



Contribution ID : 77

Type : **Oral talk**

Precision studies of neutron decay and the left-right asymmetric model of weak interaction

Thursday, 29 October 2026 18:00 (15)

An analysis of the most recent, most precise experimental data on neutron decay points to the need to extend the Standard Model by introducing an admixture of the right-handed vector boson W_R . A left-right asymmetric weak interaction model is presented, in which the sign of the mixing angle of W_R and W_L reverses upon the transition from W^- to W^+ . In this model, CP violation arises due to the presence of an admixture of the right-handed vector boson. The model parameter, the mixing angle $\zeta = -(2.7 \pm 0.9) \cdot 10^{-3}$, is derived from neutron decay — the lifetime and decay asymmetries — as well as from studies of proton decay in nuclei, the so-called superallowed $0^+ \rightarrow 0^+$ transitions. The W_R mass $M_{W_R} = (340 \pm 60)$ GeV estimate is given by the relation from the parameter $\delta = -(5.5 \pm 1.8) \cdot 10^{-2}$, which is the ratio of the squares of the mass states of vector bosons. It is shown that within the framework of this model, the effects of CP violation in the decays of K^0 -mesons, D^0 -mesons, B^0 -mesons, and B_S^0 -mesons can be successfully described.

Primary author(s) : Prof. SEREBROV, Anatolii (NRC "Kurchatov Institute" - PNPI)

Presenter(s) : Prof. SEREBROV, Anatolii (NRC "Kurchatov Institute" - PNPI)

Session Classification : Neutrino physics

Track Classification : Neutrino physics