

The heavy-ion program at the upgraded Baryonic Matter@Nuclotron Experiment at NICA

Thursday, 2 March 2023 10:00 (30 minutes)

The Nuclotron at JINR in Dubna is capable of accelerating beams of heavy ions such as xenon, gold and bismuth at energies up to $4A$ GeV and intensities up to $2.5 \cdot 10^6$ ions/s. These energies and collision systems are well suited for experiments devoted to the study of the properties of dense baryonic matter, such as the equation-of-state and new microscopic degrees-of-freedom which might emerge at neutron star core densities. To study those properties, a number of observables are commonly employed including the yields and multi-differential distributions of (multi-) strange particles, the collective flow of identified particles, fluctuation of conserved quantities, and hypernuclei. In order to perform such measurements in Xe+CsI collisions, the existing BM@N setup in the Nuclotron target hall will be upgraded with a highly granulated and fast hybrid tracking system, a set of TOF systems TOF-400 and TOF-700, a scintillation detector with a quartz hodoscope, a neutron detector, and a forward calorimeter for event plane determination. The BM@N physics program, the detector upgrades, and some results of physics performance studies will be presented.

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