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Precision neutron beta decay experiments as a probe of BSM physics

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Study of the neutron and nuclear beta decay correlation coefficients play important role in understanding the weak interaction. The correlation coefficients are sensitive to the exotic scalar and tensor interactions that are not included in the Standard Model. The information from low energy precision experiments is often complementary to that obtained from high-energy scale experiments. A short overview of neutron beta decay correlation experiments will be presented with emphasis on the BRAND project which is dedicated to measure simultaneously 11 neutron correlation coefficients (a, A, B, D, H, L, N, R, S, U, V) where 7 of them depend on the transverse electron polarization –a quantity which vanishes in the standard model. The BRAND project is starting on the cold neutron beamline PF1B at the ILL. The ultimate phase of the project is expected to be accomplished at ESS. I will discuss challenges, recent progress and plan of measurements.

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