ISSN 2347-3487
Volume 11 Number 7
Journal of Advances in Physics

ATOMIC DISRUPTION BEAM THEORY

Mr Casey Ray McMahon
E-mail: caseyraymcmahon@yahoo.com.au

Abstract

In this paper, I discuss the theory behind the use of a dense, concentrated neutron particle-based beam. I look at the particle based physics behind such a beam, when it is focused against solid material matter. Although this idea is still only theoretical, it appears that such a beam may be capable of disrupting the stability of the atoms within solid matter- in some cases by passing great volumes of neutrons between the electron and nucleus thus effectively "shielding" the electron from the charge of the nucleus. In other cases, by disrupting the nucleus by firing neutrons into it, disrupting the nucleus and weakening its bond on electrons. In either case- the resulting effect would be a disruption of the atom, which in the case of material matter would cause said material matter to fail, which would appear to the observer as liquification with some plasma generation. Thus, a dense neutron particle based beam could be used to effectively liquefy material matter. Such a beam could bore through rock, metal, or even thick, military grade armour, like that used on tanks- causing such materials to rapidly liquefy. The denser and thicker the neutron beam, the more devastating the effect of the beam- thus the faster material matter will liquefy and the greater the area of liquification. Such a beam would have applications in Defence, mining and drilling operations.

Keywords

atomic, disruption, beam, liquification, laser, energy, armour, McMahon, particle, neutron, atom, molten, plasma, heat, melting, metal, molten metal, liquid metal, shielding, electron charge, nucleus charge, charge shielding, nuclear charge shielding, electron charge shielding, nucleus charge shielding

1. Introduction

The purpose or point of an atomic disruption beam is to cause the material, matter or solid that is struck with such a beam to fail. This happens, in the case of this paper, by disrupting the atomic bond between nuclei and electrons within atoms, which make up solid matter or material. When this happens, in that the basic structure of the atom has become "disrupted" the solid nature of said material will be no more.

2. So, why use neutrons for an atomic disruption beam?

I chose to use neutrons for such a beam, as neutrons are considered to be uncharged particles. Thus, such particles can pass through atoms without charges causing them to be repelled or deflected by either the positively charged nuclei or the negatively charged electrons in orbit of such nuclei. Refer to figure 1.

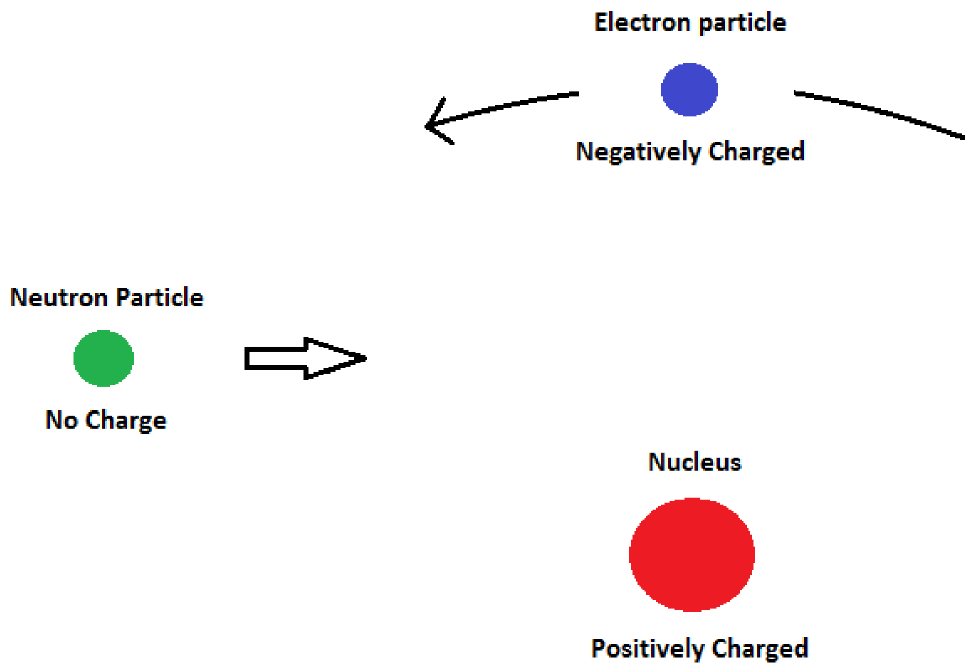

Figure 1: The neutron, in having no charge, can easily pass through atoms without being deflected solely by the charges of the nucleus or electrons.

Neutrons are also ideal, as like other atomic particles, they can be accelerated up to the speed of light, allowing a neutron beam to move at light velocity, or below light velocity.

3. So, how can a dense beam of neutrons cause atomic disruption?

The neutron, in having no charge, if fired in a dense beam, may shield the nucleus and electron within the atom from the charges possessed by each. This would cause the atom to fail, and the electrons and nuclei of atoms to go their separate ways. If this were to happen to a solid material, said material would fail. Refer to figure 2.

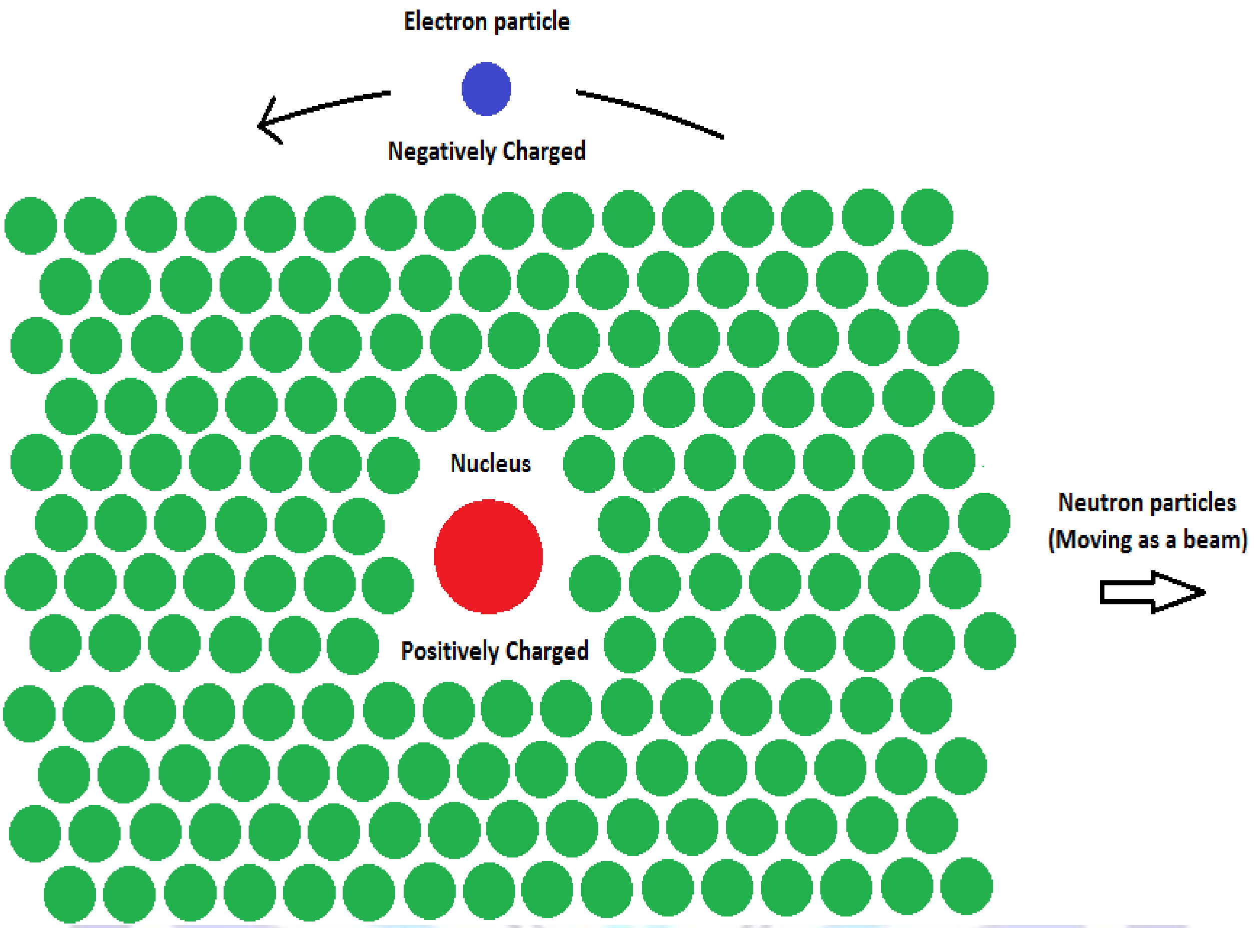

Figure 2: A dense beam of neutrons is expected to have the ability to shield the electron from the charge of the nucleus, and vice/versa. This is achieved by swamping nuclei and electrons with neutrons, so that the charge of the nucleus cannot act on the electrons that orbit the nucleus.

If the condition in figure 2 is satisfied, in that the neutron beam shields electrons and nuclei from the charges each possesses, then the electron will be free to leave the atom. Thus, the atomic bonds within matter will be disrupted, and the material will fail.

4. What could happen when nuclei are struck with neutrons?

Although atoms are mostly empty space, some neutrons will strike nuclei. When this happens, a number of scenarios are possible. I'll discuss in basic terms.

a) Firstly, the neutron could enter the nucleus, and be absorbed. This could result in the nucleus effectively becoming more "neutral", which would weaken the bond between the nucleus and surrounding electrons, allowing electrons to leave the atom, assisting atomic disruption.

b) Secondly, the neutron could enter the nucleus, causing it to become unstable, and split. This would release the energy of the atom, allowing the electrons to leave the atom, again causing atomic disruption.

c) Thirdly, the neutron could enter the nucleus, be absorbed, and eject other particles from the nucleus, affecting the integrity and stability of the nucleus, which could again lead to atomic disruption, allowing electrons to leave the nucleus.

d) Fourthly, the neutron could enter the nucleus, and then exit it, causing only a temporary disruption between the bonds of the nuclei and orbiting electrons.

e) Fifthly, the neutron could physically strike the nucleus at such an angle that it is deflected (due to a physical collision, not due to charge as discussed earlier) giving up some of its kinetic energy to the nucleus. This would allow neutron scattering within matter, causing neutrons to be spread in all directions throughout the matter being struck with the dense neutron beam. As a result, Atomic disruption can occur throughout the entire object being struck with a dense neutron beam, not just those atoms directly in the path of the neutron beam. For example: If a heavily armored military vehicle, such as a "tank" was struck with a dense neutron beam, the entire tank could undergo atomic disruption, not just the part of the tank that was hit with the neutron beam. As a result, it would appear that the neutron beam is liquifying the whole tank as the neutrons spread throughout the atoms of the tank. Such a beam, if used on a battlefield, would be absolutely devastating. It would be capable of liquifying all heavy vehicles, weapons, armour- even heavily fortified bunkers.

According to Serway, R.A. (1996) [1], "Since neutrons interact very weakly with electrons, matter appears quite "open" to free neutrons. This statement supports the idea in figure 2, in that neutrons are able to easily pass though atoms rather than interact with electrons, because neutrons have no charge. Serway, R.A. (1996) [1] also states that "It is found that the rate of neutron-induced reactions increases as the neutron kinetic energy decreases." Again, this statement further supports figure 2, whereby fast moving neutrons can easily pass through matter, between the nucleus and electrons.

Serway, R.A. (1996) [1] also supports the fifth possibility, regarding the deflection of incoming neutrons via nuclei. Serway, R.A. (1996) [1] states that "A fast neutron travelling through matter undergoes many scattering events with the nuclei. In such an event, the neutron gives up some of its kinetic energy to a nucleus."

The state in which electrons have left the atom is referred to as "plasma". It is a super-heated state, normally achieved through extremely intense heating and a huge energy input. However, a dense neutron beam, if able to shield electrons from the charge of nuclei, would cause electrons to leave the atom of their own accord, without the need to apply vast amounts of energy in the form of heat. The energy released from atoms in the freeing of electrons from said atoms would most likely be observed as heat in-itself. Thus- the energy to liquify atomic matter comes not from the neutron beam in itself, but from the energy stored within the atoms of the material the neutron beam strikes. As a result, a dense neutron based particle beam uses the energy stored within its target against its target.

5. Atomic disruption beam in action, step-by-step:

Figure 3 presents a step-by-step diagram of what would occur in the case of a dense neutron particle based beam striking a heavily armoured vehicle. Figure 3 image A) shows the neutron beam approaching the heavily armoured vehicle. In figure 3 image B), the beam would rapidly pass through the vehicle, completely disrupting all atoms in its path rapidly. In figure 3 image C, neutron scattering begins, which is predicted to begin at the point where the neutron beam first strikes the heavily armoured vehicle. In figure 3, image D, as atomic disruption continues and increasingly more nuclei and electrons are freed from each other, the possibility of neutron scattering would be expected to increase, as nuclei and electrons are scattered about. This would help neutrons scatter throughout the heavily armoured vehicle, causing atomic disruption in other parts of the vehicle. Waving the neutron beam over the whole of the vehicle would help this to occur. In figure 3 image E), neutrons have been scattered throughout the entire vehicle. At this point, the neutron beam may be deactivated. In figure 3 image F), the heavily armoured vehicle has been reduced to a pool of liquid molten metal, since atomic disruption has occurred throughout the entire vehicle.

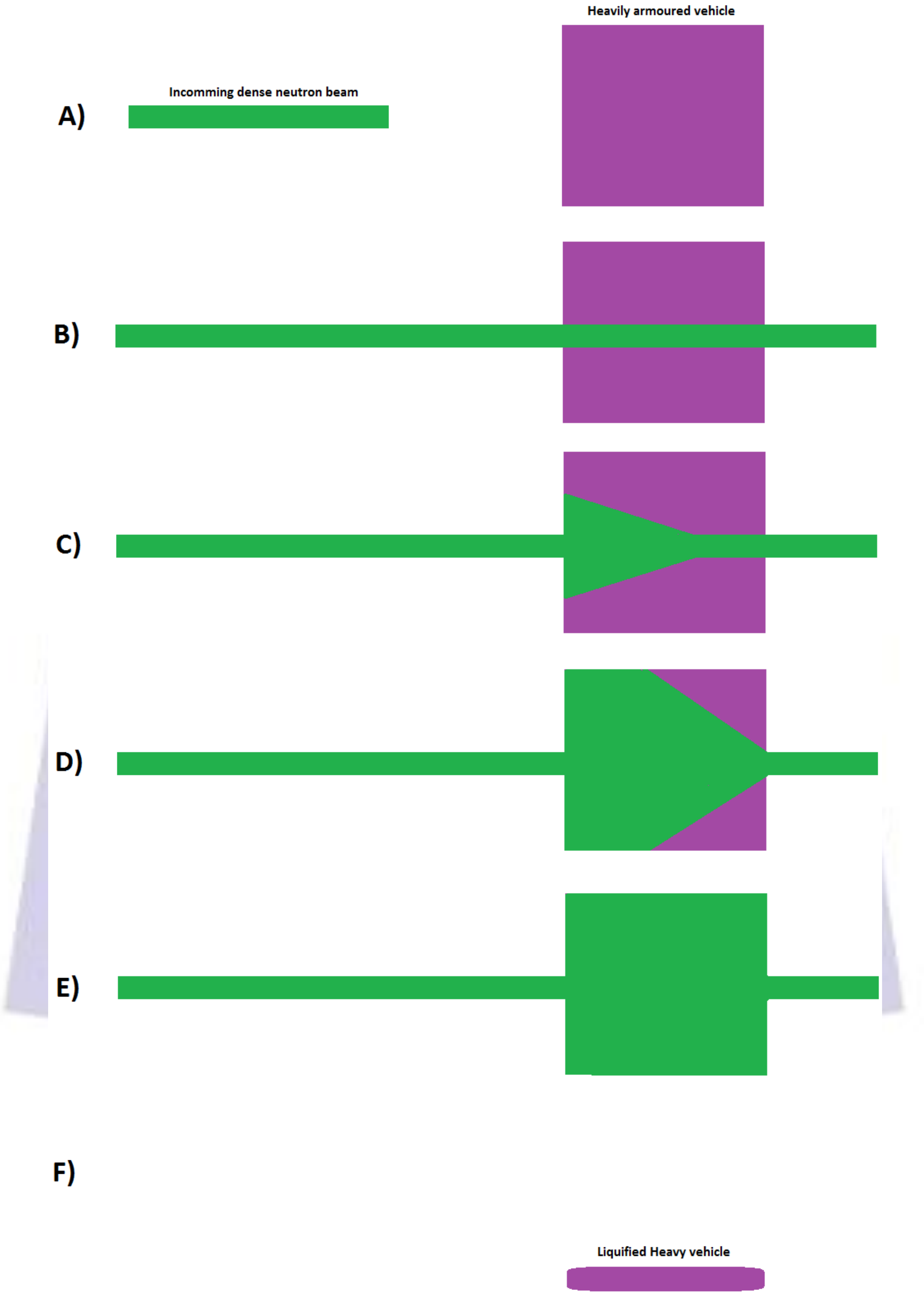

Figure 3: Here, we see the predicted effect a dense atomic disruption beam would have on a heavily armoured vehicle. The degree and efficiency of the neutron scattering would be dependent upon the density of the heavy armour, the armour thickness and the density of the neutron beam. The end result is the liquification of the target.

6. Conclusion:

Such technology would afford an extraordinary capability- the capability to bore through virtually any solid object or material by disrupting the atomic bonds within said solid or material. By simply shielding electrons from nuclei by swamping nuclei with neutrons could cause the atom to fall apart under the atoms own power. As neutrons within a dense neutron beam move, they shall in-turn swamp many other nuclei in their path, causing other atoms to fail, not just a single atom. Thus a single neutron within a dense neutron beam has the capability to assist in the disruption of thousands, millions or even billions of atoms. Basically, the denser the neutron beam, the more devastating the atomic disruption effect will be.

It could have applications in Defence, mining operations, drilling operations, metallurgy, plasma applications, etc. Such a beam would be even more effective in an environment without atmosphere, ie: a vacuum. Thus, such technology would be ideal for Defence against asteroids that could strike the Earth or strike satellites. The fact that a dense neutron beam can move at or close to the speed of light would allow asteroids thousands of miles away to be atomically disrupted before they have a chance to come into close proximity to the Earth. Thus, a dense neutron beam affords an ideal space defence technology. To my knowledge, no one has yet been able to produce a neutron beam dense enough to cause atomic disruption.

References:

[1] Serway, R.A. (1996) Physics for Scientists and Engineers with Modern Physics, Saunders college publishing, 4th edition.

Author' biography with Photo

As of the year 2016, the Author is a holder of a Science degree with honours, as well as a Mechanical engineering degree with honours. He enjoys theoretical sciences and is a publisher of theoretical works in the journal of advances in physics and the general science journal, both available online. He is also the author of the McMahon field theory, which is a theory that attempts to unify quantum physics and relativity. It uses Einsteins time dilation and length contraction equations to show that particles are observed as energy fields as they approach the speed of light, relative to observers. McMahon also uses the McMahon field theory to explain the double slit experiment.