

Low-mass meson production through di-leptonic decays in p+p and Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV from STAR

Ultra-relativistic heavy ion collisions provide a unique environment to study the properties of strongly-coupled Quark Gluon Plasma (sQGP) at high temperature and high energy density. One of the crucial probes to study the sQGP is the di-electron production in the low ($M_{ll} < 1.0 \text{ GeV}/c^2$) and the intermediate ($1.0 < M_{ll} < 3 \text{ GeV}/c^2$) mass region. In the intermediate mass region, the di-electron production are directly related to thermal radiation of the fireball. The Time-of-Flight (TOF) detector provides high acceptance and efficiency for charged particle identification at mid-rapidity. By combining the time-of-flight from the TOF and the energy loss from Time Projection Chamber, STAR is able to study di-electron production in Au+Au collisions at mid-rapidity. In this talk, we present the measurement of vector meson ρ invariant yields via di-electron decays in 200 GeV p+p and Au+Au collisions and the di-electron continuum spectrum in 200 GeV p+p collisions at mid-rapidity. The perspective on possible comparisons between $\rho \rightarrow e^+e^-$ and $\rho \rightarrow \pi^+\pi^-$ and limit on $\eta \rightarrow e^+e^-$ will be discussed.

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