Spin's Meaning, Characterization and Calculation In New Particle Physics

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Abstract: giving a viewpoint with regards to the spins of elementary particles from first principle; in the particular, about the proton's spin meaning, characterization and calculation in the consistent and definite form that suitable to it in all of different states

Main viewpoints and conclusions:

In quantum mechanics and particle physics, spin is a property of microscopic particles; but, it is neither revolves nor rotates due to they all are in a bound state in new particle physics. [1][2][3][4][5][6]

Spin is the *observed and measured charges number* of a charged elementary particle in its free state or in a bound state.

In elementary particles, only protons and electrons have their distinct *spin number* in different states; and neutrinos haven't any *spin number* due to it is a no-charged neutral elementary particle. [2][3]

With regards to protons, a proton *spin number* or *averages spin number* of protons that in a multi-protons system, sign the *spin number* of every elementary particle as *SN*, and *A* is proton's numbers in the system; *N* is the π-meson's number that combined with the protons in the system, and the *spin number* or *averages spin number* of every proton is:

$$SN = 1 - N/A \; ; \quad and \; 0 \le SN \le 1$$

Moreover, in the system, the proton's *spin number* and the system energy levels is an inversely-proportional relationship, the higher the protons *spin numbers*, the lower the energy levels; on the contrary, the lower the protons *spin numbers*, the higher the energy levels. [4][5][6]

For instance:

a single proton, $N = 0, A = 1, SN = 1$; the proton of a neutron, $N = 1, A = 1, SN = 0$;
every proton of a Deuteron, $N = 1, A = 2, SN = 1/2$;
every proton of a Helium-3, $N = 1, A = 3, SN = 2/3$;
every proton of a Tritium, $N = 2, A = 3, SN = 1/3$.

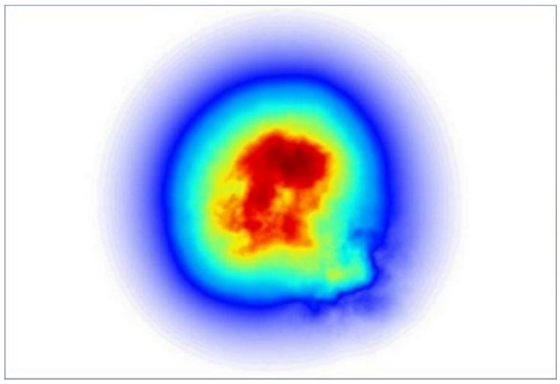

Image 1. a proton

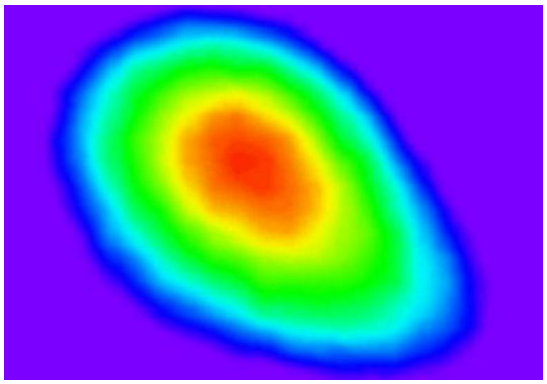

Image 2. a neutron

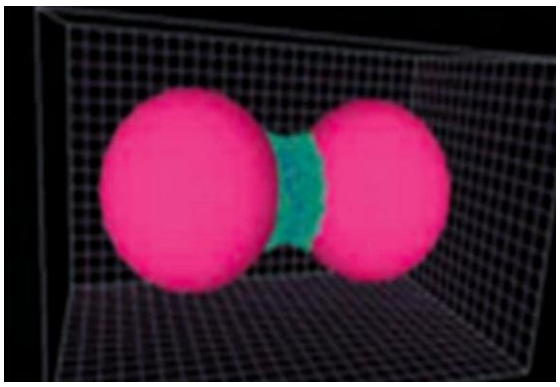

Image 3. a light nucleus

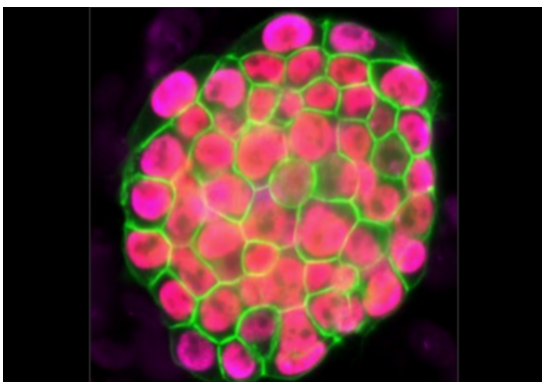

Image 4. a heavy nucleus

References

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