The π-meson and the μ-meson

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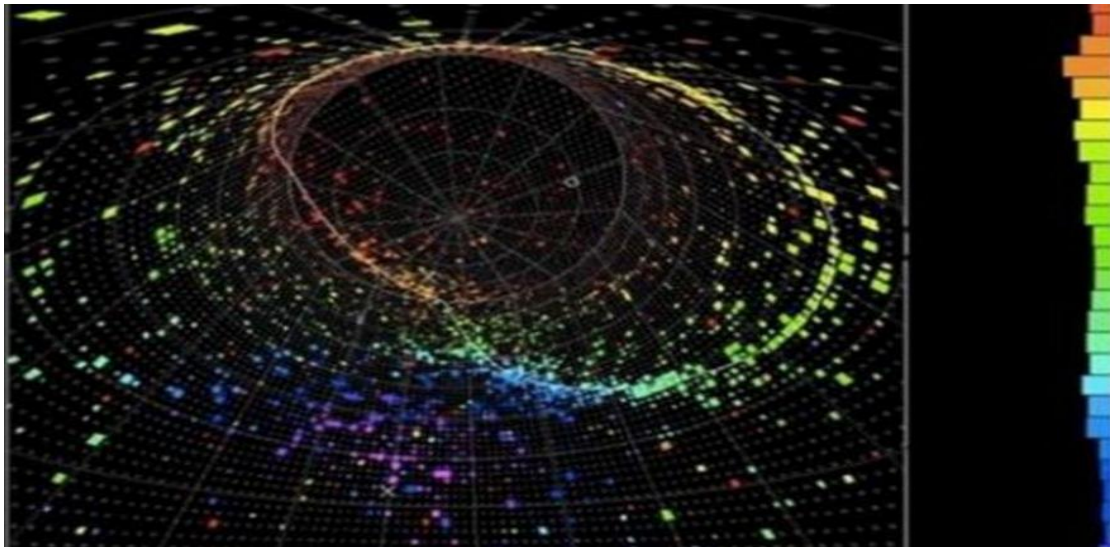
Abstract: showing a viewpoint with regards to the relationship of the *Pion* and the *Muon*



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Main viewpoint and conclusion:

The particle decay defined as the spontaneous process of one unstable subatomic particle transforming into multiple other particles. The particles created in this process (the final state) must each be less massive than the original, although the total invariant mass of the system must be conserved. [1]

Moreover, the "electronic mode" was discovered at the CERN in 1958: $\pi \rightarrow e + \nu$; a free π-meson fission into an electron and a neutrino. [2]

Besides, there are $n \rightarrow p + e + \upsilon$; a free neutron fission into a proton, an electron and a neutrino. [3]

Then, there be [4]

$$m_\pi = m_e + m_\upsilon, \quad m_n = m_p + m_\pi = m_p + m_e + m_\upsilon;$$

$$m_n = 1.00866491682\ u, \quad m_p = 1.00727647012\ u, \quad m_e = 0.0005485799\ u.$$

Then,

$$m_\pi = 0.0013884467\ u = 1.29794\ MeV/c^2.[4]$$

And,

$$m_\mu = 105.658369\ MeV/c^2.[5]$$

Then, we get $m_\mu \gg m_\pi$.

So, the π-meson couldn't able to decays into a μ-meson; or decays into a μ-meson and a μ-neutrino pairs. [6][7]

References

[1] *The particle decay*
https://en.wikipedia.org/wiki/Particle_decay

[2] *Pion*
http://en.wikipedia.org/wiki/Pion

[3] *Neutron*
http://en.wikipedia.org/wiki/Neutron

[4] *The Structure, Properties and Parameters of Nucleons*
http://vixra.org/abs/1503.0121

[5] *Muon*
https://en.wikipedia.org/wiki/Muon

[6] *T2K presents hint of CP violation by neutrinos*
http://www.interactions.org/press-release/t2k-presents-hint-cp-violation-neutrinos

[7] *An electron-neutrino interaction observed by the T2K experiment*
https://www.sciencedaily.com/releases/2017/08/170804083109.htm