

WPCF 2023 - XVI Workshop on Particle Correlations and Femtoscopy & IV Resonance Workshop 2023



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Forward-backward correlations with the Σ quantity in the wounded-constituent framework at energies available at the CERN LHC

Tuesday, 7 November 2023 12:30 (25 minutes)

Σ is a new correlation measure, quite recently introduced to heavy-ion physics. This measure, defined in the independent source model as a strongly intensive quantity, is expected to be free of the effects of system volume and volume fluctuations. In this talk, the forward-backward (FB) correlation quantified with the Σ observable calculated in the framework of the wounded nucleon model (WNM) and wounded quark model (WQM) will be discussed. Findings show that the wounded-constituent approach outperforms the commonly used heavy-ion Monte Carlo generators, such as HIJING, AMPT, or EPOS, by accurately describing the experimental data on FB correlations with Σ measured by the ALICE Collaboration in Xe-Xe reactions at $\sqrt{s_{NN}} = 5.44$ TeV and in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ and 5.02 TeV. This talk demonstrates that Σ can be a unique tool for determining the fragmentation function of a wounded constituent in a symmetric nucleus-nucleus collision. However, it is no longer a strongly intensive quantity in the wounded-constituent framework.

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