Contribution ID: **480** Type: **Talk**

UCN-Detection System for the PanEDM Experiment

Wednesday 8 September 2021 14:30 (20 minutes)

The PanEDM collaboration prepares a measurement of the Electric Dipole Moment of the neutron (nEDM) at the Institut Laue-Langevin, using its new source for ultracold neutrons (UCN), SuperSUN. The measurement principle relies on Ramsey's spectroscopy method of separated oscillating fields, which is applied to polarized UCNs stored in two chambers placed in a common magnetic field. The envisaged experimental sensitivity of $d_n = 7.9 \times 10^{-28}$ ecm imposes stringent requirements on performance and stability of the system in general and especially on the detection system. This poster presents limits for the bandwidth, efficiency and background of a detection system suitable for a high precision experiment such as PanEDM. We extensively modified a commercially available system, based on four Gas-Electron-Multiplier detectors with a B10 neutron conversion layer. This enhanced the gas and signal amplification, reduced sparks, lowered the overall electronic noise and improved the usability. Thus we can present an improved system and its first demonstration with UCN which is adapted for the envisaged PanEDM limit.

Primary author: PIELER, Magdalena (For the PanEDM Colaboration)

Presenter: PIELER, Magdalena (For the PanEDM Colaboration)

Session Classification: Development of accelerators and detectors

Track Classification: Development of accelerators and detectors