Contribution ID: **149** Type: **Poster**

Simulation model of the UCN optics system of the n2EDM apparatus at PSI

Tuesday 22 October 2019 18:00 (1 minute)

on behalf of the nEDM collaboration at PSI

The quest of a permanent electric dipole moment of the neutron, a CP-violating property, is one of the highest priorities in low-energy particle physics. The design of the n2EDM apparatus, now under construction at the PSI ultracold neutron (UCN) source, was strongly supported by neutron optics simulations using the MCUCN code. In order to obtain as realistic results as possible, the calculations treat the UCN source, beamline, and n2EDM apparatus as one system. One scope was to maximize the number of stored UCN in the double-chamber setup as a function of the geometry and coating quality of the guide system and the two storage volumes. The asymmetry in UCN counts, energy spectra, and centre of mass offsets in the two chambers had to be kept minimal. Future use of the n2EDM simulation model will be the support of a series of measurements which will be conducted in order to test and characterize the UCN optics parts of the apparatus including the spin analysis. This will provide effective parameters of the wall coatings (loss and spin flip), and help to identify possible ways for further improvements. A fine-tuned simulation model of n2EDM will finally provide detailed energy spectra for the upper and lower chambers as a function of storage time. The energy distribution of UCN is an important input for the study of systematic effects. In this poster we will give a status on the n2EDM simulation model, e.g. the recently implemented complete sequence of UCN filling, storing and spin analysis in one run.

Author: Dr ZSIGMOND, Geza (Paul Scherrer Institut)

Presenter: Dr ZSIGMOND, Geza (Paul Scherrer Institut)

Session Classification: BBQ - Drinks & Posters