Abstract Submitted
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Energy loss from holography[1] MOHAMMED MIA, Department of Physics, Columbia University — Using the dual classical gravity description for a non conformal quantum field theory, we analyze the energy loss mechanism for a heavy parton as it ploughs through a strongly interacting thermal medium. The medium is described by a gauge theory with matter in fundamental representation where the gauge coupling runs logarithmically with scale at low energies and at high energies, the theory reaches a conformal fixed point. By considering a string moving with constant velocity in the bulk geometry, we compute the drag experienced by a heavy parton as it traverses the medium. The drag coefficient depends non trivially on momentum as the dual geometry deviates from AdS space and in particular it decreases with increasing momentum. We also calculate the diffusion coefficients through computing average transverse and longitudinal momentum square of the heavy parton by considering the Nambu-Goto action of the string. Finally using our results for drag and diffusion coefficients, we compute nuclear modification factor R_{AA} for charged particles and find agreement with the significant rise of R_{AA} at large p_T as observed in Pb-Pb collisions at the LHC.

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