Contribution ID: **609** Type: **not specified**

A Herwig7 Underlying Event Tune for Relativistic Heavy Ion Collider Energies at 200 GeV

Monte Carlo event generators that simulate particle-particle collisions are an integral part of high-energy particle and nuclear physics. Physics processes implemented in the aforementioned event generators often include multiple parameters which are turned to experimental measurements. While the global tuning of the `Herwig7` Monte Carlo event generator is in good agreement with data at LHC energies, there are significant discrepancies in describing data from collisions at lower center-of-mass energies.
In this study, we perform an underlying event tune for the `Herwig7` that is applicable for hadron collisions primarily at $\sqrt{s}$ ranges available at the Relativistic Heavy-Ion Collider (RHIC). Our new `Herwig7` tuned predictions to midrapidity inclusive $\pi^{\pm}$ spectra, jet substructure, Drell-Yan production, and underlying event measurements from RHIC and the Tevatron, as well as underlying event data from the Large Hadron Collider. Our new tune shows significant improvements in the description of the experimental data as compared to the default `Herwig7` EEC5 tune.

Mini Symposia (Invited Talks Only)

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Session Classification: Computing, Analysis Tool and Data Handling

Track Classification: Computing, Analysis Tools and Data Handling