Contribution ID: **183** Type: **Poster**

Background subtraction in jet-hadron and di-hadron correlations using the reaction plane fit method

Jet-hadron and di-hadron correlations are sensitive to the low momentum and large angle modifications induced by interactions with the medium and allow higher precision measurements than jet-by-jet measurements because the background can be determined by averaging over several jets. However, the combinatorial background has limited the precision of these measurements. The Zero Yield At Minimum method, the standard method, has limitations, particularly at low momenta where modifications may broaden the jet. Typically the Fourier coefficients of the azimuthal asymmetries (v_n) of the background are taken from independent measurements of flow coefficients. This means that the standard method is also not robust to effects which lead to different v_n in jet-like correlations, including the impact of different v_n due to flow and due to jet quenching at high momenta.

We present an alternate method, the Reaction Plane Fit (RPF) method, which uses the reaction plane dependence of the v_n to constrain the shape and level of the background in the background dominated region at large $\Delta\eta$. We demonstrate the efficacy of this method using a toy model. We then apply the RPF method to di-hadron correlations relative to the reaction plane measured by STAR. We present the correlation functions and calculate the yields, per-trigger yield modification factor (I_{AA}), and the widths. Using this method, the shape of the correlation functions show little shape dependence relative to the reaction plane, an increasing I_{AA} with decreasing momentum. This is consistent with the broadening and softening of jets seen in measurements of full jets at the LHC, rather than the "Mach cone" structure observed in earlier studies.

Preferred Track

Jets and High pT Hadrons

Collaboration

Not applicable

Author: NATTRASS, Christine (University of Tennessee (US))

Co-author: MAZER, Joel Anthony (University of Tennessee (US))

Presenter: NATTRASS, Christine (University of Tennessee (US))

Session Classification: Poster Session