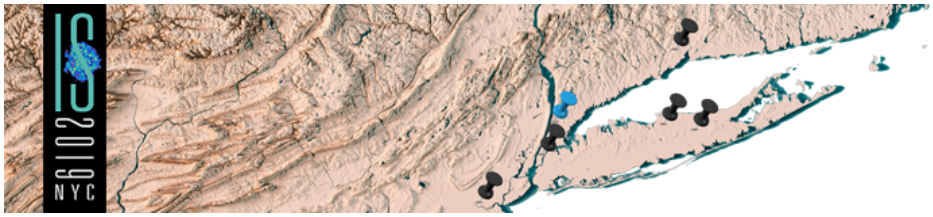

Contribution ID: **33** Type: **Oral**

A complete set of splitting functions in nuclear matter to any order in opacity and applications to jet physics

Wednesday, 26 June 2019 15:40 (20 minutes)

I will present the first calculation of all $calO(\alpha_s)$ medium-induced branching processes to any order in opacity. The splitting functions results are given as iterative solutions to matrix equations with initial conditions set by the leading order branchings in the vacuum. The flavor and quark mass dependence of the in-medium $q \to qg$, $g \to gg$, $q \to gq$, $g \to q\bar{q}$ processes is fully captured by the light-front wavefunction formalism and the color representation of the parent and daughter partons. I will further present numerical results in a realistic QCD medium. The numerical simulations show that the second order in opacity corrections can change the energy dependence of the in-medium shower intensity. Corrections to the longitudinal and angular distributions of the in-medium splitting kernels that may have important implications for jet substructure phenomenology. Last but not least, I will show how these splitting function can be used to evaluate the modification of hadron jet production in SIDIS, such as at the future EIC.

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