

# **THE ULTRACOLD NEUTRON FACILITY FOR FUNDAMENTAL PHYSICS AND THE HIGH-SENSITIVITY SEARCH FOR AN ELECTRIC DIPOLE MOMENT OF THE NEUTRON AT THE PAUL SCHERRER INSTITUTE**

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Ultracold neutrons (UCN) can be stored for hundreds of seconds, and therefore provide a unique tool in fundamental physics to determine properties of the neutron itself.

UCN allow tests of the Standard Model of particle physics, or searches for exotic interactions, for evidence of exotic particles or modifications of gravity. High-precision experiments, most prominently the search for an electric dipole moment of the neutron (nEDM), share in common their need for the highest possible intensities of UCN.

The new-generation UCN facility at the Paul Scherrer Institute (PSI), Switzerland, has been operating for 4 years and provides high UCN intensities to experiments over the entire operating season of the PSI high-intensity proton accelerator, from May to the end of the year.

The world's most sensitive nEDM search is installed on one of the two main UCN ports, and is fully operational. Data taking was successfully undertaken in 2015 and will continue throughout the entire 2016 beam period.

An overview of the present status and performance of the UCN facility will be given, along with achievements, status and plans for the nEDM experiment.