

Rapidity Dependence of Elliptic Flow at RHIC

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Large azimuthal anisotropies are observed in particle production with respect to the reaction plane for non-central heavy-ion collisions (i.e., azimuthal flow) at RHIC. Elliptic flow is measured by the 2nd harmonic (v_2) coefficient of the Fourier expansion of the azimuthal distribution. The observed anisotropies and the measured $v_2(p_t)$ values suggest an almost perfect fluid state is created, consistent with the production of a quark-gluon plasma. Most measurements of identified-particle $v_2(p_t)$ behavior at RHIC have been done near mid-rapidity, although a strong pseudorapidity dependence is seen for the charged-hadron, p_t -integrated v_2 values[1]. Some theoretical progress has been made in understanding the dependence of the azimuthal flow on the longitudinal expansion of the system [2,3,4], but these studies have lacked good data on the rapidity dependent change in $\langle p_t \rangle$ and $v_2(p_t)$ for different particle types. This talk will present new results of the BRAHMS experiment on π , K and p $v_2(p_t)$ behavior at $y \approx 0, 1$, and 3. The associated spectra will also be presented to help disentangle the kinematic factors affecting the integral v_2 values. These results can be used to better define the longitudinal expansion of the medium created through heavy-ion reactions at RHIC energies.

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