

Inclusive charged hadron elliptic flow in Au + Au collisions at $\sqrt{s_{NN}} = 7.7, 11.5$ and 39 GeV

We present a systematic study of the transverse momentum (p_T), rapidity and centrality dependence of elliptic flow, v_2 , using several methods in Au + Au collisions at $\sqrt{s_{NN}} = 7.7, 11.5$ and 39 GeV. The difference between v_2 using event plane from detectors separated in rapidity ($v_2\{2\}$) and four particle cumulants ($v_2\{4\}$) seems to decrease as the beam energy decreases. The implications of this result towards understanding the energy dependence of non-flow and flow fluctuations will be discussed. The energy dependence of v_2 will be presented by a comparison with results from high energies at RHIC ($\sqrt{s_{NN}} = 62.4$ and 200 GeV), at LHC ($\sqrt{s_{NN}} = 2.76$ TeV) and similar energy at SPS ($\sqrt{s_{NN}} = 7.6$ GeV). We observe the $v_2(p_T)$ are very comparable ($\sim 10\%$) at mid-rapidity and $p_T > 0.5$ GeV/c beyond $\sqrt{s_{NN}} = 39$ GeV. We will also compare our results to transport model calculations, such as those from UrQMD model, AMPT default model and AMPT string-melting model with different parton cross sections.

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