

Shedding Light on Hadronization by Quarkonium Energy Correlator

We propose to measure the energy correlator in quarkonium production, which tracks the energy deposited in the calorimeter χ -angular distance away from the identified quarkonium. The observable eliminates the need for jets while sustaining the perturbative predictive power. Analyzing the power correction to the energy correlator, we demonstrate the novel observable supplies a unique gateway to probing the hadronization, especially when $\cos \chi > 0$ in the quarkonium rest frame where the perturbative emissions are depleted due to the dead-cone effects. We expect the quarkonium energy correlator to add a new dimension to quarkonium studies.

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