Abstract Submitted
for the APR11 Meeting of
The American Physical Society

Viscous hydrodynamic radial and elliptic flow from RHIC to LHC[1] CHUN SHEN, ULRICH HEINZ, The Ohio State University — Using viscous hydrodynamics with a state-of-the-art equation of state (s95p-PCE) we present an excellent fit for the spectra and elliptic flow of all charged hadrons as well as identified pions and protons from Au+Au collisions of all centralities measured at the Relativistic Heavy Ion Collider (RHIC). We use this global fit to RHIC data as the basis for an extrapolation to Large Hadron Collider (LHC) energies and predict the analogous observables for Pb+Pb collisions at $\sqrt{s} = 2.76$ and $5.5\,A$ TeV, assuming the same constant specific shear viscosity η/s and thermalization time at both collision energies. Comparison with recent ALICE measurements of the elliptic flow of charged hadrons shows that the model slightly over-predicts the data, which indicates a possible temperature dependence of $(\eta/s)(T)$. The predicted centrality and transverse momentum dependence of spectra and elliptic flow for identified hadrons will be tested by upcoming experimental results. This will further test the model and shed additional light on possible variations of the quark-gluon transport coefficients between RHIC and LHC energies.

[1]Supported by the U.S. Department of Energy under Grants No. DE-SC0004286 and DE-SC0004104.

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Date submitted: 10 Jan 2011 Electronic form version 1.4