

Electroweak probes in heavy-ion collisions with ATLAS

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Electroweak bosons produced in lead-lead (Pb+Pb) collisions are an excellent tool to constrain initial-state effects which affect the rates of hard-scattering processes in nucleus-nucleus interactions. The production yields of massive electroweak bosons, observed via their leptonic decay channels, offer a high-precision test of the binary collision scaling expected in Pb+Pb and a way to quantify nuclear modifications of the parton distribution functions (PDFs). The large samples of Pb+Pb data at $\sqrt{s_{NN}} = 5.02$ TeV collected by the ATLAS experiment in 2015, and the corresponding high-statistics pp data at the same collision energy used as a baseline, allow for a detailed experimental study of these phenomena and comparisons to predictions from a variety of theoretical calculations. This talk presents the latest ATLAS results on electroweak boson production, including updated results on Z production and high-precision W boson results in Pb+Pb collisions. Inclusive production of prompt photons in proton-lead (p +Pb) collisions at $\sqrt{s_{NN}} = 8.16$ TeV is also covered. Various predictions of nuclear modifications to PDFs are discussed.

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