

## **Stellar Hydrogen Fusion Does Not Work according to Supernatural Proton-Proton- or CNO Cycle**

**Only God could transubstantiate protons into neutrons  
Helium nuclei are not made up of 2 neutrons and 2 protons**

See the articles  
**on Photons and  
The neutrino is a stopgap of inherently flawed Quantum Mechanics**

### **Abstract**

The pp-cycle explains He formation as nuclear solar fusion. The creation of a neutron out of a reaction of two protons is not explainable in terms of quantum physics because it is not coherent with the  $\beta$ -decay of neutrons. The positron and the pp-neutrino are not really existent by-products of the proton-proton reaction but figments in order to satisfy the conservation of charge and angular momentum.

The second step of solar He formation is the reaction of a deuterium nucleus (proton + neutron) with a proton. The claim is that the result of this process is a tritium nucleus (2 protons + 1 neutron).

Quantum mechanics pp-cycles were theorized in order to construct the helium nucleus that was supposed to be made up of 2 protons and 2 neutrons. There is neither empirical nor theoretical evidence for the existence of these building blocks. For the CNO cycle the preceding arguments are valid analogously.

It is not plausible that the core of the Sun is a high temperature fusion reactor and that the fusion takes about 10 billion years to be completed.

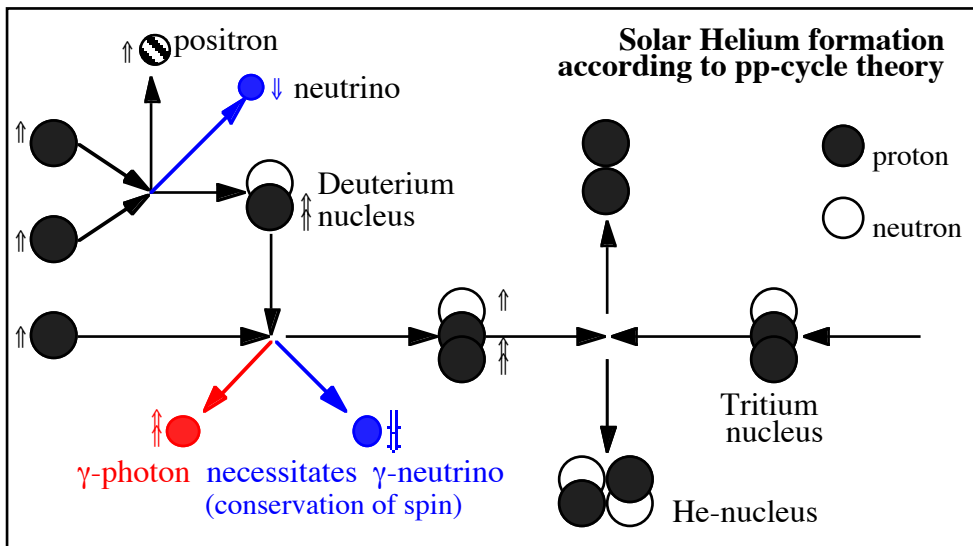
One can speculate that the core of the Sun is not a glowing fusion reactor but a cold storeroom for immobile hydrogen atoms. Fusion processes at the surface produce radiation. Four hydrogen atoms are fused to helium. Hydrogen is hypothesized as made up of a proton and a bonded electron.

Or one can speculate that the Sun is not a fusion reactor but electrically powered: According to the solar-discharge hypothesis the Sun is an anode and glow discharges are the source of solar radiant energy.

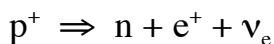
### **Introduction**

In about 1938 Weizsäcker and Bethe proposed the proton-proton cycle in order to explain the solar fusion of hydrogen atoms to helium. Meanwhile the proton-proton-chain is the standard model in solar physics. In every textbook you can read the details.

Here, I present a sketch of the solar helium production according to the current theory:



The constituents of hydrogen, namely protons and electrons, are in the very hot interior of the Sun. One hydrogen atom consists of 1 proton and 1 electron. So the proton/electron ratio is 50/50. This gas of separated protons and electrons is referred to as plasma. Two protons are fused to create a proton + neutron nucleus. This process also produces a positron and a neutrino. As one proton remains unchanged (it is like a catalyst), we can write for the transubstantiation of particles:



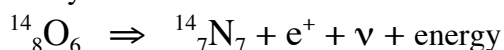
In the next reaction the proton + neutron nucleus plus a proton are fused to create a He-3 nucleus that consists of 2 protons and 1 neutron. In the last step 2 He-3 nuclei are fused to create the end product, the He-4 nucleus, which consists of 2 protons and 2 neutrons. The overall fusion process is that there are 6 starting protons to produce the final 2 protons and one helium nucleus. The positron is annihilated together with an electron. The hypothesized neutrinos cause the so-called solar neutrino problem, see below.

In the plasma soup are only protons and electrons but no neutrons. Quantum physics claims that the helium nucleus is made up of 2 protons and 2 neutrons but there is no experimental confirmation of that claim. Helium formation and generally any element formation in terms of quantum physics concern the creation of the neutron out of the proton plasma soup. Creation of neutrons is only possible as supernatural transubstantiation.

### The positron in the pp-cycle is a figment in order to fulfil charge conservation

Let us investigate the first step of the famous proton-proton cycle:

Our first question concerns the creation of the positron  $e^+$ . Obviously, we cannot observe the production of positrons in the Sun. There is no possibility to detect „solar“ positrons in an experiment either. No doubt, positrons are really existent particles. They are by-products of some atomic decomposition, for example in the decay



This experiment does not tell us that a proton is transmuted into a neutron, a positron and a neutrino. This proton must capture one of the shell electrons in order to generate a neutron. Nobody tells us how this electron capture works! Even if the positron was a product of a transmuting atomic proton, the proton in question is not a free one!

Therefore it is a fallacy to infer from the occurrence of positrons in some atomic decays that a creation of a positron according to the so-called proton-proton cycle happens.

There is no empirical evidence for this process of positron creation!

**Transubstantiation of protons into neutrons is impossible**

**No empirical evidence that helium nuclei are made up of 2 protons and 2 neutrons**

Regarding the neutron as an alleged output of the transformation of the proton we must conclude the same: Neutrons are decay products of unstable heavy atoms like uranium or they are decomposition pieces when for example  $\gamma$ -rays demolish deuterium atoms. There is no empirical evidence for the creation of a neutron in the proposed proton-proton reaction.

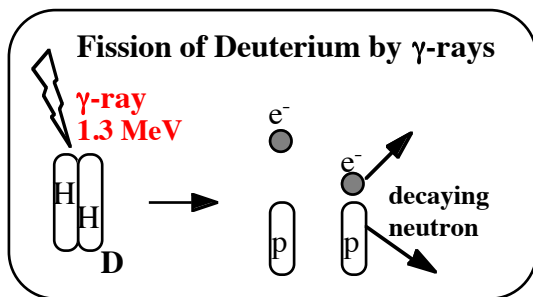
The question to ask about the creation of this neutron is, where do the neutrons come from? Textbooks remain silent!

The neutron fulfils here an ontological requirement. Since in the current atomic theory all elements have a nucleus with  $(A - Z)$  neutrons (where  $A$  is the atomic mass number and  $Z$  is the atomic number), He-4 has to have  $4 - 2 = 2$  neutrons. Therefore the pp-cycle has to produce neutrons. It is the desired final theoretical nucleus that determined the transubstantiation of the supposed initial protons.

There is no empirical evidence for the claim that helium nuclei are made up of 2 neutrons and 2 protons. I showed (see paper on neutron) that for the existence of nuclear neutrons according to the above-mentioned rule there is neither theoretical nor empirical evidence. Obviously regular instable building blocks (like neutrons) of atoms are not plausible. Neutrons have the typical feature of decomposition products: For example during the fission of heavy unstable elements neutrons occur

as decay products. Or when high-energy  $\gamma$ -radiation demolishes deuterium, the demolished building blocks of deuterium can be observed, namely protons, electrons and so-called neutrons that decay soon into protons and neutrons.

I propose an alternative model of the neutron: It is a defective and therefore unstable hydrogen atom.



The fission process may cause the defects. It is known that hydrogen can be ionized by the minute energy of 13.6 MeV! There are no indications that unstable neutrons are the building blocks of elements like helium, carbon, oxygen etc. In some papers I argued that hydrogen is the unique building block of all elements. Monoatomic hydrogen is a stable building block of molecules. Free H-atoms tend to form a diatomic molecule. Any decay or disintegration may harm the H-atoms and sooner or later they fall apart to sub-particles.

Regarding finally the hypothesized neutrino, a major discrepancy between observation and theory was conceded and referred to as the solar neutrino problem. The proposed solutions of the solar neutrino problem are not convincing. The claim is that there is not one neutrino but that there are 3 different kinds of neutrinos! They are different by „flavor“: electron-neutrinos that are the ones allegedly produced in the Sun, muon-neutrinos and tau neutrinos. Neutrinos can allegedly change the flavor on the fly! So a part of the solar electron-

neutrinos are missing because they changed into other flavors. Only a theory in troubles produces such ad hoc hypotheses... Below I will show that  $\gamma$ -neutrinos with spin  $\hbar$  must be introduced in order to save the theory. The troubles are insurmountable...

To summarize: there is no empirical evidence for the solar pp-cycle. The pp-cycle is a wild speculation...

For a valid physical theory there also is a requirement of logic. All propositions must be logically coherent. Let us investigate the decay of a neutron and the alleged pp-cycle in terms of particle transmutations:

Decay of a neutron:  $n \Rightarrow p^+ + e^- + \bar{\nu}_e$ , where  $\bar{\nu}_e$  is the anti-neutrino.

Proton-proton cycle:  $p^+ \Rightarrow n + e^+ + \nu_e$

Theoretically the neutron in the proton-proton cycle consists of

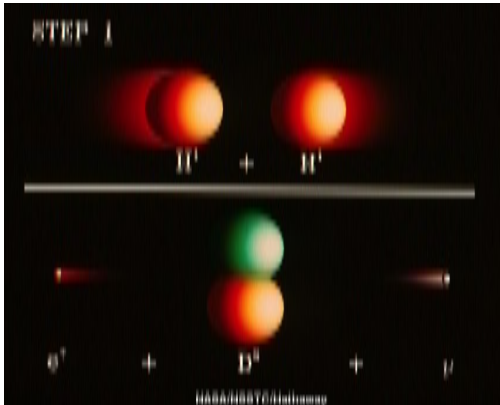
$n = p^+ + e^- + \bar{\nu}_e$ . Therefore we can rewrite the pp-cycle as:

$p^+ \Rightarrow p^+ + e^- + \bar{\nu}_e + e^+ + \nu_e$  or  $p^+ \neq p^+$

Therefore the proposition of the pp-cycle is not consistent with the proposition of the neutron decay. The beta decay of the neutron is empirically validated.

Conservation of charge, of angular momentum and of energy are necessary but not sufficient conditions for the proposed pp-cycle. The proton and the neutron are made up of sub-particles. In a reaction formula the number of particles and sub-particles must also be conserved, i.e., the quantity of matter must be conserved.

No matter whether neutrinos or anti-neutrinos exist or not, the pp-cycle hypothesis is not valid.



Let us now recapitulate the erroneous reasoning for the pp-cycle: the occurrence of the neutron in the formula is due to the untenable Bohr atomic model, see above. The occurrence of the positron is due to fulfil the charge balance, if the positron  $p^+$  is plus and the neutron is null, then there must be a plus charge  $e^+$  on the right side.

The NASA graph [NASA] shows the process of transubstantiation in step 1 of the pp-chain.

### **The neutrino is a figment in order to fulfil angular momentum conservation**

The neutrinos were introduced only to balance the angular momentum difference:

For the pp-cycle :  $p^+ \Rightarrow n + e^+ + \nu_e$  we write the angular momenta as following:

$$\uparrow \Rightarrow \uparrow + \uparrow + \downarrow$$

where  $\uparrow$  means  $= + \hbar/2$  and  $\downarrow = - \hbar/2$ .

The spin was introduced *ad hoc* to save the phenomena (spectral line splitting due to electric and magnetic fields, nuclear magnetic resonance (NMR)).

In a paper I showed that even the so-called hydrogen spin-spin coupling phenomena are not explainable in terms of proton spin.

The spectral line splitting in NMR is not due to proton-proton spin coupling.

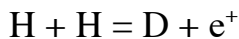
Spectral lines represent natural frequencies of the molecule oscillator. There is neither empirical nor theoretical evidence for particle spins!  
 The neutrino and the positron in the pp-cycle are typical fill-ins in order to satisfy the conservation principles for angular momentum and charge.

### **Historical remark on Bethe's and Critchfield's speculations on the formation of deuterons by proton combination**

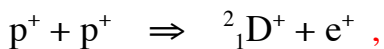
One of the classical papers on the formation of a neutron by proton combination is Bethe's and Critchfield's *The Formation of Deuterons by Proton Combination*.

[Bethe]

Their formula for atomic alchemy made history:



The formula becomes more understandable if we write it as



where the deuterium nucleus consists of a proton and a neutron:  ${}^2_1D^+ = (p^+ + n)$

Obviously, the authors introduced the occurrence of a positron  $e^+$  in order to fulfil the law of conservation of charge. There is no experimental evidence for the positron as a result of this nuclear reaction. Since a positron and an electron allegedly „annihilate“ each other, the authors were not obliged to look for the positron!

It is difficult to understand why the scientific community did not suddenly notice the violation of the law of conservation of angular momentum in the reaction process formula. But later the neutrino, a particle without charge but with spin, was introduced because it makes the fulfilment of the conservation law for angular momenta possible.

It is interesting for philosophers of science that the authors do not mention that a proton has to change its essence to become a neutron. They don't comment their formula but express it only verbally:

*Again, of all reactions involving hydrogen, the most primitive is the combination of two protons to form a deuteron, with positron emission:  $H + H = D + e^+$*

Then come the authors to the key point:

*In fact, the reaction must stand in the beginning of any building up of chemical elements...*

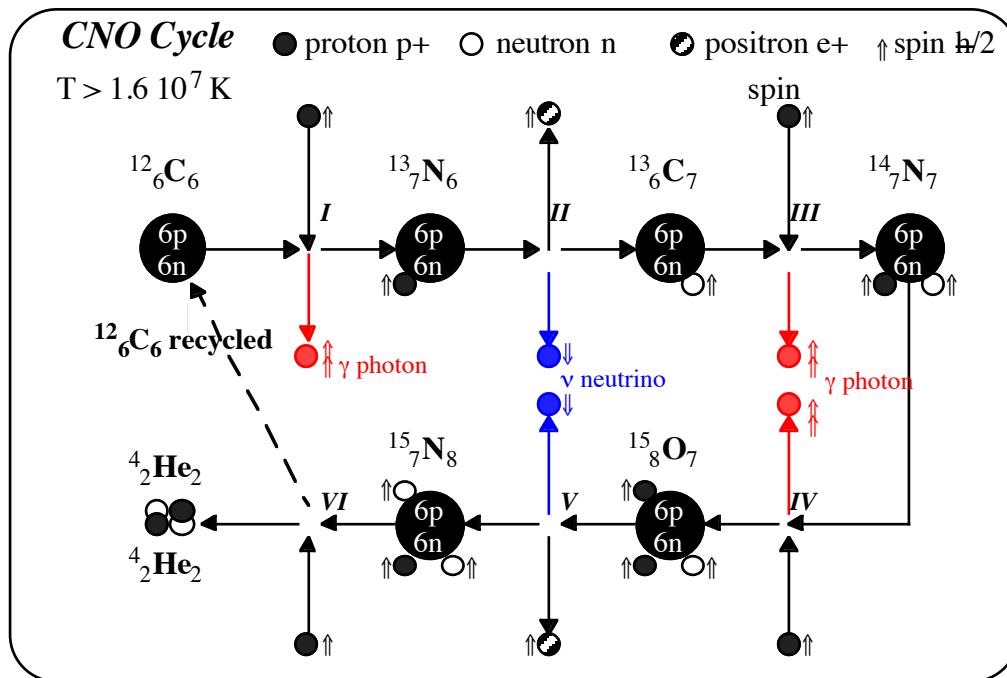
In fact, at the beginning of quantum mechanical element formation stands a physically impossible transubstantiation of a proton into a neutron.

### **The CNO Cycle**

Current stellar physics claims that for stars with mass  $M > 1.1$  solar masses the CNO (Carbon-Nitrogen-Oxygen) Cycle of nuclear fusion is the main source of energy production. The net result of the CNO cycle is the fusion of 4 protons into a helium nucleus. (Carbon-12 serves only as a catalyst and is recycled.) 2 positrons ( $e^+$ ) and 2 neutrinos are by-products.

3  $\gamma$ -photons represent the main energy source of the CNO cycle. The complete CNO cycle releases energy. Current theory adds up the inert masses of the 4 protons. Then is calculated the sum of the masses of the helium nucleus, of the 2 positrons

and the 2 neutrinos. The difference is the famous mass defect. Now is the claim that the mass defect has been converted into energy according to the famous formula  $E = mc^2$ . The graph shows the steps I-VI of the CNO cycle.



Comment:

- There is no empirical confirmation for the existence of a  $T > 1.6 \cdot 10^7 \text{ K}$  plasma soup of protons and electrons inside of the stars.
- There is no valid theory for the production of the catalyst carbon-12 in the plasma.
- There are no empirical confirmations for the existence of elemental nuclei and extranuclear electrons and for the theory that nuclei of the elements consist of protons and electrons according to the formula:  $Z + N = A$ , where the number of protons =  $Z$  ( $Z$  is called the atomic number in the periodic table) and the number of neutrons is denoted by  $N$ ;  $A$  is the atomic mass number.
- Even if the arguments above were not valid, the proposed CNO cycle is not possible even in terms of quantum physics because it violates the principle of angular momentum conservation. Look at steps I, III and IV: there is a surplus of the photon spin, angular momentum conservation is violated!
- Step II and V show that the theorized creation of the positron is required to balance the conservation of charges. The neutrino is a figment in order to balance the spins: Theoretically the neutrino must have a spin that annihilates the spin of the positron. We must ask the question: what sort of thing performs a rotation in the case of the neutrino-particle?
- In steps II and V the miracle of transubstantiation occurs: a proton becomes a neutron, the theoretically necessary by-products are a positron and a neutrino. The claim is that (like in the pp chain above):

$$p^+ \Rightarrow n + e^+ + \nu_e$$

$$\text{because : } n \Rightarrow p^+ + e^- + \underline{\nu_e} \quad (\beta^- \text{ decay of neutron})$$

$$p^+ \Rightarrow p^+ + e^- + \underline{\nu_e} + e^+ + \nu_e \quad \text{or} \quad p^+ \neq p^+$$

It is therefore not possible to transubstantiate a proton into a neutron. The neutron as an erroneously postulated nucleon is the source of all theoretical troubles for both the pp chain and the CNO cycle!

• I showed that  $E = mc^2$  is not derivable if accelerated electrons radiate (they do so for example in the cyclotron radiation). Uranium fission shows empirically that the energy balance is in disorder when the „mass-energy“ formula is applied. The formula has a limited empirical validity but inert mass and energy are conceptually incommensurable, so  $E = mc^2$  is not a natural law. See please the relevant articles.

### **Element formation unexplainable in terms of quantum theory**

The question of the neutron creation in the pp-cycle has an immensely deeper significance than just the production of solar helium and solar energy. If the galaxial universe originated as accumulations of hydrogen, one has to think where the neutrons came from because they and the protons are the constituents of the atomic nucleus of all other elements. I showed that the assumption of a transmutation of a proton into a neutron according to the pp-cycle is impossible because it is not consistent with the known decay process of free neutrons. There is no empirical evidence of the pp-cycle. The creation of the neutrons in the pp-cycle is only a theoretical requirement in order to construct the quantum theory helium nucleus that consists of 2 protons and 2 neutrons.

Both the Rutherford-Bohr atomic model and the rule for the number of the nuclear protons and neutrons of each element are untenable. The neutron is not a building block of stable atoms. Therefore quantum theory cannot explain element formation.

To believe that any element formation is a wonder done by a divine creator is a heresy because only a stupid creator would work like Sisyphus as a creator of any single chemical element of the myriads of elements. Element formation is a natural process and not a wonder.

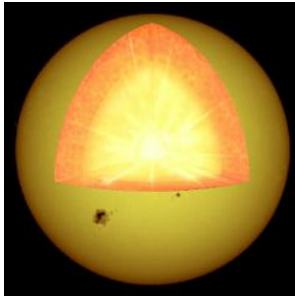
I argued that the elements don't consist of a nucleus and extranuclear electrons but are regular but so far unknown configurations of hydrogen atoms. If this is the case, the concept of a neutron as a building block of the atom is superfluous. Neutrons occurring during Uranium fission are defective hydrogens that decay in some minutes into electrons and protons.  $\gamma$ -rays can demolish deuterium atoms. Deuterium is theorized as a double H-atom. During fission also the H-atoms undergo defects and decay subsequently into electrons and protons.

If hydrogen atoms are the building blocks of all elements and if the element formation is due to magnetic coupling, then we can imagine the element formation as a natural process of hydrogen fusion and not as a wonder. Any chemical element has a (so far unknown) spacial configuration of hydrogen atoms and is something like a core and a specific shell.

For the concept of a hydrogen atom I proposed 4 ring magnets as building blocks. With charges +, -, an ortho-hydrogen is a sequence of a (+)(-)(+)(-) cluster of ring magnets. The proton is the sequence (+)(-)(+) with a net „+“ charge. The neutron as a defective hydrogen is imagined as a proton (+)(-)(+) and an electron (-)\* which leaves the proton because it is not attached to the proton in the right way, namely in such a way that there is an attractive force between the proton and the electron ring magnet. Of course, this H-model can be assembled with more than one neutral positron-electron pair (+)(-) or ( $\pm$ ): (+) X ( $\pm$ ) (-), where X = 1, 2, ... is unknown.

The elementary ring magnets do not spin, so there is no necessity for the neutrino figment. A proton is made up of a positron and X neutral ( $\pm$ ) pairs of ring magnets. There is no Coulomb barrier. The occurrence of attractive or repulsive forces depends on the mutual position of the particles.

### **The Sun — a glowing hydrogen fusion reactor?**



For the theory that the Sun is a glowing hydrogen fusion reactor we have no experimentum crucis. The graph from NASA [NASA] shows the alleged infernal interior of the Sun with about 15,000,000<sup>o</sup> Celsius. Helioseismology cannot prove that the core of the Sun is a high temperature fusion reactor.

Current theory must suppose such an immense amount of energy in order to overcome the repulsion between the two plus charged protons. As the Sun has been shining for some billions of years, quantum theorists claim that this proton-proton reaction takes about 10 billion years to be completed! Otherwise the Sun's supply of hydrogen would be exhausted in a short time.

Summary: the quantum theory of solar hydrogen fusion is a web of untenable interdependent hypotheses.



It is not plausible that solar radiation is mainly due to interior nuclear fusions. Nature is not a squanderer. Look at a candle. Only a tiny part of the wax is burning. The analogue could happen with the Sun when only the outermost shell produces radiation.

In this case the core of the Sun is hypothesized as the cold storeroom of immobile hydrogen... At the surface

4 hydrogen atoms are fused to helium. Other elements are also fused.

But it seems to me now that we should investigate the alternative to fusion, namely the electrically powered Sun:

### ***The solar-discharge hypothesis***

The Sun is not a fusion reactor but electrically powered:

In 1972 Ralph Juergens introduced the concept of electrically powered stars.

According to the solar-discharge hypothesis the Sun is an anode and glow discharges are the source of solar radiant energy. For further information see the compilation and comments of Earl. R. Milton:

<http://www.kronos-press.com/juergens/index.htm>

Phenomena of electrical arcs at the surface of the Sun are now visible, see

<http://www.thesurfaceofthesun.com>

If there is a plasma at the Sun's surface, it is not necessarily made up of protons and electrons. It is known that a proton is not an elementary particle but consists of subparticles. Quarks are not empirically confirmed.

A conjecture of mine is that a proton is made up of one positron (+) and X neutral electron-positron pairs ( $\pm$ ).



The Sun cannot be suspended in a vacuum. It is connected with a ubiquitous cosmic electromagnetic medium, whose nature is unknown. We only have a “superficial” knowledge of the Sun. Its interior and its interaction with the cosmic electromagnetic medium are unknown.

### The H-bomb — empirical evidence for the pp cycle?

In a H-bomb tritium (T) and deuterium (D) must be heated to very high temperatures, densities and pressure so that fusion can take place. In the H-bomb the explosion of a fission bomb produces the necessary heat.

The nuclear reaction according to current theory is



In the Teller-Ulam bomb an inferno must be created by atomic fission in order to create the starting atoms and to put the fusion process into operation. Parts of this inferno are high energetic X-rays.

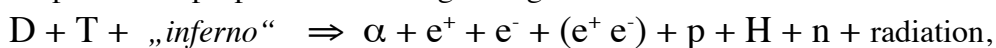
According to quantum mechanics an X-ray is also represented by a photon-particle with spin. Photon spins are not mentioned in the nuclear reaction process formulas! Disregarding the photon spin automatically falsifies the reaction formulas.

The problem of the pp cycle is the creation of the neutron out of a proton to form a deuterium nucleus (p + n). The (D + T) reaction in the H-bomb tells us nothing about this. The occurrence of high energetic neutrons as by-products of the fusion is no evidence for the existence of an unstable neutron as a nucleon. If there are unstable neutrons after the (D + T) reaction, their existence before the reaction is not necessary. During this very strong reaction it is possible that stable particles undergo a transformation into an unstable state.

According to my speculation the neutrons are damaged hydrogens. The more they are damaged the faster they decay. The half time of the decay is about 10 seconds.

The H-bomb reaction is not a natural process. In the bomb the atoms are destroyed.

A speculative proposal for the originating fallout is



where  $(e^+ e^-)$  is the chargeless „half“ of the H-atom, held together by magnetic coupling.

The problem is that we cannot distinguish between neutrons and hydrogens!

Both the neutron and the H atom are uncharged particles, so their inert masses are not measurable. It is a flaw to add the inert masses of proton and electron to obtain the inert mass of the H atom because inert mass is not an additive quantity. The current inert mass of a neutron is a calculated one. The basis of this calculation is the mass-energy formula, which is not a natural law.

Recall the detection of neutrons: In uranium fission fast neutrons are emitted. Zinn & Szilard [Zinn]

*found, as a rough estimate, an average of two neutrons per fission process. This result was obtained by counting the helium recoil nuclei which the fission neutrons project in a helium-filled ionization chamber.*

Obviously in this experiment we cannot distinguish between neutrons and H-atoms! The strong emission of neutrons observed by Zinn & Szilard was an „instantaneous“ one. Earlier a „delayed“ emission of neutrons from uranium was discovered *which apparently follows a beta-transformation of a half-life period of twelve seconds...*

I assume that in fission both intact H-atoms are damaged and therefore decaying H-atoms (= neutrons) occur. When a brick wall breaks down, some bricks break up, some bricks remain intact...

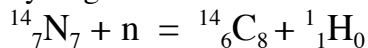
See more on the concept of a neutron in Papers under development: *Neutrons are imperfect hydrogens and decay.*

### **Neutrons in the atmosphere are due to cosmic rays**

#### **Atmospheric neutrons generate radiocarbons**

#### **Quantum transmutation formulas are inherently flawed**

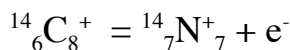
Neutrons are decay products of uranium and deuterium. A third occurrence of neutrons is in the atmosphere of our globe. Cosmic rays in the atmosphere make hydrogen and other atoms disintegrate. Decay products are neutrons. The thermic neutrons make nitrogen disintegrate and transmute nitrogen and the neutron into hydrogen and radioactive carbon-14. The transmutation formula is:



Formally the number of particles is conserved, but the process is not explainable in terms of the Bohr atomic model. When we assume that the neutron transmutes into a hydrogen, then the decay process of the neutron must be stopped, therewith it becomes a stable hydrogen.

The transmutation of the nitrogen into a radiocarbon works as follows: The nitrogen nucleus consists of 7 protons and 7 neutrons. The nucleus of carbon-14 consists of 6 protons and 8 neutrons. One proton of N must capture an electron in order to become a neutron.

The claim is:



The transmutation process is reversed here; one neutron of carbon changes its identity to be a proton of nitrogen. In order to balance the electrons, nitrogen should be  ${}^{14}_7\text{N}^{++7}$ !

Concerning the decay of radiocarbon and the generation of radiocarbon in terms of quantum theory the conclusion is that the Rutherford-Bohr model lacks both causality and plausibility.

### **Neutron stars**

A star made up of neutrons is allegedly one of the possible ends for stars.

How do we get neutron stars? Here is the story: When stars have finished burning their fuel, they explode. Such explosions are called supernovas. The stars collapse then. In the central core there are only elementary particles because of the extreme pressure. Surrounding the inner core is a neutron fluid. Neutrons are made up of protons and electrons. Obviously, there is no empirical evidence for the existence of these neutrons. Why do protons and electrons not combine to hydrogen? Why should protons and electrons combine to an unstable particle? If pressure holds the unstable neutrons together, then pressure can also hold the hydrogen atoms together.

The erroneously so-called neutron stars are pulsars. Pulsars emit light and radio waves that have short periods of variability. These short periods (up to about once per second) are thought to be due to a rotation of the star. As only a dense material could bear such speedy rotations, the neutron star was invented *ad hoc*! A more probable interpretation of the periodicity of the electromagnetic emissions of pulsars is that these emissions are due to periodic discharges. For details see [www.electric-cosmos.org](http://www.electric-cosmos.org)

### **Acknowledgment**

With Egon Küster I have had many interesting discussions about stellar physics. We agree that stars are not high temperature fusion reactors. So I got the impetus to study the current theory on stellar radiation production.

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