

Abstract Submitted
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Using the Glauber Monte Carlo Approach to Determine the Multiplicity and Eccentricity of Pb+Pb Collisions at the LHC ANYA WOLTERMAN¹, Macalester College — Glauber models provide insight into the initial state of nuclear collisions by treating them in terms of the interactions of their constituent nucleons, in accordance with theories about the scattering of composite particles. These phenomenological techniques are commonly used to determine various geometric quantities associated with such femtoscopic many-body systems. The Glauber Monte Carlo approach uses a random impact parameter and measured nuclear densities to investigate quantifiable properties such as the particle multiplicity and the average geometric eccentricity for heavy ion collisions. The former involves the incorporation of a particle production model to plot the sum of the transverse energy, a measure of centrality. The latter delves into the eccentricity of different event classes, which can be used to characterize various collision shapes for measurements of elliptic flow of heavy mesons. The results of both applications can then be compared with analyses of real data from the Large Hadron Collider.

¹Work completed with Professor Manuel Calderon of the University of California Davis as an advisor/mentor.

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