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Status of the Ultracold Neutron Source at PSI

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Commissioning of the new ultracold neutron (UCN) source at the Paul Scherrer Institut (PSI) has started. The design goal of this new generation high-intensity UCN source is to exceed the currently available ultracold neutron densities by a factor of ˜100, thus making it very valuable for fundamental physics research like the search for a neutron electric dipole moment. The source will deliver these densities into two experimental areas.
The key features are a very intense (Ip > 2.2 mA) pulsed proton beam with a low duty cycle (1%), a lead/Zircaloy spallation target, a 3.6 m3 heavy water moderator and a 30 liter solid Deuterium (sD2) converter system. Spallation neutrons are thermalized in the heavy water, further cooled and partially downscattered into the ultracold energy regime (E < 300 neV) in the sD2 crystal. Installation of most of the components has been completed. Commissioning of the facility will be finished within this year including the first cool-down and UCN production. An overview of the design of the source is reported as well as the current status of assembly and commissioning.

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