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Development of neutron reconstruction procedure with the HGND at the BM@N experiment

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BM@N is a fixed target experiment at the Nuclotron in Dubna, JINR. It is designed to study heavy ion collisions at beam energies up to 4 A GeV. Some of the important observables in this experiment are the spectra and the yields of neutrons. The Highly Granular Neutron Detector (HGND) is being developed to address experimental difficulties in measuring neutrons with kinetic energies 0.5 - 4 GeV. High granularity of the detector allows the recognition of neutrons in the presence of background particles. However, this task requires the development of advanced algorithms. One of the possible approaches is to combine fired cells of the detector into clusters, apply selection criteria to the clusters and then reconstruct the energy of the neutron by its time of flight. Such cluster-based algorithm of neutron reconstruction and its performance will be discussed.

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