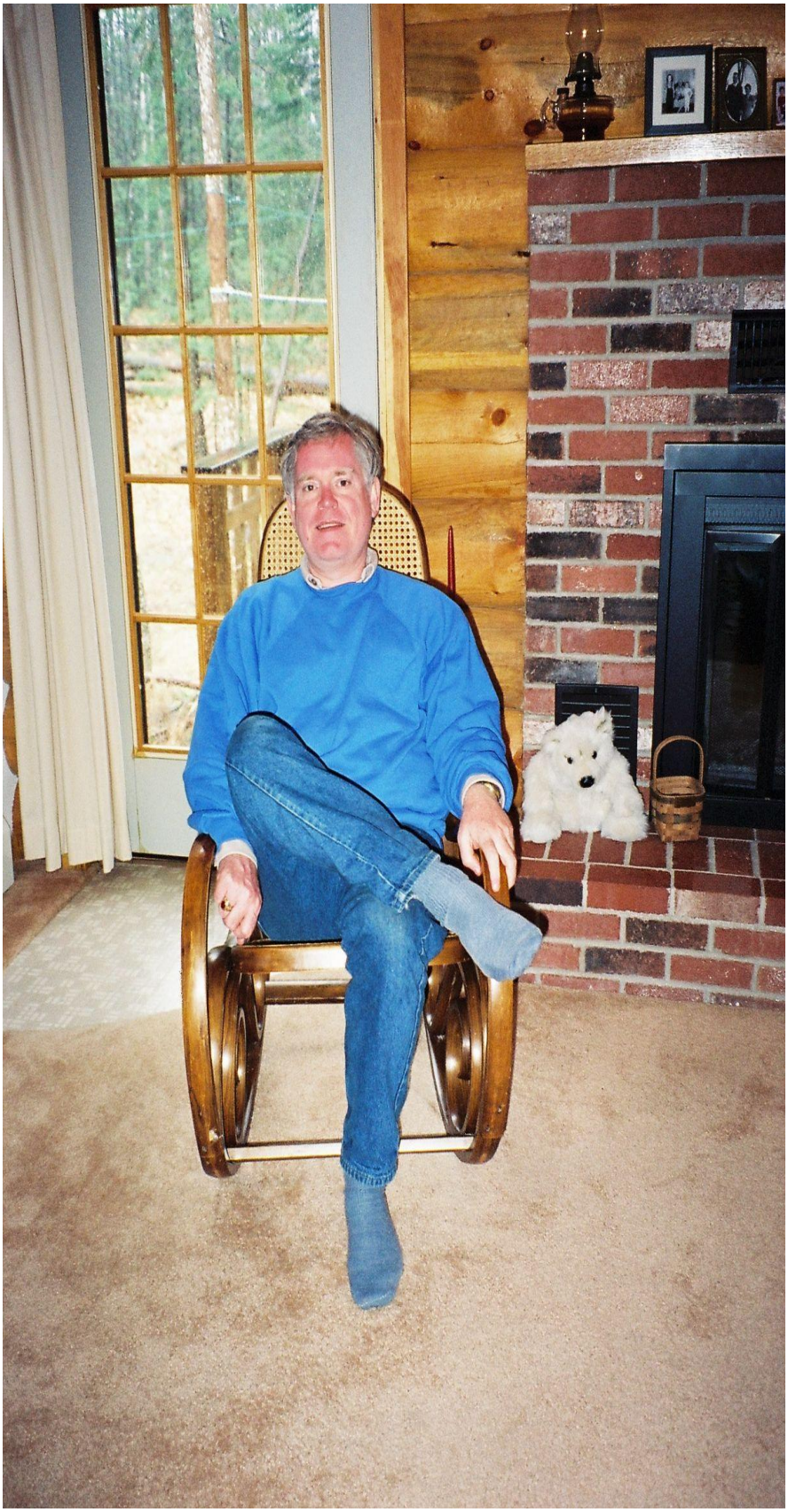
– ***Charles Darwin***

Mr. Baxter has a degree in Industrial Engineering from the University of Rhode Island and is a Licensed Professional Engineer in Illinois and Maine. He is a graduate of Vermont Academy, which honored him in 1993 as a Distinguished Alumnus with the Dr. Florence R. Sabin Award. It was at Vermont Academy as a student where Mr. Baxter attended a talk and met the very popular relativity author James A. Coleman. Mr. Baxter has been doing research in relativity and physics ever since and is currently Executive Director of the Institute for Advanced Research. See www.k1man.com His current interests include physics, philosophy, and theology.

SIXTH ANNUAL PHYSICS COLLOQUIUM IN PORTLAND, MAINE - 20 August 2016

The 20 August 2016 Physics Colloquium will be held at a hotel in the immediate Portland, Maine airport area and will feature two speakers in the morning and two in the afternoon. The Colloquium fee is $95, and the pdf proceedings and the video of all presentations and discussions recorded on a thumb drive will be free for all attendees, and will be $95 postpaid anywhere in the world for everyone else. We are now extending invitations for world class speakers.

The presentation paper pdf files will be e-mailed to all those registered well before the Physics Colloquium so that the papers can be studied ahead of time, which will greatly improve the effectiveness and efficiency of the Physics Colloquium itself. Attendees are cordially invited to dinner in Portland, Maine on Friday evening, August 19, 2016 at 7:00 p.m., to informally meet and to also discuss physics. Please register for the Physics Colloquium by sending an E-mail to Institute@K1MAN.com. All meals (and drinks) are separate at the hotel (off the menu) or wherever else is desired. www.k1man.com Telephone 207 242 2143 See you there?



Glenn A. Baxter, P.E., at his home in Belgrade Lakes, Maine U.S.A.

Glenn A. Baxter, P.E., age 4, with his dad, Frank H. Baxter (Bachelor of Science Degree, Mechanical Engineering, 1914, Rhode Island State College), and President of Frank H. Baxter Associates, 370 Lexington Avenue, New York City. See www.k1man.com/fhb and also www.k1man.com/w10 and www.k1man.com/Loons