Contribution ID: **85** Type: **Poster presentation**

A spatially resolving detector for ultracold neutrons

Tuesday 9 September 2025 17:14 (1 minute)

Ultracold neutrons (UCNs) can be stored in material vessels and magnetic field gradients. This property allows for long observation times and thereby precision measurements of fundamental neutron properties. In the presented detector design, UCNs are converted into an electrical signal by employing a ^{10}B conversion layer stacked with a ZnS(Ag) scintillation layer. The neutron capture reaction in the conversion layer generates a light pulse in the scintillation layer, which is then guided onto an array of silicon photomultipliers by a 3D printed light guide. This setup is well suited for in-situ detection of UCNs in strong magnetic fields and compatible with vacuum environments. In a first test beamtime, the detector was compared to a commercial UCN detector and its spatial resolution was evaluated. This poster will present the detector setup as well as the test beamtime results.

Author: FRANZ, Konrad (Johannes Gutenberg University Mainz)

Co-authors: RIES, Dieter Achim (PSI - Paul Scherrer Institut); Prof. FERTL, Martin (Johannes Gutenberg University Mainz)

Presenter: FRANZ, Konrad (Johannes Gutenberg University Mainz)

Session Classification: Poster Session and BBQ