

UH Physics Research Day - 2024



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Type: **Talk**

Particle Production as a Function Transverse Sphericity in pp Collisions at 13 TeV

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Proton-proton (pp) collisions with high charged-particle multiplicities at the LHC have revealed similar phenomena to the observed in Pb-Pb collisions, where a strongly interacting Quark Gluon Plasma (sQGP) is created. These include the observations of radial and anisotropic flow and the enhanced production of strange particles. Since the mechanisms for hadron production are currently not well understood, particle production is explained using phenomenological models. For example, perturbative Quantum Chromodynamics (pQCD) models based on hard scatterings, such as PYTHIA, describe hadron production via string fragmentations and rope hadronization.

In this contribution, I will show results using the PYTHIA model and how event shape observables like sphericity can help to isolate and study events where particle production is dominated by soft or hard QCD processes. This is done in an effort to pin-point the underlying mechanisms of the collective behaviour observed in pp collisions systems, such as radial flow and long-range angular correlations. Furthermore, published results of charged unidentified particles as a function of sphericity will be shown.

Academic year

1st year

Research Advisor

Dr. Omar and Dr. Bellwied

Author: VAN ROSE, Jeseleth

Presenter: VAN ROSE, Jeseleth

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