

# Luminosity measurements at the EIC —guided by experience from HERA

*Wednesday, 1 November 2023 16:00 (30 minutes)*

Precise measurements of the electron-hadron cross sections are the corner stone of scientific program at the future Electron-Ion Collider, hence the high demands towards the EIC luminosity measurements –at least a 1% accuracy is required for the absolute luminosity determination and only a 0.01% uncertainty for the relative, bunch-to-bunch, luminosity measurements. As was demonstrated at HERA –the first electron-hadron collider –the bremsstrahlung process can be successfully used to precisely measure the luminosity of high energy  $\gamma\gamma$  collisions. Such a technique can be also used at the EIC, but it poses major challenges, and a wide range of the electron beam energies and a large variety of hadron species, from protons to gold nuclei, will only increase that challenge. I will describe conceptual detector designs and measurement techniques being studied to overcome these huge challenges and to meet the target performance.

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**Session Classification:** Parallel workshop 1