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## **【356】 Investigating the solid deuterium in the PSI UCN source moderator**

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The ultracold neutron (UCN) source at PSI converts fast neutrons from a spallation target into UCN via thermalization in  $D_2O$ , subsequent moderation in solid ortho-deuterium ( $sD_2$ ), and finally down-scattering on the  $sD_2$  lattice. However, during normal operation a decline in UCN output is observed. A conditioning process allows to recover the original performance, and in many cases even increases the UCN output. This process consists of reducing the  $sD_2$  vessel cooling power and heating its lid for a short period. Investigations to pinpoint the reasons for the decreasing UCN rate and the beneficial impact of the conditioning process, together with monitoring HD and para-deuterium concentrations to exclude UCN losses through these, will be presented.

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