Contribution ID: **35** Type: **Poster presentation**

Status of the neutron decay experiment PERC

Tuesday 9 September 2025 16:45 (1 minute)

The decay of free neutrons is a powerful tool for precision tests of the Standard Model of particle physics. Correlation coefficients - such as the beta asymmetry A and the Fierz interference term b - serve as input for the determination of the CKM matrix element V_{ud} and for searches for (effective) scalar and tensor as well as right-handed couplings.
The neutron decay spectrometer PERC (Proton Electron Radiation Channel), which is set up at the research reactor FRM II in Garching, Germany, aims to improve the accuracy of several correlation coefficients by up to one order of magnitude. PERC consists of a 12 m long superconducting magnet system, in which the neutron beam is contained by a non-depolarizing neutron guide. The magnetic field guides electrons and protons produced in the neutron decay towards the main detector, which will initially be a scintillation detector with photomultiplier tube readout. A second detector system, which consists of a scintillator read out by silicon photomultipliers, is installed in the upstream area of PERC and allows to identify backscatter events.
The poster gives an overview of PERC and presents the current status.

Author: LÖBELL, Lilli (Technical University of Munich)

Co-authors: SAAVEDRA GARCIA, Alberto (Technical University of Vienna); DOBLHAMMER, Andreas (Technical University of Vienna); SCHUBERT, Anna (Technical University of Munich); MÄRKISCH, Bastian (Technical University of Munich); WINDELBAND, Bernd (University of Heidelberg); KLAUSER, Christine (Paul Scherrer Institut); DUBBERS, Dirk (University of Heidelberg); JERICHA, Erwin (Technical University of Vienna); ABELE, Hartmut (Technical University of Vienna); Dr PRADLER, Irina (Technical University of Vienna); GALIC, Ivica (Technical University of Vienna); KLENKE, Jens (Forschungs-Neutronenquelle Heinz Maier-Leibnitz); SCHILBERG, Johannes (Technical University of Vienna); GOMEZ GUZMAN, José Manuel (Forschungs-Neutronenquelle Heinz Maier-Leibnitz); BERNERT, Karina (Technical University of Munich); LEHMANN, Kathrin (Forschungs-Neutronenquelle Heinz Maier-Leibnitz); LEBERT, Manuel (Technical University of Munich); Prof. FERTL, Martin (Johannes Gutenberg University Mainz); FRIEDMANN, Ralf (Forschungs-Neutronenquelle Heinz Maier-Leibnitz); SOLDNER, Torsten (Institut Laue Langevin); SCHMIDT, Ulrich (University of Heidelberg)

Presenter: LÖBELL, Lilli (Technical University of Munich)

Session Classification: Poster Session and BBQ