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New Developments in the VMC Project

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Virtual Monte Carlo (VMC) provides a unified interface to different detector simulation transport engines such as GEANT3 and Geant4. Since recently, all VMC packages: the VMC core library, also included in ROOT, Geant3 and Geant4 VMC are distributed via the VMC Project GitHub organization. In addition to these VMC related packages, the VMC project also includes the Virtual Geometry Model (VGM), which is optionally used in Geant4 VMC for conversion between Geant4 and ROOT TGeo geometry models.

In this contribution, we will present the new organization of the VMC project at GitHub and new developments in the VMC interface and the VMC packages. We will cover the introduction of the sensitive detector interface in the VMC core and both Geant3 and Geant4 VMC and the new Geant4-related developments.

Geant4 VMC 3.0 with the integration of multithreading processing was presented at CHEP in 2015. In this presentation we will report on new features included in version 4.0 and beyond: the improved support for magnetic fields, the integration of fast simulation, Garfield++ physics, Geant4 transition radiation and monopole physics. Five new VMC examples demonstrating these new features, also used for tests, will be also discussed. Finally we will mention the work towards the code quality and improvements in testing, documentation and automated code formatting.

The introduction of the multiple engine framework in the VMC packages and new developments in VGM will be covered in two separate contributions to this conference.

Consider for promotion

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