Contribution ID: **187** Type: **Parallel**

Pion quenching and tomography from RHIC to LHC in the WHDG model

Thursday, May 26, 2011 3:40 PM (20 minutes)

We present parameter-free predictions from the WHDG (radiative+elastic+geometric fluctuation) energy loss model for high pT pion suppression in A+A at 2.76 and 5.5 ATeV. The input density is constrained from a rigorous statistical analysis of RHIC pi0 quenching data. The predictions are consistent with the recent *charged* hadron RAA data from ALICE only within the current very large systematic uncertainty (due to the unmeasured reference p + p spectrum). However, our constrained prediction of central to peripheral pion R_cp(pT), in which reference p + p spectra uncertainties cancel, is found to be over-quenched by ~two sigma relative to the charged hadron ALICE R_cp data at all pT<20 GeV. The basic tomographic assumptions in WHDG are (1) the energy loss scales linearly with the initial QGP density, rho0, and (2) that rho0 scales linearly with charge particle multiplicity dNch/dy. Under these assumptions, WHDG predicts significant difference in magnitude and pt slope pf pion RAA between RHIC and LHC. Future ALICE identified pi,K,p hadron RAA data (as well as accurate p + p and p + Pb reference data) will enable more quantitative jet tomographic tests of hard probe dynamics in strongly interacting quark gluon plasmas.

Primary author: GYULASSY, Miklos (Columbia University)

Co-author: Prof. HOROWITZ, William (University Cape Town)

Presenter: HOROWITZ, William (University of Cape Town)

Session Classification: Jets

Track Classification: Jets