The quantum nature of the weak interaction

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Abstract

From the fundamental novα = 1 formula, the up quark was identified as an exchange particle based on its mass, which implies that the particle is newly formed and not, as the current theory says, transformed from the d quark through ß-decay. But what is then the weak interaction, if it does not convert quarks? Through the nucleon magnetic field, the movement of the charged quarks induces a Lorentz force, which produces a rotation of the nucleon perpendicular to the main axis of the quarks. This rotation is then transferred to the inner parts of the nucleon that creates the weak Interaction. From this, a unified formula for the gravitation and EM forces could be deduced.

Since exchange particles are usually very small, the energy representing the potential o multiplied by the interacting constant v can be equated with hf = hc/λ, the DeBroglie wavelength, and λ with 2πh/2mv, where hcα/2π = e^2/4πε0, whereby all fundamental forces can be combined with the formula novα = 1 with n = $4\pi\varepsilon_0 h\alpha/5mve^2$ (α is the Sommerfeld fine structure constant).

$$E = ov = \frac{2}{5}mv^2 = \frac{2}{5}\frac{hc}{\lambda}; \quad \frac{hc\alpha}{2\pi} = \frac{e^2}{4\pi\varepsilon_0}; \; ov = \frac{2e^2}{10\varepsilon_0\alpha\lambda}; \quad nov\alpha = 1 \quad n = \frac{2\varepsilon_0\alpha\lambda}{5e^2} = \frac{4\pi\varepsilon_0\alpha r}{5e^2} = \frac{4\pi\varepsilon_0\alpha h}{5mve^2} \quad [1]$$

From the novα = 1 formula (1), the up quark was identified as an exchange particle based on its mass, which implies that the particle is newly formed and not, as the current theory says (2), transformed from the d quark through ß-decay. Since it is not a conversion, it implies that the d-particle is split off. But how can a quark split off from the 3-quark structure? The quark connection has to be broken and this can only be done with a force that is as great as the nuclear force.

In the big bang, an extremely large number of collisions between neutrons took place and since this led to neutron decay, which had an energetic relevance for the particle, the quantization time (1) of the free neutrons is probably very long, which means that neutrons are for a very long time or permanently in the quantized state. From various experiments that have measured the proton radius, it is known that the proton radius in the unquantized state is 1.0347 times larger than the quantized radius, which is exactly four times its reduced Compton wavelength (1). Quantization means in quantum theory in the theoretical description of a physical system, the step in which concepts or methods of classical physics are modified in such a way that quantum physical observations of the system are correctly reproduced. For example, a quantized parameter is an oversized parameter that takes on a specific size to satisfy the Heisenberg's uncertainty principle. A particle is in a quantized state when it is either in an energy exchange or measurement and the product of momentum and distance/radius is less than h/2 in the normal state. Only the energy-exchanging factor of the particle is quantized, for example its spin (3). In this sense, quantization means the quantized state of the particle property, e.g., quantized spin or the quantized parameter, e.g. quantized radius (1).

But what is then the weak interaction if it doesn't transform quarks? The weak interaction in a neutron is most likely caused by a very rapid oscillatory motion of the quarks perpendicular to their rotation, similar to the thermal motion of molecules or the zitterbewegung, the energy of which is 10^{13} times smaller than the nuclear force holding the quarks together. Since the neutron has a 1.0347-fold smaller rotational power in the quantized state, this is compensated for by an increase in the oscillation frequency of the quarks by a factor of 1.0347 per second, which means that in 877.75 s (lifetime of the neutron) the frequency and energy of the oscillation increases by a factor of $1.0347^{877.75} = 1.0 \cdot 10^{13}$. Since the vibrational energy is now equal to the strong nuclear force, the quark bond is broken and the heavier d-quark split off. Free protons are so stable because they are in a quantized state for only a very short time during the energy exchange. The neutrons are stable inside nuclei because they are present there in an unquantized state.

The angular momentum of particles is the result of rotational waves, which are believed not to rotate in a classical sense. Therefore, the rotational wave of protons or nucleons has never been attributed to a rotational wave wavelength, frequency or energy, but solely to their spin, which is a quantized property and does not reflect the true velocity or angular momentum as the product of radius and impulse of a particle. If the rotational velocity were quantized or oversized as $h/4\pi mr$ due to the quantized angular momentum, the rotational energy would not be proportional to the mass of a particle but inversely proportional to it, since

$$if\ v := \frac{h}{4\pi mr} \rightarrow \quad E_{rot} = mv^2 \ = \frac{mh^2}{16\pi^2 m^2 r^2} = \frac{h^2}{32\pi^2 mr^2} \quad [2]$$

which is not possible. Hence, the rotational wave of protons very probably has a velocity with a different (smaller) value as calculated by its spin and the proton waves rotate classically.

The quarks in bound rotation in the nucleon have a frequency f of approx. 2.67×10^{22} Hz with a range of their force effect of $h/8\pi^2 mrf$, r is the distance of the quark from the nucleon center = 1.3381×10^{-17} m. The quark rotation imparts a fast oscillatory rotation to the quarks (weak interaction), which imparts the rotation to the nucleon. Through the nucleon magnetic field, the movement of the charged quarks induces a Lorentz force, which produces a rotation of the nucleon perpendicular to the main axis of the quarks. This rotation is then transferred to the inner parts of the nucleon that creates the weak Interaction. From this, a unified formula for the gravitation and EM forces could be deduced. The rotation of the quarks cannot cause gravity, but that of the solid nucleons with an m/r^2 density distribution (1) can. Also, the force of the quarks and the generated oscillation can only affect the quarks themselves and have no effect on the nucleon. This first unification of gravity, weak interaction, Coulomb force and nuclear force occurs at the quantum level, since it involves the quantum energy *hf* of rotational waves, hence the Nova theory is a modified quantum theory of gravity. Incredible as this may sound, the rotation of quarks in the ddu and duu constellations in protons and neutrons causes the cohesion in all bodies and in the entire universe.

This is the first time that gravitation could be well-founded unified with electromagnetic forces. The formula unifying the fundamental forces is:

$$\omega_G = \frac{20\pi e r_Q r_p B \omega_Q}{h} \quad [3]$$

Derivation:

$$F_L = ev_Q B = \frac{\frac{2}{5}\frac{1}{2}mv_p^2}{r_p} = \frac{\frac{1}{5}mv\omega_G r_q}{r_p} = \frac{mv\omega_G h}{20\pi mvr_p} = \frac{\omega_G h}{20\pi r_p}; \quad \omega_G = \frac{20\pi ev_Q r_Q B}{h}$$

$$\omega_G = \frac{20\pi e\omega_Q r_Q r_p B}{h} = 2\pi \cdot 2072.34\ Hz \quad [4]$$

References

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