

# 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 [ $\pi \rightarrow e^- (\beta) + \text{Ne} (\gamma)$ ] 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

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