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Exploring the time axis within medium-modified jets

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The fast evolution of the QGP makes its interaction with jets an inherently time-dependent process. However, this crucial dimension is missing from current jet quenching measurements, which hence provide a mere average quantification of the medium properties. In this talk, we propose that jet substructure observables allow access to the QGP time structure. By identifying the recursive steps of a novel jet clustering algorithm (the τ-algorithm) with the sequence of branchings of the parton shower, we obtain an adequate proxy for a time axis within the medium. This enables us to label jets according to their formation time and select populations with enhanced sensitivity to quenching effects. We apply this technique to Z+jet simulated events using the JEWEL MC generator. Our results illustrate how this method minimizes the biases stemming from p_t-, ΔR-, or mass-based selections.

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