Contribution ID: **252** Type: **Oral Presentation**

An extraction of jet transport coefficient in cold nuclear matter from world data

Wednesday, 3 June 2020 13:25 (20 minutes)

Quantifying the nuclear modification due to multiple scatterings between jet and nuclear medium can provide a solid baseline for the identification of the medium fundamental property, which can be partly encoded in the nonperturbative jet transport coefficient ($\hat{q}$). In this work, we perform the first global extraction of the $\hat{q}$ for cold nuclear matter within the framework of the higher-twist expansion, which has been shown to be a successful approach to describe the nuclear effects observed in heavy ion collisions. The analysis takes into account the world data on the transverse momentum broadening in semi-inclusive eA deep inelastic scattering and in Drell-Yan dilepton and heavy quarkonium production in pA collisions, as well as the nuclear modification of the structure functions in DIS related to the coherent dynamical shadowing. The results of this work provide a quantitative evidence that the $\hat{q}$ for cold nuclear matter is a probing-scale dependent quantity similar to the standard parton distribution functions of proton, rather than a constant value usually used in heavy-ion study, which is expected to motivate a more precise understanding of the jet transport property of the quark-gluon plasma.

Collaboration (if applicable)

Track

Jets and High Momentum Hadrons

Contribution type

Contributed Talk

Primary authors: RU, Peng (South China Normal University); Prof. KANG, Zhongbo (UCLA); WANG, Enke (South China Normal University); XING, Hongxi (South China Normal University); ZHANG, Ben-Wei (Central China Normal University)

Presenter: RU, Peng (South China Normal University)

Session Classification: Parallel

Track Classification: Jets and High Momentum Hadrons