

## Development of new Highly Granular Neutron Detector for the BM@N experiment.

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The BM@N experiment, located at the Nuclotron facility of the Joint Institute for Nuclear Research (JINR) in Dubna, is a fixed-target experiment aimed at studying heavy ion collisions at beam energies up to 4 A GeV. One of the primary goals of the experiment is to measure neutron spectra and yields, which are essential for understanding the dynamics of these collisions. To address the challenges of detecting neutrons in the kinetic energy range of 0.5–4 GeV, a Highly Granular Neutron Detector (HGND) is being developed. The detector's high granularity is critical for precise particle identification and presents a significant design challenge. It features a layered structure with copper absorbers and readout layers consisting of an 11x11 array of plastic scintillators, with a Multi-Pixel Photon Counter (MPPC) readout board and an LED-based calibration board. This report presents status of the design, production, and testing of the readout and calibration boards, along with the development of the mechanical fixtures and support structures required for the detector's assembly.

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