

**Jets and their rarer, harder collisions:
Toward a quantitative understanding of jet quenching in the QGP**

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To move beyond the qualitative discovery of jet quenching to quantitative jet tomography, we need to consider the full distribution and fluctuations of momentum transfers of jets with the medium. These distributions cannot be summarized in one 'q-hat' value or opacity parameterization. For applications to finite energy jets in realistic nuclear geometries, the rarer, harder collisions play a comparable role to multiple soft collisions. We will show how this affects different radiative energy loss formalisms, the magnitude of different orders in an opacity expansion, the interplay of collisional and radiative energy losses, and the mass dependence of energy loss. Only in this way will we be able to use jets to gain a quantitative understanding of the bulk medium, and eliminate the wild variation in input parameters currently used to 'fit' high momentum jet data.