Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

A collision geometry-based 3D initial condition for relativistic heavy-ion collisions SAHR ALZHRANI, CHUN SHEN, Wayne State Univ — We present a simple way to construct 3D initial conditions for relativistic heavy-ion collisions based on the Glauber collision geometry. Local energy and momentum conservation conditions are imposed to set non-trivial constraints on our parameterizations of longitudinal profiles for the system's initial energy density and flow velocity. After calibrating parameters with charged hadron rapidity distributions in central Au+Au collisions, we test model predictions for particle rapidity distributions in d+Au and peripheral Au+Au collisions in the Beam Energy Scan (BES) program at Relativistic Heavy-Ion Collider (RHIC). Simulations and comparisons with measurements are also made for Pb+Pb collisions at Super Proton Synchrotron (SPS) energies. We demonstrate that elliptic flow measurements in heavy-ion collisions at $\sqrt{s} \sim 10$ GeV can set strong constraints on the dependence of Quark-Gluon Plasma shear viscosity on temperature and net baryon chemical potential.

Sahr Alzhrani
Wayne State Univ

Date submitted: 17 Jun 2020 Electronic form version 1.4