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Algorithm of neutron identification with the HGND at the BM@N experiment

Fixed target BM@N experiment at Nuclotron (JINR, Dubna) is aimed at study of heavy ion collisions at beam energies up to 4 A GeV. The High Granular Neutron Detector (HGND) is being developed in addition to existing BM@N detectors. It provides a possibility to carry out unique measurements of direct and azimutal flow of neutrons and measure their energy spectrum. Such measurements allow to study the isospin term of the equation of state of hadronic matter.

The HGND has two arms, each consisting of 8 layers of plastic scintillator with copper absorber plates in between. The first layer is used for rejection of the charged particles. Each scintillation layer is assembled from 11x11 matrix of individual cells (1936 cells in total).

This report is dedicated to the development of algorithm of HGND data analysis. This algorithm includes cluster recognition, selection of clusters corresponding to neutrons and determination of their energy by the time of flight. The energy resolution, efficiency and purity of neutron selection based on Monte-Carlo simulation will be discussed.

Section

Heavy ion collisions at Intermediate and high energies

Primary author: SHABANOV, Arseniy (INR RAS)

Co-authors: GUBER, Fedor (INR RAS, Moscow); Dr GOLUBEVA, Marina (INR RAS); KARPUSHKIN, Nikolay (INR RAS); MOROZOV, Sergey (Institute for Nuclear Research RAS); VOLKOV, Vadim (INR RAS); ZUBANKOV, Aleksandr (Institute for Nuclear Research of the Russian Academy of Sciences)

Presenter: SHABANOV, Arseniy (INR RAS)

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