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Centrality, mass and transverse momentum dependence of di-electron elliptic flow in $\sqrt{s_{NN}} = 200$ GeV Au+Au collisions at STAR

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Di-leptons are ideal probes of the strongly interacting hot and dense medium created at RHIC. They are not affected by the strong interaction once produced, therefore they can probe the whole evolution of the collision. The di-leptons spectra in the intermediate mass range ($1.1 < M_{ll} < 3.0 \text{ GeV}/c^2$) are directly related to thermal radiation of the Quark-Gluon Plasma (QGP). In the low mass range ($M_{ll} < 1.1 \text{ GeV}/c^2$), we can study the vector meson in-medium properties through their di-leptons decays, the observable of possible chiral symmetry restoration. It has been proposed that the elliptic flow measurements of di-leptons in different mass regions will enable us to probe the properties of medium from hadron-gas dominated to QGP dominated. In 2010 and 2011 more than one billion minimum bias events were taken. The 2π azimuthal coverage of the newly installed time-of-flight subdetector enables the elliptic flow measurements of di-electrons. In this poster, we will report elliptic flow measurements of di-electrons from low to intermediate mass region for Au+Au collisions at 200 GeV. Differential measurements of di-electrons elliptic flow as a function of transverse momentum in different mass regions will be presented. Centrality dependence will be reported and model comparisons will also be discussed.

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