

Abstract Submitted
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Muon decay asymmetry and the standard model¹ JAMES BUENO,
University of British Columbia, TWIST COLLABORATION — The asymmetry of the positron in polarised muon decay provides confirmation that the weak interaction maximally violates parity. Since 1957, the quantity $P_\mu\xi$ has been measured with increasing precision, where P_μ is the polarisation of the muon, and ξ is a parameter describing the asymmetry. So far, the results have been consistent with the standard model's $(V - A)$ interaction. The TRIUMF Weak Interaction Symmetry Test (TWIST) is close to completing a measurement of $P_\mu\xi$ at the level of 0.1%. An order of magnitude improvement over pre-TWIST results is anticipated. The experiment uses highly polarised muons from pion decay, and is limited in precision by a knowledge of how much the muons depolarise before decaying. At this level, the experiment is sensitive to physics beyond the standard model, such as the weak decay of right-handed muons, and left-right symmetric models where a $(V + A)$ current is introduced to conserve parity at higher energies. The physics motivation and experiment will be described, including the methods that have reduced the dominant systematic uncertainties.

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