

Some physics of small collision systems

In recent years certain experimental results from small collision systems (e.g. p-p, d-Au, p-Pb) at the RHIC and LHC have been reinterpreted as evidence for formation therein of a dense flowing medium (QGP) despite small collision volumes. Systems that had been assigned as simple references (e.g. cold nuclear matter) for larger A-A collisions would then no longer play that role. This presentation examines conventional interpretations of certain data features in the context of a two-component (soft+hard) collision model. Specific topics include centrality determination for p-Pb collisions, interpretation (or not) of nuclear modification factors, significance of claims for strangeness enhancement, and interpretation of the “ridge” in p-p collisions. For p-p and p-Pb data, analysis results indicate that p-Pb collisions are simple linear superpositions of p-N collisions, and N-N collisions within small systems generally follow simple and consistent rules. However, there is more to be learned about “basic” QCD in small systems with improved analysis methods.

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Session Classification: HEAVY NUCLEI & COLLECTIVE PROPERTIES