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Performance of the CMS muon detector and muon reconstruction with proton-proton collisions at s=13 TeV (Article) (Open Access)

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Abstract

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The CMS muon detector system, muon reconstruction software, and high-level trigger underwent significant changes in 2013-2014 in preparation for running at higher LHC collision energy and instantaneous luminosity. The performance of the modified system is studied using proton-proton collision data at center-of-mass energy s=13 TeV, collected at the LHC in 2015 and 2016. The measured performance parameters, including spatial resolution, efficiency, and timing, are found to meet all design specifications and are well reproduced by simulation. Despite the more challenging running conditions, the modified muon system is found to perform as well as, and in many aspects better than, previously. We dedicate this paper to the memory of Prof. Alberto Benvenuti, whose work was fundamental for the CMS muon detector . © 2018 CERN for the benefit of the CMS collaboration..

SciVal Topic Prominence

Topic: Tellurium compounds | High energy physics | instantaneous luminosity

Prominence percentile: 83.989

Author keywords

Muon spectrometers | Particle tracking detectors (Gaseous detectors)

Indexed keywords

Engineering controlled terms: Nuclear instrumentation | Particle spectrometers

Engineering uncontrolled terms: Center-of-mass energies | Design specification | Gaseous detectors | Muon detector systems | Muon spectrometer | Performance parameters | Proton proton collisions | Reconstruction software

Engineering main heading: Charged particles

Funding details

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