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A systematic study of the sensitivity of triangular flow to the initial state fluctuations in relativistic heavy-ion collisions[1] ROLANDO LA PLACA, Harvard University, HANNAH PETERSEN, STEFFEN BASS, Duke University — At sufficiently high temperatures and densities, QCD matter forms a deconfined state called the quark gluon plasma (QGP). This state of matter can be created in collisions of ultra-relativistic heavy-ions, e.g. at the Relativistic Heavy Ion Collider. Due to its short lifetime, many QGP properties can only be inferred indirectly through a comparison of the final state measurements with transport model calculations. For our investigation we use a hybrid transport model based on the Ultra-relativistic Quantum Molecular Dynamics (UrQMD) transport approach using an ideal hydrodynamic expansion for the hot and dense stage. Using UrQMD initial conditions for an Au-Au collision, particles resulting from a collision are mapped into an energy density distribution that is evolved event-by-event with a hydrodynamical calculation. By averaging these distributions over different numbers of events, we studied how the granularity of the distribution affects the initial eccentricity, the initial triangularity, and the resulting flow components. The average elliptic flow in non central collisions is not sensitive to the granularity, while triangular flow is. The triangularity might thus provide a good measure of the amount of initial state fluctuations necessary to reproduce the experimental data.

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