

Elliptic Flow of Inclusive Photons in AuAu & CuCu Collisions at 200 A GeV from STAR Experiment

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Ideal fluid hydrodynamic description of relativistic heavy ion collisions successfully explains the large values of flow measured at RHIC energies. However, there is limited success of the same models in explaining the observed flow at forward rapidities. While this suggests the possible need for dissipative hydrodynamic models for theoretical development, it also provides motivation to measure the flow away from mid rapidity.

In the present work, we shall present results on the observed flow in inclusive photons in AuAu and CuCu collisions at 200 A GeV. The inclusive photons are measured in the preshower Photon Multiplicity Detector (PMD), away from midrapidity, where the photons are identified by applying cuts on the cluster parameters, ADC and size. The PMD is sensitive to photons of very low momentum ($p_T \sim 30$ MeV/c) and hence flow measured in these photons yields the true p_T integrated flow. Any possible difference in the flow values of neutral and charged pions will manifest in the low p_T region and is expected to be discernible in the distribution of the low p_T photons which will be measured in the PMD.

To avoid the contribution from non-flow correlations, the event plane has been determined using charged particles measured in the TPC, and in the two FTPCs. The stability of the results is investigated by obtaining the event planes in different pseudo-rapidity regions. The systematic error on v_2 due to uncertainties in the efficiency and purity of the photon sample are estimated by varying the values of cluster parameters that identify the inclusive photons. Results of observed elliptic flow as a function of event centrality and pseudorapidity will be discussed, both for AuAu collisions and CuCu collisions at 200 A GeV.