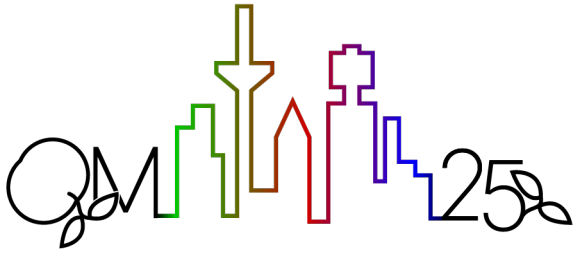

Contribution ID: **183** Type: **Oral**

Understanding quantum corrections to momentum broadening in a weakly coupled QGP

Tuesday 8 April 2025 10:50 (20 minutes)

In heavy-ion collisions, the transverse momentum broadening coefficient, $\hat{q}$ plays an integral role in characterising how a high-energy parton loses energy to the quark-gluon plasma (QGP) through which it passes. Over the last few years, it has been shown [1,2] that $\hat{q}$ starts to receive radiative corrections at $\mathcal{O}(g^2)$, featuring potentially large logarithms. Indeed, better understanding the nature of these logarithmic corrections is extremely relevant for the goal of obtaining a precise theoretical description of parton energy loss.
During this talk, I will begin by presenting our results from [3], where we investigate how the inclusion of thermal effects impacts these radiative corrections. I will then report on our progress in understanding how the logarithmic phase space is deformed, once one relaxes the so-called harmonic oscillator approximation. In this direction, we make use of the improved opacity expansion [4], which has recently found success in analytically describing, at leading order, the interface of the single and multiple-scattering regimes.

References:
[1] T.Liou, A.Mueller, B.Wu, arxiv:1304.7677
[2] J.P.Blaizot, F.Dominguez, E.Iancu, Y.Mehtar-Tani, arxiv: 1311.5823
[3] J.Ghiglieri, E.Weitz, arxiv: 2207.08842
[4]J.Barata, Y.Mehtar-Tani, A.Soto-Ontoso, K.Tywoniuk, arxiv: 2106.07402

Category

Theory

Collaboration (if applicable)

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