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Hadronic Physics in Geant4: Improvements and Status for LHC Start

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An overview of recent developments for the Geant4 hadronic modeling is provided with a focus on the start of the LHC experiments. Improvements in Pre-Compound model, Binary and Bertini cascades, models of elastic scattering, quark-gluon string and Fritiof high energy models, and low-energy neutron transport were introduced using validation versus data from thin target experiments. Many of these developments were directed to improve simulation of hadronic showers for LHC. As a result, starting from Geant4 8.3, the Physics List QGSP_BERT describes reasonably well all the main observables that have been measured in different test-beam setups for ATLAS and CMS experiments.

Primary author: Prof. IVANTCHENKO, Vladimir (CERN, ESA)

Co-authors: Dr RIBON, Alberto (CERN); Dr FOLGER, Gunter (CERN); Dr APOSTOLAKIS, JOhn (CERN)

Presenter: Prof. IVANTCHENKO, Vladimir (CERN, ESA)

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