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A Spacetime description of Hard Parton evolution in the QGP

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Typical energy loss calculations in AdS/CFT simulations use an initial condition of off-shell pairs of quarks placed back-to-back in the QGP, but a precise and theoretically motivated description of this does not exist.

Quark virtuality can have noticable effects on the rate of energy loss so a first principals calculation is needed for the early time behaviour of virtual particles soon after production.

We use the Schwinger Keldysh formalism to calculate a perturbative expression for the Energy Momentum Tensor of hard partons created before the formation of the Quark Gluon Plasma. We propose this as a foundational model to use in jet energy loss.

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