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From R_{AA} to energy loss temperature proportionality factor

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When traversing QCD medium, high $p_\perp$ partons lose energy, which is measured by suppression, and also predicted by various energy loss models. A crucial test of different energy loss mechanisms is their dependence on the medium temperature. Though it is commonly assumed that this dependence is cubic, different effects such as Debye screenings, finite parton masses, infrared cutoffs, etc., modify it differently for different energy losses models. Therefore, providing a theoretical procedure which is able to extract this temperature proportionality factor directly from the suppression data, would enable both differentiating between different energy loss models and gaining better understanding of parton-QGP interactions. In this work [1], we propose a method (based on our recently developed DREENA framework [2]) to infer the energy loss temperature dependence from high $p_\perp$ suppression, and demonstrate that our procedure presents a reliable tool for such a purpose.

[1] S. Stojku, et al., in preparation (2019).

[2] D. Zigic, I. Salom, J. Auvinen, M. Djordjevic and M. Djordjevic, Phys. Lett. B (in press, 2019); arXiv:1805.03494.

Collaboration name

Track

Heavy Flavour

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