

Y. Aramaki^a for the PHENIX Collaboration

^aCenter for Nuclear Study, University of Tokyo,
Hongo, Bunkyo, 113-0033, Japan, *aramaki@cns.s.u-tokyo.ac.jp*

It has been observed that the yield of neutral pions at high transverse momentum ($p_T > 5$ GeV/c) region is strongly suppressed in central Au+Au collisions at Relativistic Heavy Ion Collider (RHIC), compared to the one expected in p+p collisions. This suppression may be due to an energy loss of hard scattered partons in the medium (jet quenching), that results in a decrease of the yield at a given p_T . The magnitude of the suppression would depend on the path length of scattering partons in the medium, and therefore is associated with azimuthal angle from reaction plane in non-central collisions. Studying the path length dependence of energy loss would give additional information on understanding the energy loss mechanism. We discuss the parton energy loss mechanism using the nuclear modification factor (R_{AA}) of neutral pion with respect to reaction plane. A new reaction plane detector was installed in the PHENIX detector in RHIC Year-7 run, and improved the reaction plane resolution. More precise measurement of the hadron suppression with respect to path length is expected using the detector. I will report about analysis status of neutral pion production in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV.

please send contribution to: *qm2008@veccal.ernet.in*.