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Investigaing the response of hot QCD matter to fast partons using bare thermal perturbation theory R.B. NEUFELD, Los Alamos National Lab — The response of hot QCD matter to energetic partons has gained tremendous interest in light of two- and three- particle correlation measurements from heavy-ion collisions at RHIC that show a conical emission structure. While the association of this conical structure with Mach cone formation is uncertain, investigation of the medium response to fast partons is still very relevant. Within the perturbative framework, the traditional approach to such an investigation has been to treat the fast parton as a source of soft external color fields which perturb an otherwise thermal medium. In that approach, the appropriate formalism is the hard thermal loop effective theory. However, when the external fields generated by a fast parton are of the order of the temperature or higher, a different approach is needed. I will here present an approach for such a situation, in which bare thermal perturbation theory is used to evaluate the thermal average of the energy-momentum tensor. I will present results for components of the energy-momentum tensor for a gluonic medium in the presence of a fast parton.

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