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Monte Carlo Studies: Tagging Heavy Quark Initialized Jets ALYSSA MONTALBANO, Rensselaer Polytechnic Institute — Quark-Gluon-Plasma (QGP), a new quantum chromodynamic phase of matter made in heavy ion collisions composed of deconfined quarks and gluons, is studied at the Relativistic Heavy Ion Collider and its experiment PHENIX has plans to upgrade its detectors to study QGP properties in greater detail. Detailed measurements of modifications of heavy and light jets are needed to develop a coherent understanding of how different partons interact with QGP. Jets, hadrons resulting from high energy quarks or gluons, are used since they are color and energy calibrated probes of QGP. Leading order Monte Carlo event generator PYTHIA was used to generate p+p collisions and resulting charm and beauty jets. Realistic detector performance was accounted for using Geant4 based simulations. Tagging methods of distance of closest approach and determining secondary vertices were used to study tagging efficiency and rejection of light jets. Probability distributions of jets originating at the collision vertex were plotted. Results will lead to further development of tagging heavy flavor jets in high multiplicity Au+Au collisions and a new understanding of fundamental energy loss mechanisms within QGP.

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