

ATLAS Overview

Tuesday 23 September 2025 09:00 (25 minutes)

The future electron-hadron collider (EIC) at Brookhaven National Laboratory and the High-Luminosity Large Hadron Collider (HL-LHC) at CERN represent the next frontiers for high precision quantum chromodynamics (QCD) measurements in nuclear physics. The staggered timelines, together with the synergy between the physics programs of the two accelerators, offer unique opportunities to advance the understanding of QCD in both the hot and cold temperature regimes. Thanks to its outstanding detection capabilities, the ATLAS experiment at the LHC can reconstruct proton-proton (p+p), proton-nucleus (p+A), and nucleus-nucleus (A+A) collisions with high precision. In this talk, I will review recent heavy-ion results from ATLAS that are directly related to the physics landscape of the LHC. I will present cold QCD measurements carried out in p+A and ultra-peripheral A+A collisions, demonstrating their direct connection to the EIC program. I will also discuss how the unprecedented precision of the EIC in mapping the nucleon and the nuclear structure will benefit the (HL-) LHC heavy-ion program and possible future synergies between the EIC and the HL-LHC.

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