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Electroweak probes of small and large systems with the ATLAS detector

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Measurements of isolated prompt photon and massive electroweak (W and Z) boson production in different collision systems are of great interest to understanding the partonic structure of heavy nuclei, and serve as a constraint on the initial state in larger collision systems. These channels are sensitive to a variety of effects such as the modification of the parton densities in nuclei in certain kinematic regions, and the energy loss of partons as they undergo multiple interactions in the nucleus before the hard parton-parton scattering. High-statistics samples of lead–lead and proton–lead collision data at $\sqrt{s_{\mathrm{NN}}} = 5.02$ TeV and 8.16 TeV, respectively, taken by the ATLAS experiment, as well as proton–proton comparison data at analogous collision energies, allow for a detailed study of these phenomena in data and comprehensive comparisons to the predictions of a variety of theoretical approaches. This talk presents the latest ATLAS results in these topics, including updated results on inclusive prompt photon production in proton–lead collisions over a broad kinematic range and high-precision W boson results in lead–lead collisions.

Content type

Experiment

Collaboration

ATLAS

Centralised submission by Collaboration

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