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Measurements of the Correlation between Jets and the Reaction Plane in STAR at RHIC

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The relationship between jet properties and the underlying geometry of the medium produced in heavy ion collisions can be explored through a measurement of the correlation between the axes of reconstructed jets and the reaction plane (defined as jet v_2). Such a measurement provides information on the pathlength dependence of medium-induced parton energy loss as well as biases in jet-finding methods. In addition, an estimate of jet v_2 is necessary for background-subtraction in jet-triggered correlation analyses, which are used to study medium-induced jet shape modification. However, jet v_2 measurements are complicated by biases in the event plane calculation due to the presence of the jet, leading to an overestimation of jet v_2 . In order to reduce the artificial jet-event plane bias, we utilize detectors at forward pseudorapidity (η), such as the Forward Time Projection Chambers located at $2.5 < |\eta| < 4$ and the Zero Degree Calorimeter Shower Maximum Detectors at $|\eta| > 6.3$, to determine the event plane when measuring v_2 of reconstructed jets at mid-rapidity ($|\eta| < 1$). We present first results of jet v_2 measurements in $\sqrt{s_{NN}} = 200$ GeV Au+Au collisions in STAR and their implications.

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