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First results of running the LHC with lead ions at a beam energy of 6.8 Z TeV

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A two-day test of operation with Pb ion beams was carried out in the CERN Large Hadron Collider (LHC) in 2022, with the aim of gaining experience in view of the future high luminosity heavy-ion physics runs from 2023 onwards. The LHC experiments received the first Pb-Pb collisions at a record energy of 5.36 TeV centre-of-mass energy per colliding nucleon pair (beam energy 6.8 Z TeV). Bunch trains created with a new production scheme in the injectors, including slip-stacking, were injected into the LHC, with the collimation of nuclear beams with bent crystals tested along with a new collimation scheme for collision products. This paper describes the conditions and outcomes of these tests, which are critical steps in the upgrade to higher luminosity.

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Footnotes

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