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The first results for directed flow of deuterons in 3.8A GeV Xe+CsI collisions at the BM@N experiment

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At the beam energies of several GeV per projectile nucleon dense baryonic matter is produced similar to one observed in astrophysical phenomena as neutron star mergers. The initial asymmetry of the energy distribution in the overlap region, governed by the properties of the created matter, evolves into momentum anisotropy of the final-state particles. The coefficients of the Fourier decomposition of the azimuthal distribution of the produced in the collision particles v_n thus are a sensitive probe of these properties.

In 2022-2023 BM@N, the first experiment on the NICA accelerator complex in JINR, Russia, finished its first physical run collecting more than 500M Xe+CsI collisions at $E_{kin} = 3.8A$ GeV. We present the first results on the analysis of the directed flow (v_1) of deuterons, and compare obtained v_1 with existing world data. The scaling of the directed flow on mass number for light nuclei is discussed.

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