

First measurement of the ω -meson production at RHIC by PHENIX

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Abstract. The PHENIX experiment at RHIC has measured ω , η and K_s^0 mesons through the multi-particle hadron decay modes in $p+p$, $d+Au$ and $Au+Au$ collisions at $\sqrt{s_{NN}} = 200$ GeV. We will present ω -meson data at $\sqrt{s_{NN}} = 200$ GeV from $p+p$ and $d+Au$ collisions in the p_T range from 2.5 GeV/c to 9 GeV/c, and the first results from $Au+Au$ $\sqrt{s_{NN}} = 200$ GeV. The ω carries unique information about medium modification effects. A large fraction of ω -mesons decay when the energy density of the system is above the threshold of the phase transition from Hadronic Matter to QGP. Changes in the property of the medium could be reflected in the modification of the yield and mass of the ω . Comparison of the ω yield and width in the hadron and di-lepton channels could provide significant evidence of a new state of matter, and help to study its properties. These hadron decay results set the baseline for such a comparison.