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QGP Collective Effects and High-Energy Jet Propagation

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In this talk I review recent advances in the understanding of plasma response to the passage of high energy jets. I will discuss our understanding based on the assumption of a thermal isotropic plasma highlighting the importance of both collisional and radiative energy loss. I will also discuss the case of a plasma which has a momentum space anisotropy and the effect of such an anisotropy on jet propagation including the possibility of jet deflection by large-amplitude turbulent chromofields leading to near-side longitudinal jet broadening. Finally, I present recently developed numerical methods for solving the coupled particle-field system in real-time allowing for detailed simulation of jet dynamics in a QGP.