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Precision jet event shapes for future Electron-Ion-Collider

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We study angularity event shape for deep inelastic scattering (DIS) in the framework of soft-collinear effective theory (SCET) tool to push the frontier of the precision jet physics in the future Electron-Ion Collider (EIC). Angularity τ_a Depends On a continuous parameter 'a' whose limiting values at a = 0 and a = 1 provide 'thrust' and 'jet broadening' event shapes. The angularity cross-section is dominated by 2-jet region where one (beam) along the proton beam direction created by the initial state radiation (ISR) and another one (jet) created by the final state radiation (FSR). The region can be accurately described using SCET. The cross-section is factorized in terms of hard, jet, beam and soft functions using SCET The angularity beam function is first computed here at next-to-leading order (NLO). Our result includes summation of the large logarithms up to next-to-next leading logarithmic (NNLL) accuracy in resumed perturbation theory. We present numerical result For DIS angularity cross-section which is going to be explored by the future EIC.

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