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Soft and Collective Particle Generator for a Better Understanding of Heavy Ion Background in Jet Studies[1] CHARLES HUGHES, ALEX AUKERMAN, THOMAS KROBATSCH, University of Tennessee, ADAM MATYJA, The Henryk Niewodniczanski Institute of Nuclear Physics (IFJ PAN), CHRISTINE NATTRASS, JAMES NEUHAUS, WILLIAM WITT, University of Tennessee — Collisions of atomic nuclei moving near the speed of light at the Large Hadron Collider (LHC) generate the Quark Gluon Plasma (QGP), a novel phase of nuclear matter. Jets generated early in the nuclear collision, when internal quarks and gluons scatter with high momentum transfer, provide a tool for studying the properties of the QGP. These quarks and gluons traverse the QGP as it forms, lose energy, and become collimated streams of hadrons. The main difficulty in measurements of jet properties is the large background of hadrons due to the multitude of soft collisions from the expansion and cooling of the short lived QGP. We generate a data-driven background for jets based on measurements of hadron transverse momentum spectra and hadron azimuthal flow at the LHC. We use this data-driven background in concert with Monte-Carlo parton shower generators and jet-finding algorithms to better understand how lower momentum jets are modified. We present the current status of these studies.

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