

Studying the effects of multi-parton interactions on typical heavy-ion observables

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Recent measurements performed in high-multiplicity proton-proton (pp) and proton-lead (p-Pb) collisions have shown features that are reminiscent of those observed in lead-lead (Pb-Pb) collisions.

The origin of these features is, however, still controversial, with collectivity, initial state effects and multipartonic correlations all possibly contributing.

The pp measurements have in the past been successfully modeled by mechanisms such as multi-parton interactions and color reconnection. We now have an opportunity to investigate if these effects can mimic collectivity in a high multiplicity regime.

In this work, we use the PYTHIA event generator to investigate how typical heavy-ion observables are affected in a scenario in which a large number of partonic interactions took place. Observables related to the event shape and identified particle production, including strange particles and resonances, are studied. Finally, we also discuss the prospect of how to best perform experimental event selection in pp and p-Pb collisions and still preserve the expected physics from multi-parton interactions as opposed to introducing any potential selection biases.

List of tracks

Small systems (pA)

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