



The volume field model about strong interaction and weak interaction

Rongwu Liu

USA

E-mail: rwliu65@gmail.com

For a long time, researchers have believed that strong interaction and weak interaction are realized by exchanging intermediate particles. This article proposes a new mechanism as follows: Volume field is a form of material existence in plane space, it takes volume-changing motion in the form of non-continuous motion (or pulsation), volume fields have strong interaction or weak interaction between them by overlapping their volume fields. Based on these concepts, this article further proposes a bag model of volume field for atomic nucleus, it includes three sub-models: (1) The complex structure model of fundamental body (such as quark) which is further composed of fundamental particle (mass and electricity) and fundamental volume field (flavor and color), (2) The atom-like structure model of hadron which is further composed of hadronic nucleus (consisting of particle-like quarks) and extranuclear quarks (a kind of volume-field-like quark), and (3) The molecule-like structure model of atomic nucleus. This article also proposes a plane space model, periodic jump function model, a physics model of volume field in plane space, as well as a model of space-time conversion. The model of space-time conversion suggests that: Point space-time and plane space-time convert each other by means of merging and rupture respectively, the essence of space-time conversion is the mutual transformations of matter and energy respectively; the process of collision of high energy hadrons (from point space to plane space then to point space), the formation of black hole (from point space to plane space), and the Big Bang of universe (from plane space to point space) are three different kinds of space-time conversions.

Phenomenologically, strong interaction and weak interaction seem as if quite different from gravitational interaction and electromagnetic interaction, they have the properties of shortrange force, saturating force, non-central force, and non-attenuate force. For a long time, researchers have attempted to describe them by using the paradigm of particle model, but there still exist some problems unsolved, such as the singularities of black hole and universe. This article suggests that, volume field is a form of existence of matter in plane space, it takes volume-changing motion (or volume motion) in the form of non-continuous motion, volume fields have strong interaction and weak interaction between them by overlapping their volume fields.

The model of space-time conversion The collision of volume fields and the energy conversion between particle and volume field Like particle collision, in volume field model collision also occurs between volume fields. During the collision of volume fields, energy conversion takes place between particle and volume field and the form of space-time is also converted by merging and rupture. When two volume fields (such as two protons) collide, their volume fields overlap with each other and have strong interaction. At this time the two protons enter into plane spacetime from point space-time, the overlapping volume fields of them take volume-changing motion. According to volume field model, in plane space volume field takes volume-changing motion in the way of periodic jump (or pulsation), the speed of each jump is infinitely great, or to say, greater than speed of light. According to relativity, when the speed of particle exceeds the speed of light, the mass of particle will turn into imaginary number. This indicates that, when the speed of particle exceeds the speed of light, the mass of particle will turn into zero. If two volume fields (such as two protons) have strong interaction by means of collision, when overlapping volume fields jump with super speed of light, the mass m compatible with volume field will turn into zero, when the overlapping volume fields are at rest, the mass m will restore to rest mass m_0 .

Conclusions: Atomic nucleus is another material world existing in plane space, it is a volume field motion system. The phenomena of "quark confinement" and "asymptotic freedom" of particle-like quarks in hadronic nucleus result from the combination of deformation force and color field force. The nuclear force between hadrons in atomic nucleus attributes to the combination of deformation force and chi field force. Point space-time and plane space-time convert each other by means of merging and rupture respectively, the process of collision of high energy hadrons, the formation of black hole, and the Big Bang of universe are three different kinds of space-time conversions. Black hole doesn't collapse into a singularity because of the resistance of chi potential energy and dark energy (or dark matter), instead, it has an equilibrium state with horizon as its boundary (inside of horizon is a volume field motion system, outside of horizon is a particle motion system). The universe didn't explode from a singularity, instead, it exploded from a huge volume field under the repulsive forces of chi field and dark matter (or dark energy)

Bottom Note: This work is partly presented at International Conference on Physics June 27-29, 2016, New Orleans, USA