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Monitoring Neutron Spectrum of Reactor IBR2 Using New Direct Beam Detection System at Small Angle Neutron Scattering Spectrometer (YuMO)

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The specific geometry of small angle neutron scattering spectrometer YuMO, a central hole along the neutron beam direction through the two scattering detectors reaching to direct beam detector (DBD) located at 35 meters from moderator [1-3]
DBD importance return to determine the transmittance of the sample as a function of wavelength, due to peculiarities of normalization when the ratio between the scattering values from the sample and the vanadium standard become close to each other. Additional information about the procedure can be found in [1,2]. Also to monitor occurring changes at reactor power on long term.
The new direct beam detector at YuMO is a proportional gas detector with solid state Boron converter [4-8]. Here we present recording for IBR2 neutron spectrum with different reactor power by processing empty beam spectrum on DBD, it was shown that the detector works effectively. Also, comparison between new and old DBD detector showed that both are stably working. However new DBD have higher efficiency.

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