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Implications of MPI in ALICE multiplicity measurements

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Multiple Partonic Interactions (MPI) refer to those cases where more than one semi-hard partonic scattering occurs within the same pp collision. Their relevance increases at high collision energies. Therefore, it is crucial to deepen the understanding of MPI contributions to particle production in hadronic collisions at the LHC. ALICE has performed several measurements in small collision systems, like proton-proton and proton-lead, and in large systems, like lead-lead and xenon-xenon. In this talk, a study of the evolution of particle multiplicities with energy and system size will be presented, as well as comparisons between data and models. Besides being interesting in their own right, multiplicity measurements are also used as a baseline to study the particle production. An overview of species-dependent yields, sensitive to the MPI saturation effect, will be shown. The implications of using the underlying event as a multiplicity estimator to probe mechanisms of particle production will be discussed, thus exploring possible improvements to our understanding of QCD.

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