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High precision branching ratio measurement in ^{19}Ne beta decay

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At present there are several large scale experiments ongoing world-wide that aim to find experimental evidence of physics beyond the standard model (SM). Most of these experiments involve either deep underground low-background measurements or high-energy collider physics. An alternative method to look for signatures of new physics is via precision tests of fundamental symmetries assumed in the model. Precise measurements of observables such as decay rates and angular correlations in nuclear beta decays can be used to stringently test the assumed symmetries in the SM and to probe for exotic couplings, beyond the established V-A (vector – axial vector) picture of weak interactions.

In this presentation, we describe the analysis of data from a previous experiment performed at TRIUMF (Canada's National Laboratory for Particle and Nuclear Physics) to obtain the superallowed branching ratio for the beta decay of ^{19}Ne to ^{19}F using a radioactive ion beam. Together with a previously measured beta asymmetry parameter, the implications of our result pertaining to searches for right-handed weak interactions will be briefly discussed.

Apply to be considered for a student award (Yes / No)?

yes

Level for award (Hons, MSc, PhD, N/A)?

PhD

Main supervisor (name and email) and his / her institution

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Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

No

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