

Abstract for an Invited Paper
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Probing the QGP Structure at RHIC with Jet-Medium Correlations

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The study of di-jet production and multi-particle correlations involving at least one hard particle has developed into an important tool for probing the properties of the QGP produced at RHIC. In the first part of my talk I will focus on how jet-medium correlations, such as the azimuthal dependence of jet energy-loss can help constrain the various approaches used to describe jet-medium interactions (i.e. BDMPS, Higher Twist and AMY). In the second part of my talk I will study the interactions of jets with turbulent color fields and their implications for observables at RHIC: The near-side distribution of particles at intermediate transverse momentum, associated with a high momentum trigger hadron, is broadened in rapidity compared with the jet cone. This broadened distribution is thought to contain the energy lost by the progenitor parton of the trigger hadron. I will show that the broadening can be explained as the final-state deflection of the gluons radiated from the hard parton inside the medium by soft, transversely oriented, turbulent color fields that arise in the presence of plasma instabilities. The magnitude of the effect is found to grow with medium size and density and diminish with increasing energy of the associated hadron.