New hypothesis about proton-proton reaction

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Abstract -
In the core of stars the size of the Sun, or smaller, energy is released through sequences of nuclear reactions that convert hydrogen into helium. The primary reaction is thought to be the fusion of two protons with the emission of a low-energy neutrino. Modifications to the first and second parts of this process are proposed. In the first, one of the protons absorbs virtual particles which increase mass and account for its transformation to a neutron. In the second, tritium forms before decaying into helium-3 (allowing increased emission of electron neutrinos to reduce the solar neutrino problem). Tritium has not been discovered in nature but is formed in nuclear reactions – and the Sun uses nuclear reactions.

Content -
The first step in the proton-proton reaction involves the fusion of two protons, releasing a positron and an electron neutrino as one proton changes into a neutron. The mass of the proton is 938.27 MeV/c^2 while the neutron is 939.57 MeV/c^2. How does a proton transform into a more massive neutron by radiating detectable particles? Since it is known that absorption of particles doesn't take place, there must also be radiation of undetected entities. Scientists call these virtual particles. A virtual particle is not a particle at all - it refers to a disturbance in a field. Therefore, the "virtual particles" could be Hidden Variables * called bits (binary digits).

* "Hidden variables is an interpretation of quantum mechanics based on the belief that the theory is incomplete and that there is an underlying layer of reality that contains additional information about the quantum world. The identification of these hidden variables would lead to exact predictions for the outcome of experiments and not just probabilities of obtaining certain results." [0]

When the second proton in the fusion reaction absorbs the virtual particles, the sequences of bits (0's and 1's) become that of gravitons and photons, which interact to produce extra mass and the proton

transforms into a neutron. The mass of the second proton might use quantum-scale gravitational lensing to focus radiated 0's and 1's into photons and gravitons.

If space-time is composed of 1's and 0's, neutrons absorb these virtual particles directly from their environment. This absorption destabilizes the balance between forces in the atomic nucleus and can lead to an atom of radioactive uranium-235 which possesses 92 protons and, thanks to mass increase via bit-absorption, 143 neutrons. Detailed models of decay normally point to transformation of quarks within protons and neutrons. But as a well-known book [1] puts it, "It is certainly possible that some alien beings … would make the same experimental observations that we do, but describe them without quarks." So let's describe observations not with quarks, but with a more basic quantum process that says all particles are comprised of bits (including quarks, if they exist).

According to Hans Bethe, who was awarded the Nobel Prize in 1967 for his work on stellar nucleosynthesis [2] - the deuteron formed above is, in the second step of the reaction, fused with another proton to form helium-3 (emitting a gamma ray).

It's shown above how a proton transforms into a neutron. If this recurs at the second stage of the Sun's reaction, the result wouldn't be He-3's two protons plus one neutron. It'd be one proton plus two neutrons i.e. tritium. Once more, an electron neutrino is emitted (because of the instability caused by introducing bit-absorbing neutrons). Experiments found that the number of electron neutrinos arriving from the Sun was between one third and one half the number predicted. This became known as the solar neutrino problem and is largely or completely resolved by emission of twice as many electron neutrinos. If not "completely" but "largely", the remainder of the solution is attributed to the currently accepted resolution viz. neutrino oscillation (electron neutrinos, muon neutrinos and tau neutrinos converting into each other).

There are a number of nuclear as well as non-nuclear processes that produce gamma rays. Thus we aren't limited to emitted positrons producing them when the positrons almost instantly collide with electrons and mutually annihilate. The tritium (which introduced two

neutrons and double instability) decays into helium-3, then continues its decay and releases a gamma ray in addition to the extra electron neutrino and positron. Finally, two helium-3 atoms fuse, forming an atom of helium-4 and emitting two protons that allow the proton-proton reaction to begin anew.

REFERENCES

[0] Kumar, M. – “Quantum” – Icon Books, p.379 (2008)

[1] Hawking, S. & Mlodinow, L. – “The Grand Design” – Bantam Press, p.49 (2010)

[2] Bethe, H.A. -"Energy Production in Stars" - Physical Review 55 (5): 434–456 (September 7, 1938) - doi:10.1103/PhysRev.55.434