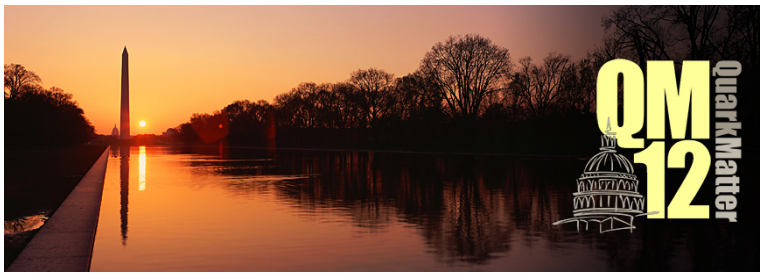

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How do Jets Affect the Collective Flow of the Quark-Gluon Plasma?

Thursday 16 August 2012 16:00 (2 hours)

In this work we study how highly energetic jets affect the hydrodynamic evolution of the quark-gluon plasma in an event-by-event basis. This is done by the introduction of a source term [1] in the energy-momentum conservation equation that describes the evolution of inviscid hydrodynamics (with a realistic equation of state [2]). The source is parametrized in terms of the direction of the jet in the medium and its energy loss rate. The influence of jets on the QGP collective flow is systematically investigated using the Fourier coefficients of the azimuthal flow distribution computed at both RHIC and LHC energies. In addition, we discuss the structure of the two-particle correlation function taking into account both initial state fluctuations [3,4] and the effects of jets. While the propagation of jets in a smooth QGP has been extensively studied before, the interplay between the different sources of flow anisotropy (i.e, initial state fluctuations and jets) studied in this work poses some new questions about the hydrodynamical evolution of the QGP. For instance, can Mach cones consistently form in an event-by-event basis? Do the highly high energetic jets present at LHC lead to novel structures in the two-particle correlation function? In this presentation we intend to shed some light on such questions.

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