

Measurements of the top quark pair production in 5.02 TeV pp and PbPb collisions

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The top quark pair production cross-section is measured in proton-proton and lead-lead collisions at a center-of-mass energy of 5.02 TeV. The data, collected in 2017 and 2018 by the CMS experiment at the LHC, correspond to a proton-equivalent integrated luminosity of 304 and 78 pb⁻¹, respectively. The measurements are performed using events with one electron and one muon of opposite sign, and at least two jets. The measured cross-sections are found to be consistent with each other as well as perturbative QCD calculations, including state-of-the-art free- or bound-nucleon parton distribution functions. They constitute the first step towards using the top quark as a novel tool to probe the quark-gluon plasma, an exotic state of strongly interacting quantum chromodynamics matter which is routinely produced in ultrarelativistic heavy nuclei collisions.

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