

Abstract Submitted
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The TREK program at J-PARC¹ MICHAEL KOHL, Hampton University, TREK COLLABORATION — The TREK program at J-PARC in Japan consists of a series of experiments that have been proposed to use the new, recently commissioned kaon beamline K1.1BR at the new J-PARC Hadron Facility. A beam of low-energy positively charged kaons will be stopped, and their decays observed with a large acceptance toroidal spectrometer capable of tracking charged particles with high resolution, combined with a photon calorimeter and additional instrumentation with muon polarimeters. The first two experiments, requiring less beam intensity, aim to test lepton universality in the $K_{e2}/K_{\mu2}$ ratio with 0.2% statistical uncertainty, and to search for heavy sterile neutrinos in two-body kaon decays. Ultimately, the Time Reversal Experiment with Kaons (TREK) aims to find New Physics beyond the Standard Model by a precision measurement of the T-violating transverse polarization P_T of muons in the $K_{\mu3}^+$ decay of stopped kaons with a sensitivity of 10^{-4} . An overview of the planned experiments, results from recent R&D activities, and the current project status will be presented.

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Michael Kohl
Hampton University

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