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Utilizing very low flux nuclear reactors for neutron imaging

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In order to provide a basic platform for training and first contact research in the field of neutron science, very low flux facilities represent a sufficient starting point. The training and research reactor (**AKR-2**) with a maximum continuous power of two Watts can be categorized as such a facility. In the course of the last two years, the experimental field of the AKR-2 has been extended by a thermal neutron imaging radiography system (**TRAPY**). Currently, this setup utilizes thermal neutrons with a LiF/ZnS(Ag) scintillator, with the prospect to be able to switch to the fast neutron spectrum in a later setup.

Split in two parts, we first introduce the AKR-2 and the boundary conditions, it provides and continue with first achievements in building and characterizing the imaging setup. So far, the characterization has been made through an L/D study. This study builds upon a previous investigation with a less advanced imaging system (DELCam) and is intended to demonstrate the limits in neutron imaging at AKR-2. A two-way cadmium knife-edge with integrated reproduction scale has been used for the slanted edge method in order to estimate the edge response sufficiently. Additionally, first measurement examples are introduced. It is therefore proposed that experiments not ranked sufficiently high enough for the limited beam time at high flux facilities, but with their experimental needs fulfilled by the AKR-2, can be conducted at our facility.

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