Abstract Submitted
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Jet Measurements for QGP Experiments at CMS[1] SAMUEL FLETCHER, Princeton University — Since the 1980s, experimentalists have sought to create in heavy ion collisions a new form of matter called quark-gluon plasma (QGP), where the constituent quarks of highly energetic hadrons become deconfined amidst large quantities of gluons. Measurements of the QGP can serve not only as a test of non-perturbative aspects of quantum chromodynamics, but also illuminate the properties of the early universe, which is believed to have existed as a QGP at the first few microseconds after the Big Bang. We propose a new measurement with the Compact Muon Solenoid at the Large Hadron Collider that uses the dileptonic decay of Z^0 bosons to tag jets electromagnetically. Dileptons are unhindered by the QGP's strong color field, and thus allow for direct, model-independent measurements of jet energy loss. I will present first studies of experimental feasibility of measuring the Z^0 signal and identifying the associated background.

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