Contribution ID: **28** Type: **not specified**

A factorized approach to jet modification in dense matter.

Thursday, 2 September 2010 09:00 (1 hour)

We demonstrate that a formalism where one assumes a hard jet to be weakly coupled to a medium, which may itself be strongly or weakly coupled, can be used to explain high p_T leading particle suppression and azimuthal anisotropy. In this calculation the scattering and multiple emissions of partons within a jet is computed entirely within perturbation theory. The scattering matrix elements are assumed to be factorized into a hard partonic part and a soft non-perturbative part. The soft part may be expressed as the expectation of certain operator products in the medium. There exist a set of related operators which encode the usual transport coefficients which describe transverse broadening, elastic energy loss and longitudinal diffusion. Relating these operators to each other such that there exists only one undetermined constant, which is scaled with temperature according to its energy dimensions, we successfully describe both heavy and light flavor jet modification. Imposing additional constraints on the coefficients such as requiring that they be computed within Leading Order HTL tends to worsen the fit. This indicates that jet quenching coefficients cannot be calculated at Leading Order in HTL theory.

Primary author: Dr MAJUMDER, Abhijit (Ohio State University)

Presenter: Dr MAJUMDER, Abhijit (Ohio State University)