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Nontrivial holonomy and collisional energy loss

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We compute the collisional energy loss for a heavy quark above the critical temperature in Quantum Chro-moDynamics (QCD). We work in the semi Quark-Gluon Plasma, which assumes that this region is dominated by the non-trivial holonomy of the thermal Wilson line. Relative to the result to leading order in perturbation theory, at a fixed value of the coupling constant we generically we find that collisional energy loss is suppressed by powers of the Polyakov loop, $l < 1$. For small values of the loop, this suppression is linear for the scattering off of light quarks, and quadratic for the scattering off of gluons, or for Compton scattering.

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