Contribution ID: **90** Type: **Oral**

Improved determination of the ß-v angular correlation coefficient a in free neutron decay with the aSPECT spectrometer

Tuesday 22 October 2019 09:30 (20 minutes)

We report on a precise measurement of the electron-antineutrino angular correlation (a coeffcient) in free neutron beta-decay from the aSPECT experiment. The a coefficient is inferred from the recoil energy spectrum of the protons which are detected in 4pi by the aSPECT spectrometer using magnetic adiabatic collimation with an electrostatic filter. Data are presented from a 100 days run at the Institut Laue Langevin in 2013. The sources of systematic errors are considered and included in the final result. We obtain a= -0.10430(84) [1] which is the most precise measurement of the neutron a coefficient to date (PDG value a=0.1059(28)). From this, the ratio of axial-vector to vector coupling constants is derived giving lambda= -1.2677(28). This talk gives an overview of the aSPECT experiment, discusses the treatment of systematic errors and shows the status of measurements (including our result).

[1] M. Beck et al. (aSPECT collaboration), arXiv:submit/2803505 [nucl-ex] 13 Aug 2019, submitted to Phys. Rev. C

Author: Prof. HEIL, Werner (Institute of Physics , JGU Mainz, Germany)

Co-authors: Dr WUNDERLE, Alexander; Dr SCHMIDT, Christian; Dr GLÜCK, Ferenc; Dr AYALA GUADIA, Fidel; Dr KONRAD, Gertrud (Technische Universitat Wien, Atominstitut , 1020 Wien, Austria); Mr KAHLENBERG, Jan; Dr BECK, Marcus (Industry); Dr SIMSON, Martin; Dr BORG, Michael; Dr KLOPF, Michael; Prof. ZIMMER, Oliver; Dr MUNOS HORTA, Raquel; Dr MAISONROBE, Romain; Dr VIROT, Romain; Prof. BAESSLER, Stefan; Dr SOLDNER, Torsten; Prof. SCHMIDT, Ulrich

Presenter: Prof. HEIL, Werner (Institute of Physics , JGU Mainz, Germany)

Session Classification: Session