Measurements of High p_T Identified Hadron v_2 and v_4 in Au+Au Collisions at $\sqrt{S_{NN}}$ = 200 GeV by the PHENIX Experiment

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Measurements of the anisotropic flow coefficients v_2 and v_4 at RHIC have provided sensitive information about the earliest stages of heavy ion collisions and the thermal properties of the created matter. The elliptic flow coefficient v_2 of identified hadrons has been found empirically to scale with the number of constituent quarks, providing evidence that partonic degrees of freedom determine the early dynamics of the system. The ratio of v_4/v_2^2 is expected to be a probe of the degree of thermalization of the system. Present measurements of identified particles such as pions, kaons, protons and deuterons anisotropic flow have been limited to p_T around 4 GeV/c due to the lack of particle identification and insufficient statistics. For Run 7 of RHIC, the PHENIX experiment was upgraded with a time of flight detector with 80 ps intrinsic timing resolution and a reaction plane detector with 70% resolution. Both of these detectors performed well during the whole Run 7 at RHIC in which PHENIX collected over 5.5 billion minimum bias 200 GeV Au+Au events. The large data sample combined with upgraded detector capabilities is expected to extend the anisotropic flow measurements of identified particles such as pions, kaons, protons and deuterons to p_T around 7 GeV/c. We will present identified particle v_2 and v_4 measurements as a function of centrality and further test the quark-number scaling of v_2 in the high p_T region