Contribution ID: **155** Type: **Oral**

Status of the TREK/E36 Experiment at J-PARC

Tuesday 18 October 2016 17:20 (20 minutes)

A precision test of lepton universality in the leptonic decay ratio for positive kaons $R_K = K_{e2}/K_{\mu 2}$ has been carried out with stopped kaons at J-Parc by the TREK Collaboration (Experiment E36). The Standard Model (SM) prediction for R_K is very precise with an uncertainty of $\Delta R_K/R_K$ = 4 x 10^{-4}. An observed deviation from this would be an indication of New Physics beyond the SM. Simultaneously, E36 looked for possible light U(1) gauge bosons and sterile neutrinos below 300 MeV/c^2, which could be associated with dark matter or explain established muon-related anomalies such as the muon $g-2$ and the proton radius puzzle. The TREK-E36 detector was installed in 2014, at the J-PARC K1.1BR kaon beamline. It consists of a toroidal spectrometer, that affords high resolution tracking, in concert with a kaon stopping target, a multi-element CsI(TI) photon detector, and particle ID detector array. Commissioning was carried out in 2015 and production data taking was completed by the end of 2015. The offline analysis is now in progress. The status and recent progress of the experiment will be presented.

Author: Prof. DJALALI, Chaden (University of Iowa)

Co-author: E36, J-Parc ((for the TREK Collaboration)

Presenters: Prof. DJALALI, Chaden (University of Iowa); Prof. HASINOFF, Michael (Univ of British Columbia)

Session Classification: Tu - 4

Track Classification: Low energy precision tests of the Standard Model