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Jet quenching in strongly coupled plasma

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We present calculations in which a light quark shoots through a finite slab of strongly coupled $\mathcal{N} = 4$ supersymmetric Yang-Mills plasma, with thickness L, focussing on what comes out on the other side. We find that even when the "jets'" that emerge from the plasma have lost a substantial fraction of their energy they look in almost all respects like "jets" in vacuum with the same reduced energy. The one possible exception is that the opening angle of the "jet" is larger after passage through the slab of plasma than before. Along the way, we obtain a fully geometric characterization of energy loss in the strongly coupled plasma and show that $dE_{\rm out}/dL$ is proportional to $L^2/\sqrt{x_{\rm stop}^2 - L^2}$, where $E_{\rm out}$ is the energy of the "jet" that emerges from the slab of plasma and $x_{\rm stop}$ is the (previously known) stopping distance for the light quark in an infinite volume of plasma.

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