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Effect of transverse spherocity in (mutli-)strange and charged particle production in O-O, Ne-Ne, p-O and p-Ne collisions at RHIC and LHC energies using AMPT

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Understanding the event geometry in high-energy collisions is essential for exploring the underlying particle production mechanisms. In this work, we employ transverse spherocity as a novel tool to classify events by their geometrical structure and analyze global observables of (multi-)strange and charged particles in oxygen-oxyegn (O-O) and neon-neon (Ne-Ne) collisions at $\sqrt{s_{NN}}$ = 5.36 TeV and 200 GeV along with proton-oxygen (p-O) and proton-neon (p-Ne) for comparison using AMPT. Events are divided into isotropic (soft) and jetty (hard) classes to explore soft and hard processes. The results reveal a clear evolution of event topology with system size and collision energy, offering insights into particle-production dynamics.

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