Title; “Search for the Chiral Magnetic Effect: Recent results from isobar collisions at RHIC”

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Abstract

The chiral magnetic effect (CME) is predicted to occur as a consequence of a local violation of P and CP symmetries of the strong interaction amidst a strong magnetic field generated in relativistic heavy-ion collisions. Experimental manifestation of the CME involves a separation of positively and negatively charged hadrons along the direction of the magnetic field. Previous measurements of the CME-sensitive charge-separation observables remain inconclusive because of large background contributions. In order to better control the influence of signal and backgrounds, the STAR Collaboration has performed a blind analysis of a large data sample of approximately 3.8 billion isobar Ru+Ru ($A_{Ru} = 96, Z_{Ru} = 44$) and Zr+Zr ($A_{Zr} = 96, Z_{Zr} = 40$) collisions at the top RHIC energy. Prior to the blind analysis, the CME signatures were predefined as a significant excess of the CME-sensitive observables in Ru+Ru collisions over those in Zr+Zr collisions, owing to a larger magnetic field in the former. This presentation reports on the findings from the isobar blind analysis and their significance for the CME search in heavy-ion collisions.