

CME search at STAR using the Event Plane Detector

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Abstract

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2 Recently Relativistic Heavy Ion Collider (RHIC) collided isobars (Ru+Ru and Zr+Zr)
3 and STAR collaboration is currently performing blind analysis to make a decisive test of the
4 Chiral Magnetic Effect (CME) at the top RHIC energy ($\sqrt{s_{NN}} = 200$ GeV). Meanwhile,
5 the observability of CME has been conjectured to be dependent on $\sqrt{s_{NN}}$ due to changes
6 in the lifetime of the magnetic field, the strength of CME signal and non-CME background.
7 So what happens at lower energies? The Event Plane Detector (EPD) installed in the year
8 2018 provides a unique capability for CME search over a wide range of energies. At lower
9 energies the EPD acceptance ($2.1 < |\eta| < 5.1$) covers the region where particle production
10 is accompanied by a large directed flow of beam fragments, stopped protons and specta-
11 tors. Therefore, EPD can measure the event plane associated with the spectators, strongly
12 correlated to the magnetic field, with good precision. This opens up new opportunities to
13 revisit CME search at lower energies with the BES-II data recently collected by STAR. In
14 this presentation, I will focus on the CME search using the EPD and present the first mea-
15 surements in Au+Au collision at $\sqrt{s_{NN}} = 27$ GeV. I will also discuss STAR's plan for blind
16 analysis of the isobar.