# Parity and CP Violation Studies at RHIC

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**Abstract**

Parity and CP symmetry violations have never been observed in the strong interaction. However, Kharzeev et. al. ( PRL 81, 512, 1998) have shown that an effective Lagrangian model which reflects the $U_A(1)$ anomaly of QCD, predicts, under certain circumstances, the appearance of metastable vacua in which P and CP symmetries are spontaneously broken. These authors have proposed that such symmetry violating states may be created briefly during relativistic heavy-ion collisions. At STAR we are looking for the experimental signatures of these possible symmetry violating vacuum states.

I will present a search for P and CP violation using the STAR detector at RHIC. This will include methods for analyzing the data as well as expected experimental sensitivities derived from simulations. Results from STAR year-one data will be presented which should test theory predictions at an interesting level.

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