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Directed flow of deuterons in Xe+Cs(I) collisions at 3.8A GeV at the BM@N experiment

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Collective flow measurements in relativistic heavy-ion collisions can provide key constraints on the properties of strongly-interacting matter and its Equation of State (EoS) in the high net-baryon density regime. Light nuclei, such as deuterons, are particularly valuable in this context: their v1 coefficients are sensitive to the early-stage pressure gradients, and help distinguish between mechanisms of cluster formation. Accurate experimental data on deuteron directed flow can therefore serve to test and refine a broad range of theoretical approaches, including hydrodynamic, transport, and coalescence-based models. In this work, we report the first measurement of the directed flow of deuterons in Xe+Cs(I) collisions at a beam kinetic energy of 3.8A GeV, performed at the BM@N experiment and compare it to the world data.

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