Contribution ID: **229** Type: **Oral Presentation**

Parton Production Spectra and Energy Loss in High-Energy OO Collisions

Tuesday 8 July 2025 09:40 (20 minutes)

We compute the production spectra for high-momentum light quarks and gluons in high-energy hadron collisions at a variety of center-of-mass energies, some of which are previously unstudied. These spectra provide the foundation for making quantitative predictions of parton energy loss in high-multiplicity hadronic collisions at RHIC and the LHC. Thus these spectra are necessary in order to use high-momentum partonic probes as a femtoscope to quantitatively characterize the properties of the novel state of matter produced in high-multiplicity hadronic collisions, the quark-gluon plasma. We demonstrate the success of our methodology and implementation by reproducing previously known theoretical results; we then successfully compare our calculations with recent experimental data; finally, we make quantitative first predictions for the production spectra necessary for the future $O + O$ collisions at LHC in the second half of 2025.

Apply for student award at which level:

None

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Yes, I ACCEPT

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Session Classification: Nuclear, Particle and Radiation Physics-2

Track Classification: Track B - Nuclear, Particle and Radiation Physics