



Contribution ID : 301

Type : Oral talk

Hadron transverse momentum spectra in O+O, Kr+Kr, and Xe+Xe collisions at $\sqrt{s_{NN}} = 6$ GeV using the UrQMD and SMASH models within Tsallis statistics

Thursday, 29 October 2026 17:35 (15)

Hadron transverse momentum (p_T) spectra serve as a sensitive probe of matter produced in relativistic nuclear collisions, with statistical frameworks being widely used to extract its thermodynamic parameters. Despite extensive research into particle production across a wide range of collision energies, of particular interest is a detailed analysis of p_T spectra under the conditions of the Spin Physics Detector (SPD) experiment at the NICA collider. To address this, the current study presents generator-level results on hadron p_T spectra in O+O, Kr+Kr, and Xe+Xe collisions at $\sqrt{s_{NN}} = 6$ GeV. Events are simulated using two transport approaches: the Ultrarelativistic Quantum Molecular Dynamics (UrQMD) and the Simulating Many Accelerating Strongly-interacting Hadrons (SMASH) models. The calculated p_T distributions are analyzed within the framework of non-extensive Tsallis statistics. The phenomenological Tsallis distribution is fitted to the charged hadron spectra from both generators. Furthermore, the analysis of the UrQMD events is extended to include identified hadron spectra, for which the fit is performed using the exact p_T distribution of the Tsallis-3 statistics. The study provides a comparison of the results on charged hadron spectra between the UrQMD and SMASH models. The dependence of the extracted parameters on centrality and system size is presented for both charged and identified hadrons. For the identified particles, the parameters are further examined across different species. The obtained results may be relevant for future experimental measurements at the NICA collider.

Primary author(s) : VASILIEVA, Anastasiia (National Research Nuclear University MEPhI)

Presenter(s) : VASILIEVA, Anastasiia (National Research Nuclear University MEPhI)

Session Classification : Heavy ion physics

Track Classification : Heavy ion physics