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The Inner Workings of the Quark-Gluon Plasma Studied with Highly Energetic Jets

MARTA VERWEIJ, Vanderbilt University

In collisions between relativistically accelerated lead ions a dense medium is formed: the quark-gluon plasma (QGP). These type of collisions are used to study matter in phases where quarks and gluons are no more confined into hadrons and where chiral symmetry is restored. Hard scattered partons are used to map out the properties of the QGP. As a parton passes through the QCD medium, induced energy loss from elastic and radiative interactions leads to a modification of the parton shower; this modification is used to deduce medium properties. In this talk, jet measurements in heavy-ion collisions at the Large Hadron Collider are discussed. In particular the use of jet substructures to study specific properties of hot QCD matter will be presented.