

## New para-hydrogen cold neutron source at BRR: Monte Carlo simulations

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**Date and time:**

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14:00-14:45 + discussion

**Location:**

KFKI Campus, Bldg 19 Lecture room + Online

**Seminar link:**

<https://ek.hun-ren.hu/s/BNC/Seminars/DmitriiShapiro>

**Abstract:**

The upcoming upgrade of the neutron guide system at the BRR provides an opportunity to replace the existing disk moderator with a new design, which would result in a better performance of a cold neutron source. Using the Monte Carlo code PHITS we investigated two options: box para-hydrogen moderator and assemblies of flat para-hydrogen moderators. Simulations indicate that the box moderator can increase neutron brightness by up to 2.2 times in the wavelength range of 3-7 Å, while flat moderator assemblies provide an additional gain of about 20% at 2 Å. In this talk we will discuss details of the simulations, the optimization procedure, the limitations of the proposed moderators, as well as the obtained results.