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Comparing Fragmentation Functions in Pb-Pb Collisions using JEWEL HARRISON DAVIS, University of Illinois at Urbana-Champaign — Collisions between lead nuclei at relativistic speeds create a hot, dense state of deconfined quark matter called the quark gluon plasma (QGP). Due to its extreme density, temperature, and abundance of color charge, the QGP gives us a unique opportunity to study strong interactions and test the limits of QCD. Collisions between nuclei produce jets, clusters of particles hadronized from an energetic parton. Jets produced in heavy ion collisions must travel through the energetic and dense QGP, which changes the structure and momenta of the jets, a phenomenon known as jet quenching. By analyzing the changes in hadron fragmentation and momenta, we probe the properties and structure of the QGP. To analyze the jet fragmentation, we simulated lead-lead collisions with JEWEL, a modification to the Monte-Carlo (MC) generator PYTHIA6, and compared the results with ATLAS data at 2.76 TeV and 5 TeV. These comparisons between the ATLAS data and the MC simulation are important for understanding jet quenching in heavy ion collisions. This poster gives an overview of the results of the simulation and how they compare with ATLAS data on fragmentation.

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