

Abstract Submitted  
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**Study of charged pion elliptic flow and search for Electric Quadrupole Effect in Au+Au collisions at 39 GeV from STAR**<sup>1</sup> LYNN MORMINO, Kalamazoo College / UCLA, STAR COLLABORATION — It is predicted that Chiral Magnetic Wave (CMW) at finite baryon density can induce an electric quadrupole moment of the quark-gluon plasma produced in heavy ion collisions. [1] This electric quadrupole deformation lifts the degeneracy between the elliptic flow ( $v^2$ ) of positive and negative pions leading to  $v^2(\pi_+) < v^2(\pi_-)$ . We study the difference between  $v^2(\pi_+)$  and  $v^2(\pi_-)$  measurements from STAR for Au+Au collisions at 39 GeV, and investigate the dependence of the  $v^2$  difference on the measured net-proton number of the data sample. Here the net-proton number is used to approximate the conserved net-baryon number, and the  $v^2$  difference is expected to be proportional to the baryon number asymmetry in the presence of an Electric Quadrupole Effect. In this work, we present pion elliptic flow as a function of transverse momentum and centrality for Au+Au collisions at 39 GeV, and we will discuss the dependence of the  $v^2$  difference on net-proton numbers.

[1] Y. Burnier, D. Kharzeev, J. Liao and H. Yee, arXiv:1103.1307.

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