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Studying Quark-Gluon Plasma with Jets ALEXANDRA DEMAIO, Rutgers University New Brunswick, CONSEIL EUROPÉEN POUR LA RECHERCHE NUCLÉAIRE (CERN), COMPACT MUON SOLENOID (CMS) COLLABORATION — Quark-gluon plasma (QGP), is a phase of matter consisting of deconfined quarks and gluons, theorized to exist in the early Post-Bang expansion of the universe. At the Large Hadron Collider, QGP is examined via hard probes in heavy-ion collisions. The production of these high-p_{T} jets is well understood and calculable in the framework of perturbative quantum chromodynamics. We implement the anti-k_{t} algorithm to reconstruct jets, using the data collected by the Compact Muon Solenoid (CMS) detector. Jet measurements in heavy-ion collisions are compared with those of pp collisions and PYTHIA + HYDJET calculations at the same energy. In PbPb collisions at $\sqrt{s_{\mathrm{NN}}} = 2.76$ TeV, dijet asymmetry was observed in back-to-back jets, indicating that energy loss occurs as partons traverse the medium. This energy loss appears to increase with collision centrality. In pPb collisions at $\sqrt{s_{\mathrm{NN}}} = 5.02$ TeV, no significant diject momentum imbalance was observed with respect to the pp Monte-Carlo reference, however the dijet pseudorapidity as a function of forward calorimter activity was strongly modified.

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