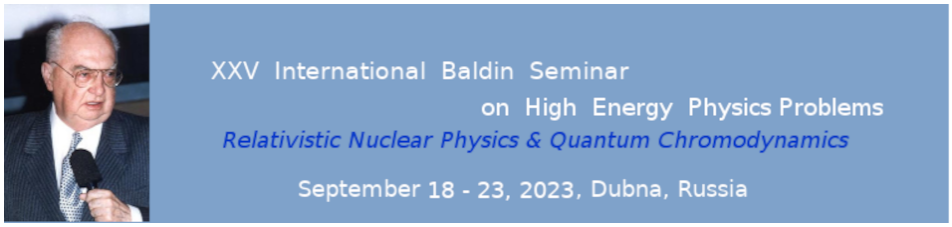

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Performance study of the neutron reconstruction using HGN detector at the BM@N experiment

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One of the main goals of the beam energy scan physical programs with heavy ions in the range of 2-3.5 GeV is to study the high-density equation of state (EOS) and the search for an onset of a phase transition in dense baryonic matter. Anisotropic flow coefficients are one of the observables that are commonly used in such studies.
Generally, at such energies one can define EOS of the dense matter as a sum of two parts: symetric matter that treats both protons and neutrons in a same way, and symmetry energy that takes into account isospin asymmetry. Properties of the symmetric matter are being studied extensively using charged particles. However, in order to study the properties of the symmetry energy, one needs to measure neutrons.
In this work we present reconstruction performance of the compact highly granular time-of-flight neutron detector (HGN) at the BM@N experiment and discuss first predictions of the anisotropic flow of neutrons using state-of-the-art models of heavy-ion collisions.

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