Contribution ID: **344** Type: **Poster**

Data-driven analysis of light parton transport properties in a factorized energy loss model

Wednesday 6 April 2022 17:38 (4 minutes)

We perform a systematic data-driven extraction of the light parton transport properties in a quark-gluon plasma based on a hard-soft factorized parton energy loss model [1]. In this model, occasional hard interactions and frequent softer interactions are systematically factorized. The larger number of soft interactions makes possible an effective stochastic description of the parton-plasma interactions in terms of a small number of transport coefficients [2]. These soft transport coefficients can capture non-perturbative effects, agnostic to the strongly- or weakly-coupled nature of the underlying deconfined plasma.

We constrain the temperature dependence of these soft transport coefficients by performing a Bayesian model-to-data comparison with jet measurements from RHIC and LHC, allowing us to better understand the non-perturbative effects suffered by soft interactions in heavy ion collisions. We also study the dependence of the calibration results on the separation of the scale between soft and hard parton-plasma interactions in order to investigate the robustness of the approach. We discuss differences between this work's soft transport coefficients and the soft-hard ones extracted in other approaches, highlighting the strength of our factorized approach.

[1] Dai, Tianyu, Jean-François Paquet, Derek Teaney, and Steffen A. Bass. "Parton energy loss in a hard-soft factorized approach." arXiv preprint 2012.03441 (2020).

[2] Ghiglieri, Jacopo, Guy D. Moore, and Derek Teaney. "Jet-medium interactions at NLO in a weakly-coupled quark-gluon plasma." Journal of High Energy Physics 2016, no. 3 (2016): 1-58.

Primary authors: PAQUET, Jean-Francois (Duke University); DAI, Tianyu; BASS, Steffen A. (Duke University)

Presenter: DAI, Tianyu

Session Classification: Poster Session 1 T04_1

Track Classification: Jets, high-pT hadrons, and medium response