

RECEIVED: *November 26, 2009*REVISED: *January 19, 2010*ACCEPTED: *January 26, 2010*PUBLISHED: *March 19, 2010***COMMISSIONING OF THE CMS EXPERIMENT WITH COSMIC RAYS**

Commissioning of the CMS experiment and the cosmic run at four tesla

CMS Collaboration

ABSTRACT: The CMS Collaboration conducted a month-long data-taking exercise known as the Cosmic Run At Four Tesla in late 2008 in order to complete the commissioning of the experiment for extended operation. The operational lessons resulting from this exercise were addressed in the subsequent shutdown to better prepare CMS for LHC beams in 2009. The cosmic data collected have been invaluable to study the performance of the detectors, to commission the alignment and calibration techniques, and to make several cosmic ray measurements. The experimental setup, conditions, and principal achievements from this data-taking exercise are described along with a review of the preceding integration activities.

KEYWORDS: Large detector systems for particle and astroparticle physics; Calorimeters; Particle tracking detectors (Solid-state detectors); Particle tracking detectors (Gaseous detectors)

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