

Speed of sound from ultracentral nucleus-nucleus collisions using the mean transverse momentum

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It has recently been proposed that the speed of sound of the Quark-Gluon Plasma can be experimentally measured using the variation of the mean transverse momentum with the particle multiplicity in ultracentral heavy-ion collisions. In this talk we access this correspondence via hybrid hydrodynamic simulations at zero impact parameter with several equations of state. It is found the correspondence is satisfied for a smooth, boost-invariant fluid and an ideal detector indicating the reliability of extracting the speed of sound from experimental data. Differences between this simplified setup and actual experiments are discussed.

Based on: F. G. Gardim, A. V. Giannini and J. Y. Ollitrault, Accessing the speed of sound in relativistic ultracentral nucleus-nucleus collisions using the mean transverse momentum, arXiv:2403.06052 [nucl-th].

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