

# Centrality Determination for p+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV by the STAR Experiment

In heavy-ion collisions, properties of the created QCD matter highly depend on the collision geometry or “centrality”. In A+A collisions, centrality is related to the size of the overlap region determined by the impact parameter. In p+A collisions, the term “centrality” is still taken to be a classification of the amount of activity in the collision, which, however, is not strictly related to the impact parameter, but more closely to the number of p+N collisions in a Glauber-like picture. This study focuses on the determination of centrality classes in p+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV by the STAR experiment using data taken in 2015. Simulation studies based on the Glauber model and the GEANT modelling of the STAR detector are performed to determine the sensitivity of different sub-detectors with different rapidity coverages to the event centrality. Comparisons of such studies to the data will be presented, and the implications on how to best determine centralities for p+Au collisions will be discussed.

## Preferred Track

QCD in small systems

## Collaboration

STAR

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