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The Stopped-Kaon Decay Experiment TREK/E36 at J-PARC[1]
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The TREK/E36 experiment conducted at J-PARC in Japan aims to test lepton universality in the ratio of decay widths, $R_K = \Gamma(K_{e2})/\Gamma(K_{\mu 2})$, by utilizing a superconducting toroidal spectrometer, a scintillating fiber target, particle identification systems in combination with a highly segmented CsI(Tl) photon calorimeter covering 75% of 4π and charged-particle tracking detectors. Additionally the set-up of the E36 detector system facilitates searches for light $U(1)$ gauge bosons below 300 MeV/c^2. These bosons could be associated with dark matter or explain the established muon-related anomalies such as the muon $g-2$ value, and the proton radius puzzle. The status and approach of the analysis will be presented.

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