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Understanding LHC jets in the light of RHIC data

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Hard probes are a cornerstone in the ongoing program to determine the properties of hot and dense QCD matter as created in ultrarelativistic heavy ion collisions. The first two runs at the LHC have resulted in a wealth of measurements of both reconstructed jets and single inclusive high P_T hadrons, opening new kinematic windows and offering high statistics. Yet on first glance, several observations are counter-intuitive and seem to contradict results from the RHIC high P_T program. I present a combined analysis of high P_T hadronic observables at RHIC and LHC and reconstructed jets at LHC in a framework testing a large number of theoretical models for both medium evolution and shower-medium interactions against the systematics of the data. I demonstrate how a consistent picture of shower-medium interaction emerges from the combined results and explain where and why results appear counter-intuitive. In particular, I discuss the role of jet measurements in constraining models critically and suggest measurements sensitive to the gaps in our knowledge.

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