Cored protons: cored protons join with each other and neutrons and electrons to form an atomic structure with energy being allocated beyond the set boundaries

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Part I of III

Abstract

Protons and neutrons, known collectively as nucleons, are made up of quarks. More specifically, up and down quarks. Protons and neutrons when joined together become an atom's nucleus. Within particle physics, it has been said that gluons (gauge bosons) act as force mediators that work to hold the quarks together in the atom's nucleus. Contrary to this view, gluons may not be responsible for this attribute of atomic structure. It is being offered that electromagnetic and strong gravity-related forces are in fact responsible for holding the nucleus together as an assembly. Taking that concept even further, the gravity-related force, when radiating beyond the nucleus, will morph into something much weaker but more extensive in range.

Introduction

What is being proposed is divergent from some of the teachings of current physics. With that, the hypothesis presents a different approach to atomic structure.

The premise is that, with electromagnetic cores surrounded by bi-polar outer electromagnetic fields, aided by gravity-like energy (ref. Part II), protons are bound in close proximity to each other while capturing their electrons through differences in electromagnetic polarity. Protons through electrostatic and a gravity-like attraction also retain charge neutral neutrons.

Hypothesis

According to the Standard Model, a quark is a type of elementary particle. A proton consists of two positive charge up quarks and one negative charge down quark and a neutron is made up of one up quark and two of the down quarks. The assumption here is that protons consist of an offset positive-charge fundamental energy core, one of the proton's up quarks, surrounded by a bi-polar energy field. The bi-polar field consists of the two remaining quarks that are conceivably oscillating and at frequencies differing from that of the core's field and possibly each other. The bi-polar field with its positive charge core in some ways resembles the structure of an egg with white and yoke components. (see Figure A) The proton's core and bi-polar outer field are of differing characteristics because of their delegated types. Significantly, the two up quarks give the proton its outward net positive charged presentation.

Through appropriate alignment of positive to negative polarities, the protons will hold each other in close proximity while retaining their more distant attendant electrons in much the same way (Figure B).

Additional energy, assistive in keeping the nucleons together, is provided by the strong gravity-like force that is depicted in Part II.

Neutrons as well are part of an atom's nuclear structure. It is also being hypothesized that the proton's negative pole charge functions in a way that that mimics what is referred to as electrostatic attraction, otherwise loosely known as static cling. Through this attraction, the proton's negative charge electrostatic region aids in holding charge neutral neutrons in place.

The nucleus moves as a grouping in synchronicity with any orbital motion of the electrons. This synchronization reduces the possibility of destructive shear forces between protons and electrons. A nucleus with more than one proton and neutron will result in a crystalline structural lattice. This lattice will change configuration three-dimensionally as the number of protons and neutrons varies.

How the positive-charge up quark core survives inside the bi-polar outer field, or the other way around, has not been fully rationalized. Conceivably the proposed core and bi-polar outer field, because of their fundamental differences, are immiscible. This suggests that the bi-polar field and positive-charge core are protected from reaching a ground state. For instance, opposing forces from like-magnetic poles working in conjunction with attractive electrostatic polarities might be considered as a means to keep the proton's core balanced, as a core.

Fig. A.
Cored Proton

This two-dimensional illustration is not to scale. The charge symbols are illustrational of the positive and negative charge outer field. The rigid outlines are used only to demonstrate the separation between the up quark core and bi-polar-field quarks.

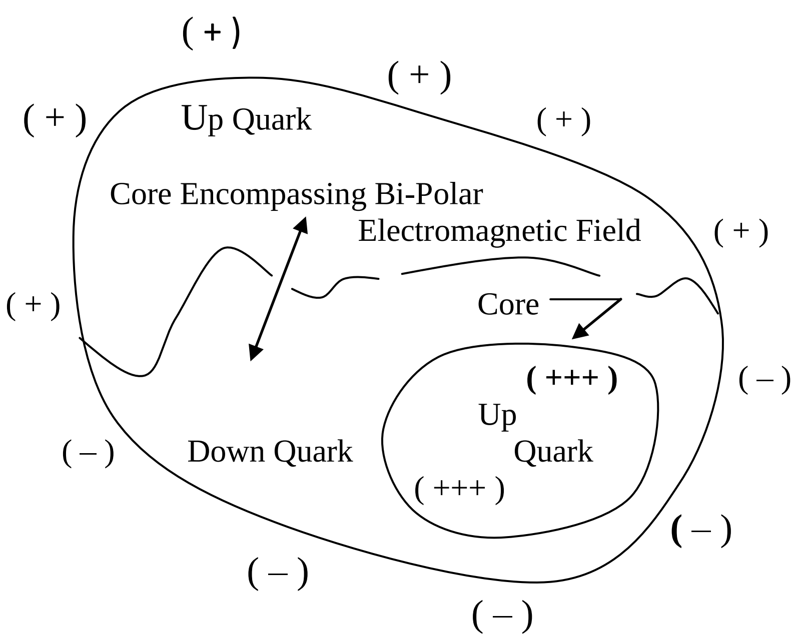
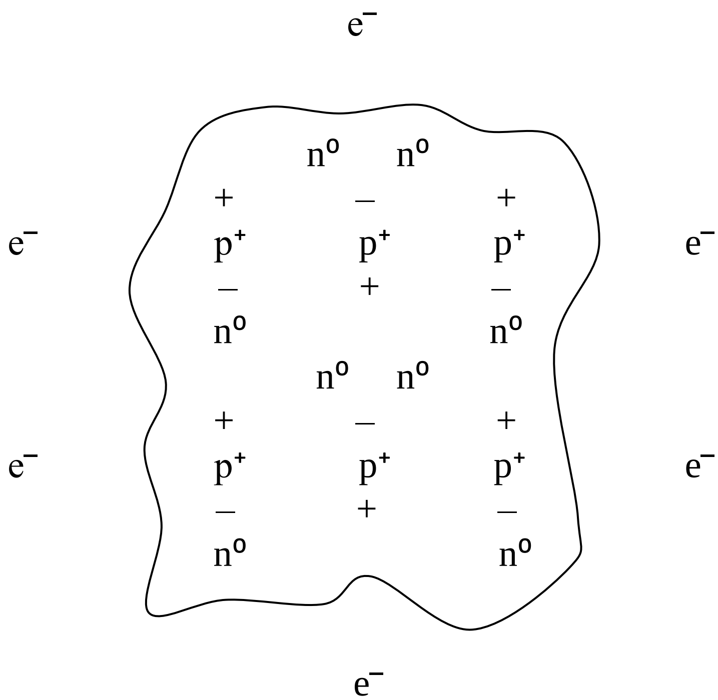


Fig. B.

Carbon-14 nucleus with surrounding electrons

The protons consist of positive-charge electromagnetic cores surrounded by bi-polar electromagnetic fields. The positive-charge core, with another up quark, results in the nucleus presenting as being electrostatically positive externally, with a somewhat offset field strength. In this way, proton to proton to neutron and electron integrity is maintained.

Note: The carbon-14 representation is not to scale. The electrons are illustrative only. The rigid outline is used only to highlight the nucleus.



Note: other numbers of protons will result in an altered crystalline lattice.

Part II of III

The strong binding forces between nucleons

Hypothesis, continued

Analogous to the first law of thermodynamics, the strong gravity-like energy in adding force to the binding of protons to protons to neutrons (nucleons) takes place in something less than a totally closed system. This leads to and invokes the most important conservation of energy. *This force exhibited between nucleons does not transfer between the nucleons but is expressed as a form of work.* The force is intrinsic and is compatible with electromagnetic energy, allowing them to coexist.

There are two distinct forces at work here. The first is polar electromagnetic. The second is a strong gravity-like force (*gl*). This gravity-like force is in the form of waves or fields and is non-polar in that it only attracts nucleons to each other (but does not repel). This energetic force is only effective very close-in to the nucleons.

The constituents of a nucleus either are in direct contact with each other or are extremely close together: picture the boundaries of protons or neutrons as being indistinct (fuzzy). In this system, the two different but compatible forces increase in attractive strength by the inverse square (or higher) of the distance between nucleons. This results in the nucleons being held in tight proximity to each other.

$$\mathcal{E} + gl = \frac{F}{d^{\mathrm{n}}}$$

The energy required to separate nucleons from each other is in the MeV range. With the two complementary intrinsic forces, the gravity-like force being the stronger of the two, and the close-knit nucleons, the high energy needed to disrupt a nucleus is held true.

Part III of III

Hypothesis, continued

Recalling from Part II, the nucleus's energy system is something less than totally closed. At short-range and close in to the binding regions between nucleons, the gravity-like energy level is exceptionally high. Tracking away from the closely bound nucleons, the gravity-like energy drops off dramatically while morphing into a very much weaker gravitational field but one that has long-range influence.

As the total mass of a macroscopic system increases so does the gravitational force to the point where, if enough mass is added, the gravitational force becomes readily quantifiable. In the microscopic world of nucleons, gravity or gravity-like forces cannot be directly measured. With this inability to directly measure such related forces, the subject will continue being open to discussion.

Bibliography

Coughlan, Guy D., Dodd, James E., and Gripaios, Ben M., *The Ideas of Particle Physics, An Introduction for Scientists* (Cambridge University Press, New York, 2006), Third ed.

Eisenbud, Leonard and Wigner Eugene P., *Nuclear Structure* (Printed by The William Boyd Press, Richmond Virginia; Princeton University Press, New Jersey, 1958).

Feynman, Richard P., *QED, The Strange Theory of Light and Matter* (Princeton University Press, Princeton, New Jersey, 1985).

Feynman, Leighton, and Sands, *The Feynman Lectures on Physics* (Addison-Wesley Publishing Company, Reading Massachusetts, 1989, Originally published in 1963), Vol. 1-3.

Gardner, Martin, *Relativity Simply Explained* (Dover Publications, New York, 1997).

Susskind, Leonard and Friedman, Art, *Special Relativity and Classical Field Theory* (Basic Books, New York, 2017).

Wikipedia's online encyclopedia and its numerous on-subject titles.