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Sorting out energy loss for medium-modified jets

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Most studies of medium-induced jet modification rely on the comparison of jet properties measured in heavy ion collisions with a proton-proton baseline of the same reconstructed jet p_T. Migration of jets from higher to lower p_T due to energy loss, together with the steepness of the jet spectrum, lead to a heavy ion jet sample with a given p_T range which is dominated by the jets that were least modified. We introduce a new strategy to compare heavy ion jet measurements to proton-proton baselines which views energy loss as being monotonic in p_T. In this strategy, the jets in a heavy ion collision ordered by p_T can be viewed as modified versions of the same number of highest energy jets in proton-proton collisions. We validate, at MC level, the correlation between the p_T of the parton that initiates a heavy ion jet with the p_T of the vacuum jet which corresponds to it via our novel binning procedure. We show that this strategy mitigates the effect of bin migration and provides a complementary way to study jet modification in heavy ion collisions.

Summary

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