Electron Confinement Fusion of Deuterium Near 0 K

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30th May 2015

1 Abstract

This is a suggestion for an experiment for fusion of heavy hydrogen, or deuterium, near absolute zero temperature. The idea is to create a sphere of free electrons with deuterium confined at the center. Disregarding for a moment conventional theories, the deuteron may be taken to be a simple configuration of p-e-p . Through physics yet unknown, a deuterium atom may collapse with its atomic electron forced to merge with its nucleus to form a neutral, but unstable, "ionized" nucleus of p-e-p-e. Being neutral, two such pepe are free to get very close to each other. When it happens, a stable configuration is preferred and this may favor leaving behind a helium nucleus by expelling two electrons. Thus fusion of heavy hydrogen to helium is achieved.

2 Zerok Fusion Near 0 K

Nature seems to have a way to ensure the long term survival of all living things as a matter of principle. The natural laws of the Universe too may be expected to have innate intelligence to be compatible to this ideal principle. With the human species, the case may be deduced. The phenomenon of fission occurs naturally. It may be harnessed to produce thermonuclear device of mass destruction, but only through the exceptional faculty of the human intelligence. The way to produce such devices are generally very difficult as the radioactive elements are rather sparsely distributed such that acquiring a sufficient quantity of the pure fissionable material involves very tedious processes. If nuclear fission were easily achieved, it may endanger the very survival of the human species as well as the very world.

By the same reasoning and principle, if fusion to release huge amount of nuclear energy is possible, it should be expected that it could only be achieved under extreme conditions that are difficult to come by and vastly different from conditions naturally found on our planet earth. Heavy water is relatively easy to produce and so obtaining heavy hydrogen in itself does not pose much of a problem. So it is expected that the difficulty of fusion may come from other

factors. The likely difficult conditions for fusion may be through an extreme in temperature that are not natural to our planet, at the two ends of the temperature scale, either infinitely high temperatures or near absolute zero.

It is possible that the source of the Sun's energy is from the fusion of hydrogen, but only at the center of the Sun where the huge gravitational force make the density of matter very high; so there is extreme high temperature and pressure combined. Then through a small random probability, fusion of hydrogen to helium may happen and the small rate of fusion may be enough to power the Sun - so the Sun may be powered by a controlled thermonuclear fusion. But here on earth, controlled high temperature fusion may never be feasible to provide for the energy need of the world; many decades of research have not produce any promising results nor hope in it for the future.

The way to go may be controlled fusion near absolute zero, at the other extreme end of the temperature scale. In order to succeed in cold fusion, we have to throw away our conventional wisdom found in current physics. If relying on current physics is sufficient, then, probably, we should by now be using fusion energy as our main source of energy; but we are not. So we have to put aside thinking along the lines of what is possible and what is not possible and what is physics and what is not physics. There is the common notion that only through high kinetic energy that it is possible for the deuteron to overcome the repulsive Coulomb barrier of protons and to push through to regions where the strong forces take over and so fusion to helium may occur - but this is merely just a notion; it is also a notion that has not help to produce any result so far.

We should go the other way instead towards near absolute zero temperature where particles lose nearly all their kinetic energy. We create a sphere of free electrons to confine deuterium at the center (I do not have the background physics to suggest how to get this sphere of cold free electrons). A collection of free electrons occupying a sphere would tend towards a configuration with a minimum of potential energy. The contributions to the potential of any electron depends mostly to those other electrons nearest to it; because of this and for the configuration of the electrons to have a minimum potential, the mean distances between electrons may be smaller the nearer the electrons are to the center of the sphere.

Through physics yet unknown, the tendency for electrons to get closer near the center of the sphere may somehow extend also to the atomic electrons of the deuterium atoms confined near the center - a deuterium atom may collapse with its atomic electron being forced to merge with its nucleus to form a temporary, but neutral and nucleus-like particle, the pepe. As a p-e-p-e pepe is neutral, it can easily get very close to another pepe. Again, through physics yet unknown, two pepes would seek a state with a natural stability and with the least potential energy. Such a state may be found through forming a nucleus of helium by releasing two electrons. In this manner, through the intermediation of the pepe, fusion of deuterium to helium may be achieved.

3 Conclusion

Until now, fusion has been elusive and not much promising signs have been found to show that the current favored techniques of high temperature would lead to any result. As we have failed after many decades of research, it may be wise that current conventional wisdom and physics be temporarily set aside when it involves the search for fusion; even seemingly unconventional methods should be considered and tried for experimentation.