Study of the Number of Quark Scaling of $v_2$ at High Transverse Momentum

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— The number of quark (NCQ) scaling in the anisotropy parameter $v_2$, for almost all measured hadrons at transverse momentum region up to $p_T$ about $5\text{GeV}/c$, has been observed in high-energy nuclear collisions at RHIC. The scaling results imply the formation of the de-confined matter with partonic collectivity in the collisions. In this talk, we report systematic studies of $v_2$ at midrapidity for π, p, $K^0_s$ and Λ in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV using the STAR detector. The FTPC detectors, which sit at large rapidity, were used for the determination of the event plane. Comparing to previous results, a high statistics data set is used in the analysis. We find that in the high transverse momentum region, $p_T \geq 6\text{GeV}/c \left( (m_T - m) / n_q > 1.5 \text{ GeV}/c \right)$, the NCQ in $v_2$ is breaking down. A comparison to models suggests this is mainly caused by an increase in particles coming from hard process at high $p_T$. 

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