Predictions for Modern Jet Quenching Observables at RHIC Energies with JEWEL AHMED ALENEZI, University of Colorado, Boulder — In 2023, the Relativistic Heavy Ion Collider will begin to deliver high-statistics Au+Au collision data to the new sPHENIX and existing STAR detectors. New experimental capabilities at these detectors will allow for a better understanding of how hard scattered partons propagate and lose energy in the quark-gluon plasma. In this talk, we use the latest version of JEWEL to study jet quenching observables which can be measured for the first time at RHIC. JEWEL is a Monte Carlo event generator that simulates jet evolution in a perturbative framework in both proton-proton and nucleus-nucleus collisions and has been mostly used for making predictions at LHC energies. JEWEL studies at RHIC energies may help guide the physics program and analysis techniques in the mid-2020's. In particular, JEWEL now includes photon-jet processes which are important to the sPHENIX physics program, as well as an improved medium response. We present results for photon-jet and jet substructure observables which can be measured with the high-statistics Au+Au data-taking at RHIC in 2023.

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