Asymmetric Decays of Neutral Kaons and B Mesons as False Evidences of the Matter-Antimatter Asymmetry

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Abstract: It is assumed that the asymmetric decays of neutral kaons and B mesons make an absolute distinction between matter and antimatter. Such asymmetric decays were observed in collisions of nucleons only. There are not experiments in which kaons and B mesons are produced in collisions of antinucleons only. Here, applying the Scale-Symmetric Theory (SST), we showed that internal helicity of created neutral kaons (according to SST, relativistic neutral kaon is a constituent of neutral B meson also) depend on internal helicity of colliding particles - nucleons are internally left-handed whereas antinucleons are right-handed. SST shows that there should not be some distinctions between decays of neutral kaons and B mesons created in collisions of matter only and in collisions of antimatter only. In reality, the matter-antimater asymmetry does not follow from different behaviour of matter and antimatter in weak interactions but from the external left-handedness of the initial inflation field. It caused that at the end of inflation there appeared more nucleons than antinucleons. Next, the return shock wave, carrying the additional nucleons, created the early Universe.

In 1980, the Nobel Prize in Physics was for the discovery of violations of fundamental symmetry principles in the decay of neutral K-mesons [1].

Indeed we know that following semileptonic decays of the long-lived neutral kaon $K^o{}_L$

$$K^o{}_L \rightarrow \pi^- \nu_l \, l^+ \tag{1}$$

are more likely than following decays

$$K^o{}_L \rightarrow \pi^+ \nu_{anti,l} \, l^- \, . \tag{2}$$

The fractional excess is only $3.3 \cdot 10^{-3}$ [2].

But emphasize that the kaons were produced in collisions of nucleons only.

The Scale-Symmetric Theory (SST) shows that the internal helicity distinguishes not only fermions from antifermions but mesons from antimesons as well [3]. The p, n, π^+, e^+ and $\nu_{anti,e}$ are internally left-handed (L) whereas their antiparticles are right-handed (R). Moreover, $K^o{}_L$ is the binary system of positively charged pion and negatively charged pion with relativistic spin speeds [4]. When we assume that the pions rotate then $K^o{}_L$ can be internally left-handed or right-handed.

When we neglect the fact that internal helicity of $K^o{}_L$ depends on internal helicity of colliding particles then indeed the asymmetric decays of $K^o{}_L$ make an absolute distinction between matter and antimatter. But we cannot neglect it. According to SST, the nucleons are internally left-handed so in their collisions are produced only internally left-handed $K^o{}_L$. It means that the binary system of charged particles ($\pi^+\pi^-$ or πe) more often tries to emit the internally right-handed neutrino i.e. ν_e – it leads to conclusion that the decays to π^- ν_l l^+ (RRL) are more likely.

There are not experiments in which kaons and B mesons are produced in collisions of antinucleons only. In such collisions are produced the internally right-handed $K^o{}_L$ so the decays to π^+ $\nu_{anti,l}$ l^- (LLR) are more likely. It means that there is not an asymmetry in decays of the $K^o{}_L$ kaons when we take into account internal helicities not only of the final particles but as well of the colliding particles.

In reality, the matter-antimater asymmetry does not follow from different behaviour of matter and antimatter in weak interactions but from the external left-handedness of the initial inflation field [5]. It caused that at the end of inflation there appeared more nucleons than antinucleons [5]. Next, the return shock wave, carrying the additional nucleons, created the early Universe [5].

References

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