

Abstract Submitted
for the DNP06 Meeting of
The American Physical Society

Anomalous Viscosity of an Expanding Quark-Gluon Plasma¹

STEFFEN BASS, Duke University, MASAYUKI ASAKAWA, Osaka University, BERNDT MUELLER, Duke University — We argue that an expanding quark-gluon plasma has an anomalous viscosity, which arises from interactions with dynamically generated color fields. We derive an expression for the anomalous viscosity in the turbulent plasma domain and apply it to the hydrodynamic expansion phase, when the quark-gluon plasma is near equilibrium. The anomalous viscosity dominates over the collisional viscosity for weak coupling and not too late times. This effect may provide an explanation for the apparent “nearly perfect” liquidity of the matter produced in nuclear collisions at the Relativistic Heavy Ion Collider without the assumption that it is a strongly coupled state.

¹work supported by DOE and NSF

Steffen Bass
Duke University

Date submitted: 22 Jun 2006

Electronic form version 1.4