



Contribution ID: 142

Type: **Parallel talk**

## Centrality-dependent jet and hadron cross sections in e-A reactions at the EIC

*Wednesday, 29 March 2023 10:00 (20 minutes)*

Centrality-dependent data of hadron and jet attenuation in deep inelastic scattering (DIS) on nuclei can shed new light on the physics of final-state interactions in nuclear matter, including the path-length dependence of in-medium parton shower evolution. Thus-far, such measurements that can disentangle shadowing and energy loss effects on semi-inclusive DIS cross sections have not been performed. Recent simulation studies, based on the BeAGEL Monte Carlo event generator have demonstrated the feasibility of experimental centrality determination in electron nucleus (e-A) reactions at the electron-ion collider (EIC). Motivated by this result, we present the first theoretical investigation of hadron and jet cross section modification in central and peripheral e-Pb collisions. We find that the variation in the magnitude of the semi-inclusive cross section suppression as a function of centrality is less than a factor of two. In more differential distributions, such as the hadron spectra as a function of the hadronization fraction  $z_h$ , the difference can be enhanced up to an order of magnitude. We discuss the connection of our calculations to the proton-nucleus (p-A) cold nuclear matter program.

### Submitted on behalf of a Collaboration?

No

### Participate in poster competition?

No

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**Session Classification:** WG4

**Track Classification:** WG4: QCD with Heavy Flavours and Hadronic Final States