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Non-Trivial Initial State Anisotropies and their effects on observables[1] NICOLAS FORTIER, McGill Univ — Initial state geometry is a key component of descriptions of observables in heavy ion collisions. It is usually entirely determined by the properties of the collision. That is, two spherically symmetric nuclei, such as Au or Pb, can only produce specific subtypes of anisotropies that are resolved by how much overlap between the two nuclei is generated by a specific event, modulo small fluctuations in nucleon configurations. These anisotropies and their primary effects have been studied at length both theoretically and experimentally. However, the study of spherically symmetric nuclei via heavy ion collisions alone cannot fully distinguish between the effects of collision centrality and initial state geometry on the intermediate (Quark-Gluon Plasma (QGP)) and final states. By using deformed collision systems, such as U^{238}, one can create non-trivial initial state anisotropies that help separate their effects from pure consequences of centrality. In this talk, we will show that the QCD-based initial state model IP-Glasma, coupled to relativistic hydrodynamics and hadronic cascade programs, is capable of reproducing STAR data for U+U at $\sqrt{s_{NN}} = 193$ GeV while providing key insights into how these anisotropies affect both QGP flow and observables.

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