Contribution ID: **6** Type: **not specified**

Jets of light hadrons via AdS/CFT correspondence

Wednesday 11 February 2015 13:30 (20 minutes)

The spectacular measurements from the Relativistic Heavy Ion Collider (RHIC) and the Large Hadron Collider (LHC) provide compelling evidence that the matter produced in heavy ion collision is a deconfined state of QCD, Quark-Gluon Plasma (QGP), at temperatures above ˜160 MeV which appears to be nearly perfect, with an extremely low viscosity-to-entropy ratio $\eta/s \tilde{} 1/4\pi$.
Within this expanding fireball, jets are produced which probes the QGP. Analysis the energy loss of these energetic partons as they travel throw QGP may reveal extremely valuable information about the dynamics of the plasma and exhibit distinctive properties such as jet-quenching.
The "AdS/CFT correspondence"which imposes the duality between the gauge theory and gravity is a novel tool provides valuable insight into the strongly coupled plasma. The most important result of AdS/CFT is calculating the value of shear viscosity to entropy density ratio which is in remarkable agreement with the hydrodynamics predictions.
We study the energy loss rate of light quarks via AdS/CFT correspondence in both static and expanding plasma. In the hope of making contact with QGP physics, we propose a novel jet prescription based on the separation of hard and soft modes in the dual theory and test the AdS/CFT approach with the latest light hadron suppression data from CMS.

Presenter: MORAD, Razieh (University of Cape Town)