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Using jets and high transverse momentum particles to probe the Quark-Gluon Plasma

Experiments at RHIC and the LHC have shown that a phase of matter, known as the Quark-Gluon Plasma (QGP), is produced in collisions of relativistic heavy-ions. This strongly interacting medium has partonic (quark and gluon) degrees of freedom and behaves like a nearly perfect fluid. Hard-scattered partons provide an ideal probe for the study of the QGP as they are produced early in the collision, prior to the QGP's formation. These scattered partons must then traverse the QGP and hadronize forming sprays of charged and neutral particles termed jets. Early measurements conducted at RHIC provided compelling evidence of significant energy loss of these highly energetic partons due to interactions with the hot and dense medium, a phenomenon name "jet quenching".

I will review the current status of the evidence for jet quenching from RHIC and the LHC and describe how a variety of jet shape measurements are now being utilized to probe the mechanisms of the jet-medium interaction.

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