

Superheavy spherical nuclei. Island of Stability.

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Abstract. *In the present paper we show, that nuclei Os 192, Pt 198, Hg 198, Hg 200, Hg 201, Hg 204, Tl 205, Pb 206, Pb 207, At 210, Pa 231, Th 232, AcU 235, Np 237, Pu 240, Am 242, Cm 247, Ku 261, and more create an island of stability.*

Keywords: superheavy spherical nuclei, island of stability, sphere 192

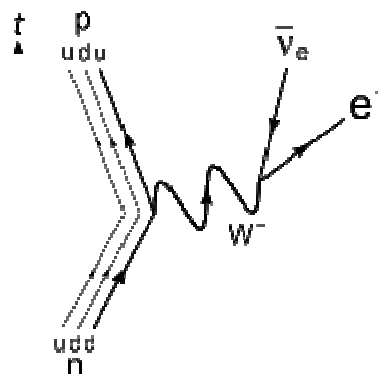
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Introduction

The theory of *Mgr. Lubomir Vlcek* published in the book *New trends in physics* [1],[2] performed in cooperation with *Ing. Branislav Sobota, PhD.*, an employee of *TU Kosice* will enable you as the first ones the insight into the stabile spheric nuclei of isotopes and isobars of practically all the elements known so far with pair and impair number of nucleons.

Neutron, β electron , gamma rays

Gamma rays have frequencies above 10 exahertz (10^{19} Hz), and therefore have energies above 100 keV and wavelength less than 10 picometers, often smaller than an atom. Gamma rays from radioactive decay commonly have energies of a few hundred keV, and almost always less than 10 MeV. The upper limit for such energies is about 20 MeV, and there is effectively no lower limit (they are sometimes classed as x-rays if their frequencies are lower than 10^{19} Hz).



The Feynman diagram for beta decay of a neutron into a proton , electron , and electron antineutrino via an intermediate heavy W boson.

In the "stable" neutron, electron orbits around the center-of-mass with speed greater than $0,999994c$.

If will start beta decay of a neutron, β electron has kinetical energy in direction of motion $80\ 398\ \text{MeV}$ (it is W^- boson), proton is moving at a speed $0,023337082847141190198366394399065c$, and radiates γ ray.

Discussion to Cobalt-60 Decay [3]

Neutron is source β rays - β electrons (bosons $Z_0\ W^{+-}$ too) , γ rays, electron neutrinos, muon neutrinos, tauon neutrinos:

1a.) β electron is radiated from a neutron ,for $v/c = 0,999994396591$ BOSON $Z = \beta$ electron

for $v/c = 0,99999364465781184$ W^{+-} BOSON = β electron W^{+-}

1b.) electron neutrinos, muon neutrinos, tauon neutrinos are waves against the direction of movement (= only energy of waves radiated by movement of electron) and in direction of movement (= only energy of waves radiated by movement of electron)

2. Logically follows that , gamma rays are actually caused by the movement of a proton in neutron.

Results

Superheavy spherical nuclei contain sphere 192 according to [2] . They are nuclei: Os 192, Pt 198, Hg 198, Hg 200, Hg 201, Hg 204, Tl 205, Pb 206, Pb 207, At 210, Pa 231, Th 232, AcU 235, Np 237, Pu 240, Am 242, Cm 247, Ku 261, XXX 262+263, XXX 264+265, XXX 266+267, XXX 268+269, XXX 270+271, XXX 272+273, XXX 274+275, XXX 276+277, XXX 278+279 ,XXX 280+281, XXX 282+283, XXX 284+285, XXX 286+287, XXX 292+293, XXX 296+297, XXX 298+299, XXX 302+303, XXX 304+305, XXX 310+311, XXX 316+317, XXX 322+323. All these nuclei create an island of stability.

References

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[3] L. Vlcek : Particles, waves and trends in physics. The article is ready for publication.

[4] K. Nakamura *et al* (Particle Data Group) 2010 *J. Phys. G: Nucl. Part. Phys.* **37** 075021