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Exploring particle collision dynamics by studying event shape variables in small systems

Event shape variables are crucial in high-energy physics for characterizing the geometric and kinematic properties of particle collision events. These variables help to understand the underlying dynamics of the interactions that produce different particles and can provide insights into the nature of the forces involved.

This work presents calculations of event-shape observables, specifically transverse thrust and sphericity, measured in various transverse momentum ($\sqrt{s_{\perp}}$) bins for small collision systems. Using primary charged particles, these measurements are generated with the EPOS event generator. The analysis focuses on the sensitivity of transverse thrust and sphericity to the underlying event properties at different $\sqrt{s_{\perp}}$ ranges, providing insight into event dynamics in small collision systems. The results aim to contribute to a deeper understanding of the underlying event structure and to distinguish between different types of events (e.g., hard scatterings versus soft interactions).

Field of contribution

Phenomenology

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