The Stability and Radioactivity of Atomic Nucleus

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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 \(\pi\)-meson, is stability; the nucleus of Helium-3 consists of two protons and a neutron, which three protons and a \(\pi\)-meson, is stability.

A Tritium’s nucleus consists of a proton and two neutrons, which three protons and two \(\pi\)-mesons, it is unstable. But, since a Tritium’s nucleus has only a proton, there is no exist Coulomb repulsion of protons inside a Tritium’s nucleus, so we get Coulomb repulsion of protons is not the reality causes for nucleus instability and radioactivity.

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

In short, radioactive nuclides, because it contains redundancy neutrons, or more accurately, because it contains redundancy \(\pi\)-mesons and excess energy; [2] the process that element discharged from unstable nucleus spontaneously rays (such as \(\alpha\)-rays, \(\beta\)-rays, \(\gamma\)-rays, etc.), and the decay of the element formation in stable state, is the release of the redundancy \(\pi\)-mesons and the excess energy.

References