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Is it Hard yet? The qualitative agreement of pQCD energy loss with RHIC and LHC data

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High momentum particles provide the most direct probe of the pertinent physics of the quark-gluon plasma produced at RHIC and LHC. We present comparisons of the latest pQCD- and AdS/CFT-based energy loss models with the newest high momentum measurements from RHIC and LHC. In contrast to the naive success of strong coupling AdS/CFT methods in describing the very small viscosity to entropy ratio extracted from hydrodynamics studies, the qualitative agreement of the weak-coupling and the disagreement of the strong-coupling calculations compared to high momentum observables suggest that the dominant quark-gluon plasma physics is best described using perturbative QCD methods. Future measurements may hold the key to understanding this potential crossover between strong and weak coupling dynamics.

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