

Abstract for an Invited Paper
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Probing the Weak Interaction Spacetime Structure with Muon Decay

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Muon decay provides an excellent place to study the structure of the weak interaction. Since it is a purely leptonic process, many uncertainties deriving from the internal structure of the particles involved or from other interactions are reduced. TWIST measures with high precision the momentum and angular dependence of positrons emitted from the decay of polarized positive muons. I will describe the apparatus, some of the novel analysis techniques that we have employed, and our future goals. New results for the muon decay parameters ρ and δ will be presented, together with their implications regarding the spacetime symmetries of the weak interaction. References: J.M. Musser *et al*, Phys. Rev. Lett. 94, 101805 (2005), A. Gaponenko *et al*, Phys. Rev. D. (Rapid Communications) 71 (2005).

¹For the TWIST Collaboration