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The HERMES reflectometer at the JULIC neutron platform

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The Laboratoire Léon Brillouin is currently evaluating the use of High brilliance Compact Accelerator-driven Neutron Sources (HiCANS) to provide the French neutron scattering community with a suite of world-class instruments. For that purpose, the performances of neutron scattering instruments around this novel type of sources must be evaluated. HERMES is a time-of-flight horizontal reflectometer designed for soft-matter studies that operated at the Orphée reactor until 2019. Through a collaboration with the Jülich Centre for Neutron Science, HERMES is being installed at the HBS demonstrator neutron source at the JULIC accelerator of the Institute for Nuclear Physics (IKP) Forschungszentrum Jülich. This source is able to deliver a cold spectrum with pulses in the 100 μ s-1 ms range and is very well suited to evaluate the feasibility of reflectivity experiments at a HiCANS. As the flux at the JULIC neutron platform is 5 orders of magnitude lower than the one expected for a HiCANS, our current goal is to perform reflectivity experiments with supermirrors as a proof of concept. Nevertheless, Monte-Carlo simulations showed that HERMES instrument's performances at a HiCANS could match that of reflectometry instruments operating at medium power research reactors. This work is part of the collaboration within ELENA and LENS on the development of HiCANS. It has been funded by the "CANS Inflexion" program at the CEA and the "IPHI-Neutron" SESAME project of the Île de France region.

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