

Santa Fe Jets and Heavy Flavor Workshop

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Gamma hadron and jet correlations with the STAR experiment

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For more than a decade, heavy-ion collisions have allowed us to study the Quark Gluon Plasma (QGP) created in these collisions, where relevant degrees of freedom are partonic rather than hadronic. In the initial stage of the collision, high energy nucleon collisions produce high transverse momentum partons, which fragment and hadronize into a spray of particles that we call a jet. Jets are a well calibrated probe of the QGP as the initial production cross-section should scale by the number of nucleon-nucleon collisions, so that the initial production and structure of the jets are known. Measurements of the fragmentation and yield modification of jets in heavy ion collisions will offer insight into the question of how partons lose energy in the QGP. Photon-jet observables have the advantage that the correlation between the kinematics of the photon and the initially produced partons is stronger than the correlation between the reconstructed jets and the initial partons. The photon also does not interact with the QGP, thus the initial parton kinematics are known. I will report on the results of photon enhanced and pion enhanced hadron azimuthal correlations measured by the STAR experiment in central Au+Au and pp collisions at 200 GeV. I will discuss the prospects of photon enhanced - fully reconstructed jet correlations from the recent high statistics Au+Au data set recorded by STAR in 2014.

Presenter: Prof. REED, Rosi (Wayne State University)

Session Classification: Session 5