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# Signatures of Chiral Magnetic Effect in Isobaric Collisions

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**Chiral Magnetic Effect (CME)** is the macroscopic manifestation of the fundamental chiral anomaly, and emerges as an anomalous transport current in a many-body system of chiral fermions such as the hot quark-gluon plasma created in heavy ion collisions. Experimental observation of CME would provide a tantalizing evidence for the chiral symmetry restoration as well as QCD topological fluctuations. Measurements at RHIC and LHC so far show intriguing hints but remain inconclusive, due to strong background contamination and relatively small CME signal. To address these challenges and to understand sensitivity of various proposed observables, it is crucial to have a sophisticated modeling framework that realistically quantify both the CME signal and background correlations. In this talk, we present such a new tool, the **Event-By-Event Anomalous Viscous Fluid Dynamics** (EBE-AVFD) framework. The EBE-AVFD starts with event-wise fluctuating initial conditions for the bulk+axial charge+magnetic fields, simulates the evolution of fermion currents in QGP on top of the data-validated bulk fluid evolution from either VISHNU or MUSIC, samples freeze-out particles with local charge conservation implemented, to be followed by URQMD hadron scattering stage that includes resonance decay contributions. We use this tool to characterize the various features of CME signal and related backgrounds, to validate the simulation parameters with existing experimental data, and to investigate the sensitivity of several different observables with respect to signal and backgrounds. Finally, we present the state-of-the-art quantitative predictions for the **CME signatures in isobaric collisions** (RuRu v.s. ZrZr), which will provide the unique opportunity for potential discovery of CME in heavy ion collisions.

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