Contribution ID: **310** Type: **Oral Presentation**

A 2+1D Monte Carlo generator for Jets in Heavy Ion Collisions

Wednesday, 10 July 2019 10:40 (20 minutes)

At the Large Hadron Collider (LHC) in Geneva, Switzerland and the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory in the United States, it is widely believed that a new state of matter, the Quark-Gluon Plasma (QGP), is routinely created by colliding the nuclei of heavy elements such as gold or lead at nearly the speed of light. In head-on collisions between heavy nucleii, it is not uncommon to create tens of thousands of particles and the patterns they produce in the detectors can be very complex. In order to connect theoretical predictions to experimental measurements, it is useful to create a computer algorithm which uses Monte Carlo techniques to simulate the collisions. Such 'Monte Carlo Generators (MCG)' may be programmed
to contain much of the known physics, but the development of MCG's in heavy ion physics has been hampered by the complexity of the interplay between different physics effects. Heavy-ion MCG's have, therefore, often been forced to make simplifying assumptions. JEWEL is one such an MCG, attempting to focus primarily on the physics of highly energetic particles that traverse the QGP. We present an extension of JEWEL which allows JEWEL to consider a dynamical background which evolves in time and has no symmetry in the plain transverse to the beam direction. We also show preliminary results from a variety of analyses.

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No

Level for award
 (Hons, MSc,
   PhD, N/A)?

N/A

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Session Classification: Theoretical and Computational Physics

Track Classification: Track G - Theoretical and Computational Physics