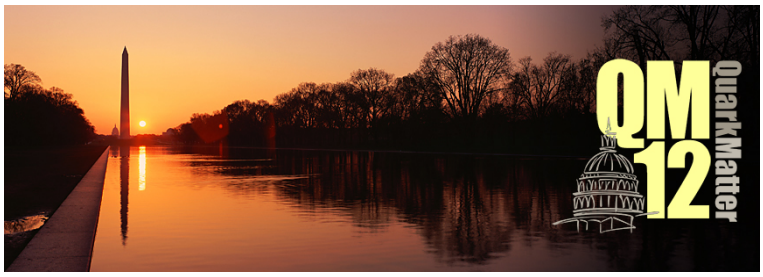

Contribution ID: **88** Type: **Poster**

The Emergent QCD Plasma from RHIC to LHC

Thursday, August 16, 2012 4:00 PM (2 hours)

One of the main discoveries at RHIC is the strongly coupled quark-gluon plasma (sQGP), based particularly on the observed "perfect fluid" and strong jet quenching. One of the most interesting physics to see at LHC is whether and how such sQGP properties will change. Based on the deep and generic electric-magnetic duality, we've suggested that the QCD plasma contains the quarks and gluons (color-electric D.o.F) as well as the EMERGENT monopoles (color-magnetic D.o.F.) with the latter becoming dominant at strong gauge coupling as in the near-Tc QCD plasma . An important prediction of this "magnetic scenario" is a RAPID turn-off of the magnetic dominanace when increasing temperature beyond the near-Tc regime of 1-1.5Tc, accompanied by rapid decrease (due to non-perturbative running) of QCD coupling in this regime.

This scenario, therefore, implies the QCD plasma to be less perfect a fluid and more transparent a medium at LHC, despite only modest increase in tempearture. We will discuss such expected change of the emergent QCD plasma from RHIC to LHC energies. Furthermore, we will examine the changes in the two most important medium properties: 1) evidences for a less perfect fluid from our molecular dynamics simulations as well as from other groups' hydrodynamic modelling of flow data at LHC; 2) evidences for a more transparent medium as predicted from our analysis of geometric data for jet quenching and from other groups' modelling for LHC Raa data and extraction of jet quenching parameter at LHC.

Reference: arXiv:1109.0271[nucl-th]; arXiv:1202.1047[nucl-th]; Phys.Rev. C84 (2011) 034904; PRL102:202302,2009; PRL101:162302,2008; PRC75:054907,2007.

Primary author: LIAO, Jinfeng (Indiana University & RIKEN BNL Research Center)

Presenter: LIAO, Jinfeng (Indiana University & RIKEN BNL Research Center)

Session Classification: Poster Session Reception

Track Classification: New theoretical developments