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Vorticity and Polarization in Nucleus-Nucleus Collisions at sub-10-GeV Beam Energy[1] JINFENG LIAO, Indiana Univ - Bloomington — In a non-central nucleus-nucleus collision, the colliding system carries large orbital angular momentum, part of which remains within the hot dense matter created by the collision. This angular momentum turns into complex fluid vorticity structures in the bulk fluid, and eventually manifests itself through the global spin polarization of produced particles (e.g. hyperons). The STAR Collaboration reported the experimental discovery of this novel phenomenon in 2017. A crucial feature in establishing the intepretation is the predicted beam energy dependence, specifically a strong increase of fluid vorticity (and thus the polarization) when the collision beam energy is decresed from O(100) GeV to O(10) GeV range. In the latest Beam Energy Scan II experiment, these measurements have been pushed toward sub-10-GeV range through e.g. fixed target collisions. It is an important question of great interest as to whether the trend would continue into such low beam energy range. In this contribution, we report our latest theoretical analysis of the vorticity and polarization in the sub-10-GeV collisions and present predictions for relevant observables.

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