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First measurement of groomed events shapes in ep DIS using archived H1 data

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Event shapes provide incisive probes of QCD, both its perturbative and non-perturbative aspects. Grooming techniques have been developed to separate perturbative from non-perturbative components of jets in a theoretically well-controlled way, and have been applied extensively to jet measurements in hadronic collisions. In this talk the first application of grooming techniques to event shape measurements at HERA is presented, utilizing archived electron-proton Deep Inelastic Scattering data from the H1 experiment. The analysis is based on the novel Centauro jet clustering algorithm, which is designed specifically for the event topologies of ep DIS collisions. Cross-section measurements of groomed event 1-jettiness and groomed invariant jet mass are shown. The measurements are compared to Monte Carlo models, and to a theoretical calculation based on Soft Collinear Effective Theory.

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