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Fluctuations of topological charges and the photon from Chiral Magnetic Effect in early stage of RHIC

This presentation is based on an event-by-event study of RHIC which is initialized by McLerran-Venugopalan (MV) model. Topological charge is related to the gauge invariant $F_{\mu\nu}\tilde{F}^{\mu\nu}$, where $F_{\mu\nu}$ and $\tilde{F}^{\mu\nu}$ denote the Yang-Mills field strength tensor and its dual. The chiral density is produced via the chiral anomaly of Quantum Chromodynamics. Firstly, we are going to discuss the correlation length of the topological charges as well as the associated chiral densities. Then, as an application, we are going to discuss the photons produced through Chiral Magnetic Effect (CME), especially their spectrum and elliptic flow. At last, we summarize our presentation and make some outlooks.

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