



Contribution ID: 332

Type: **Contributed Oral Presentation**

Nuclear Fragmentation at the Future Electron-Ion Collider

Tuesday, 27 May 2025 12:05 (15 minutes)

I will discuss low-energy nuclear physics at the future Electron-Ion Collider (EIC) at Brookhaven. By comparing the standard theory of electron-nucleus scattering with the equivalent photon method applied to Ultraperipheral Collisions (UPC) at the Large Hadron Collider (LHC) at CERN. In the limit of extremely high beam energies and small energy transfers, very transparent equations emerge. We apply these equations to analyze nuclear fragmentation in UPCs at the LHC and scattering at the EIC, demonstrating that the EIC could facilitate unique photonuclear physics studies. However, we have also shown that the fragmentation cross-sections at the EIC are about 1,000 times smaller than those at the LHC. At the LHC, the fragmentation of uranium nuclei displays characteristic double-hump mass distributions from fission events, while at the EIC, fragmentation is dominated by neutron emission and fewer fission products, about 10,000 smaller number of events.

Primary author: BERTULANI, Carlos (East Texas A&M University)

Presenter: BERTULANI, Carlos (East Texas A&M University)

Session Classification: Parallel Session

Track Classification: Nuclear Reactions