The Stability and Radioactivity of Atomic Nucleus

Yibing Qiu
yibing.qiu@hotmail.com

Abstract: put forward the causes and mechanism of radioactivity of unstable nucleus

Main Viewpoint & Result:

A Deuterium's nucleus consists of a proton and a neutron, which two protons and a π-meson, is stable; the nucleus of Helium-3 consists of two protons and a neutron, which three protons and a π-meson, is stable. [1]

A Tritium's nucleus consists of a proton and two neutrons, which three protons and two π-mesons, it is unstable. But, since a Tritium's nucleus has only a proton, there is no exist the Coulomb repulsion between of protons inside a Tritium's nucleus, so we get the Coulomb repulsion between of protons is not the reality causes for atomic nucleus in unstable state and has radioactivity.

The reality causes for atomic nucleus in unstable state and has radioactivity is: Compared with a stable Helium-3, a Tritium's nucleus has a redundancy π-meson and excess energy, until freed the redundancy π-meson [$\pi=e^{-}(\beta)+Ne(\gamma)$] and excess energy, after attenuation become Helium-3, reaches in stable state.

In short, atomic nucleus' energy is produced by neutrons and their π-mesons, the energy levels of atomic nucleus is determined by N/A, or (A−Z)/A, one kind of nuclide has radioactivity, is because it contains redundancy neutrons, or more accurately, is because it contains redundancy π-mesons and excess energy. [2]

The process that element discharged from unstable nucleus spontaneously rays (such as α-rays, β-rays, γ-rays, etc.), and the decay of the element formation in stable state, is the process that release of the redundancy π-mesons and the excess energy.

Also precisely because the energy and energy levels of atomic nucleus are determined by the (A−Z)/A, employ the ***Neutron excitation***, namely, by neutrons emission, Injection (conveying; load) neutrons into the target nucleus, making the target nucleus obtains extra neutrons and redundancy π-mesons, and then has radioactivity, to product of radioactive substances is widely used in the medical sector, academia and the industrial.

References

[1] <The Basic Structure and Properties of Hadrons> http://vixra.org/abs/1407.0015
[2] <π-Meson and the Structure of a Nucleus> http://vixra.org/abs/1405.0228