The Program for Construction to the Real 《Atomic and Nuclear Physics》

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Abstract: put a program for construction to a new *Atomic and Nuclear Physics*

Main Viewpoint:

Establish to *an Atomic and Nuclear Physics* which compliance with the standard of "Accurate, Clear, Concise and Direct" that "explore particles physics, deep-seated structure of matter, looking for the most basic elements of the material world and the most fundamental physical interactions".

Based on the "atomic nuclear-model structure; nuclear frog-eggs structure; and spherical layer grading structure of extra-nuclear charge distribution":

1. Fusion the *classical quantum theory*, *quantum mechanics*, *quantum field theory* and *volume charge density theory* (VDFT); establish a representation theory in *Field theory* about the volume charge density; frequency; energy levels distribution; the mechanism of energy absorption and emission of the extra-nuclear charge.

2. Generation the principle and mechanism of action of nuclear forces; the stability mechanism and stability nucleus; nuclear energy and energy levels representation. Nature of the ground state and excited state properties of nuclei will be described, including the ground-state properties of nuclei binding energy; radius; single-particle level; resonant states, magnetic moment; halo phenomena. Excited state properties, including rotating magnetic nuclei; low-lying excited state properties; the collective rotation; quantum phase transition; the collective vibration. Since there be exist clear experimental evidence those nuclear π-mesons in the collective memory mode, then the energy and the collective energy levels of characterization and formulation of the π-mesons (belt, body) should be described.

Appendix

The Basic Structure and Properties of Hadrons [1]

We all know, an atomic nucleus ($Z \geq 2$) by and only consists of two kind nucleons which protons and neutrons. In the case of not accepting any new particles, according to the *Meson theory* [2], get the following conclusions: there only exist three kind Hadrons are each a neutron, a proton and a π-meson in the world.

(1) The basic structure of Hadrons
Protons and neutrinos are the most elementary particles; a π-meson by an electron and a neutrino compounded; a neutron compounded by a proton and a π-meson, the π-meson as a shell and afterbirth, covered and wrapped with the proton.

(2) The basic properties of Hadrons
Since an electron with a unit negative charge; a neutrino is has no any charge; then the π-meson which by they are compounded has a unit negative charge, and a proton with a unit positive charge; thus, both a neutron the electric dipole moment and the magnetic moment, but without significant electrical properties. A free π-meson is unstable, a short time after (the life shorter than 8.4×10^{-17} seconds) [3], the free π-meson lysis to an electron and a neutrino; also a free neutron is unstable, after a short period of time (about 10 minutes 11seconds) [4], the free neutron lysis to a proton, an electron and a neutrino; a proton as the most elementary particle is stable (Experiment at the Super-Kamiokande detector in Japan gave lower limits for proton mean lifetime of 6.6×10^{33} years) [5].

References

[1] <The Basic Structure and Properties of Hadrons> http://vixra.org/abs/1407.0015
[2] <Meson> http://en.wikipedia.org/wiki/Meson
[3] <Pion> http://en.wikipedia.org/wiki/Pion
[4] <Neutron> http://en.wikipedia.org/wiki/Neutron
[5] <Proton> http://en.wikipedia.org/wiki/Proton