Abstract Submitted for the APR21 Meeting of The American Physical Society

Jet-Conversion Photons in Relativistic Heavy Ion Collisions ROUZBEH MODARRESI YAZDI, CHARLES GALE, SANGYONG JEON, McGill Univ — Photons are powerful probes of the quark-gluon plasma (QGP). They are created at all stages of the evolution and carry information about the local conditions of their creation. As they interact only via electromagnetism, they can faithfully carry this information to the detectors. However, it is difficult to experimentally distinguish between photons of different origin. Thus it is important to have a detailed understanding of the various production mechanisms of photons in heavy ion collisions. Here we present, for the first time, a modern calculation of an important source of photons: jet-conversion photons. Using kinetic theory at leading order in the strong coupling, we calculate the rate of parton to photon conversion. The perturbative calculation is then performed using MARTINI, a Monte-Carlo algorithm for realistic jet energy loss in a strongly interacting medium. We use QGP evolution history generated using MUSIC, a realistic (3+1)D relativistic hydrodynamic simulation of a heavy ion collision. The resulting photon yields are compared to data for Au-Au at 200 GeV and Pb-Pb at 2.76 TeV. We also present our prediction of photon yield for Pb-Pb collisions at 5.02 TeV.

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Date submitted: 08 Jan 2021

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