Contribution ID: **24** Type: **Poster presentation**

Neutron-to-mirror-neutron oscillations in an ultracold neutron beam

Tuesday 9 September 2025 16:38 (1 minute)

The concept of "mirror matter"has been postulated in various terms since the 1950s. The modern formulation supposes that every Standard Model particle has a partner with opposite chirality, in order to restore parity symmetry in the weak interaction. Neutrons are of particular interest because their lack of electric charge allows for the possibility of mixing between the ordinary and mirror forms. Observation of such a phenomenon would have implications for baryogenesis, dark matter, and even cosmic rays. We present an overview of an experiment performed in May–July 2024 at the PF2 ultracold neutron (UCN) facility of the Institut Laue-Langevin. The experiment aims to search for evidence of neutron-to-mirror-neutron oscillations in a UCN beam, under the influence of a magnetic field in the range 1–10 mT. Neutrons were counted using one of the fast-response gaseous detectors designed and built for the n2EDM experiment, known as GADGET.

Author: GALBINSKI, Daniel (LPC Caen)

Co-authors: Dr CLEMENT, Benoit (LPSC Grenoble); PIGNOL, Guillaume (LPSC Grenoble); ROCCIA, Stephanie (CSNSM); SAENZ, William (LPC); LEFORT, thomas (Université de Caen Normandie, ENSICAEN, CNRS/IN2P3, LPC Caen UMR6534, F-14000 Caen, France)

Presenter: GALBINSKI, Daniel (LPC Caen)

Session Classification: Poster Session and BBQ