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CMS geometry through 2020

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CMS faces real challenges with upgrade of the CMS detector through 2020. One of the challenges, from the software point of view, is managing upgrade simulations with the same software release as the 2013 scenario. We present the CMS geometry description software model, its integration with the CMS event setup and core software. The CMS geometry configuration and selection is implemented in Python. The tools collect the Python configuration fragments into a script used in CMS workflow. This flexible and automated geometry configuration allows choosing either transient or persistent version of the same scenario and specific version of the same scenario. We describe how the geometries are integrated and validated, how we define and handle different geometry scenarios in simulation and reconstruction. We discuss how to transparently manage multiple incompatible geometries in the same software release. Several examples are shown based on current implementation assuring consistent choice of scenario conditions. The consequences and implications for multiple/different code algorithms are discussed.

Summary

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