Contribution ID: **217**   Type: **Poster**

NoMoS: Beyond the Standard Model Physics in Neutron Decay

Tuesday 18 October 2016 17:47 (1 minute)

The New Frontiers Group 'NoMoS'of the Austrian Academy of Sciences aims to search for traces of new physics in neutron beta decay with novel experimental techniques.

Precision measurements in neutron decay allow searching for physics beyond the Standard Model. An accuracy of 1E-4 in the observables corresponds to energy scales of 1 –100 TeV for new particles and interactions; far above the production threshold at the LHC. To achieve this accuracy, a new technique is developed: R×B spectroscopy. An R×B spectrometer measures the momentum of charged particles by their drift in a circular magnetic field. This precision method will be applied to determine several correlations between decay products in neutron decay.

For measurements at ultimate statistics, the R×B spectrometer will be installed at PERC, a new facility at the FRM II in Garching/Germany that collects electrons and protons from a large neutron decay volume. A final goal is to measure or set limits on the Fierz term. This term is zero in the Standard Model and has not yet been measured with neutrons. A non-zero value would indicate the existence of exotic scalar or tensor currents, resulting from the exchange of yet unknown charged Higgs bosons, sleptons, or leptoquarks.

Besides the physics motivation, the measurement concept and physics programme of NoMoS are presented.

Author: Dr KONRAD, Gertrud (SMI Wien & Atominstitut)

Co-authors: Mr BROUSSE, Clément (SMI Wien & ECAM Strasbourg); Mr FILLUNGER, Harald (SMI Wien); Prof. ABELE, Hartmut (Atominstitut); Mr BOSINA, Joachim (SMI Wien & Institut Laue Langevin); Dr ZMESKAL, Johann (SMI Wien); Dr SUZUKI, Ken (SMI Wien); Dr PITSCHMANN, Mario (Atominstitut); Mr KLOPF, Michael (Atominstitut); Dr SOLDNER, Torsten (Institut Laue Langevin); Dr WANG, Xiangzun (Atominstitut)

Presenter: Dr KONRAD, Gertrud (SMI Wien & Atominstitut)

Session Classification: Poster Session