

# Vector boson-tagged jet production in heavy ion reactions at the LHC

Wednesday, February 8, 2017 9:30 AM (20 minutes)

Electroweak boson-tagged jet measurements provide a promising experimental channel to accurately study the physics of jet production and propagation in dense QCD medium. In this talk, we present theoretical predictions for the nuclear-induced attenuation  $R_{AA}^2(V + J)$  of the differential cross section for photon-tagged and Z0-tagged jet production in heavy ion collisions, and provide theoretical interpretations to the recent LHC data. In particular, we identify the flavor origin of the vector boson tagged jet production and discuss its implications for the energy loss of the recoiling parton shower. By further using SCET with Glauber gluons improved energy loss model, we demonstrate quantitatively the significance of collisional and radiative energy loss, as revealed in the strong momentum asymmetry  $d\sigma/dx_{VJ}$  in central lead-lead reactions. We show how the collective constraints from momentum imbalance shifts  $\Delta x_{VJ}$ , and tagged jet  $I_{AA}$ , combined with the absence of significant cold nuclear matter modification help constrain the transport properties of the QGP.

## Preferred Track

Electromagnetic Probes

## Collaboration

Not applicable

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