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Direct Photon Simulations for Correlation Studies in 510 GeV Proton-Proton Collisions at PHENIX AARON WHITE, CHRISTINE AIDALA, University of Michigan, PHENIX COLLABORATION — A direct photon is generated at leading order by a quantum-chromodynamics 2-to-2 hard-scattering subprocess, such as $g+q \rightarrow \gamma+q$ and $q+\bar{q} \rightarrow \gamma+g$. These subprocesses result in two products, a photon and an associated hadronic decay jet, the azimuthal distribution of which can be described by a correlation function. The direct photon produced by these subprocesses is a useful probe of the jet and initial parton momenta and energies. The PHENIX detector is located at Brookhaven National Laboratory's Relativistic Heavy Ion Collider (RHIC) and is designed to measure charged particles and photons produced by p+p, d+Au, and heavy ion collisions at variable center of mass energies ($\sqrt{s}$). Previously, the PHENIX collaboration has published the correlation function for p+p collisions at $\sqrt{s} = 200$ GeV. Starting in 2011, data at $\sqrt{s} = 510$ GeV became available from RHIC, offering the opportunity to probe parton and jet kinematics at higher energies using direct photon processes. This poster will present the results of PYTHIA/GEANT3 simulations at various center of mass energies that are needed to understand the correlation functions at higher energies.

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