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## Status of hadronic calorimetry in GEANT4

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The performance of hadronic calorimeters will be a key parameter at the next generation of High Energy Physics accelerators. Energy resolution requirements might largely exceed the performance of today's detectors and therefore, require the development of new hadronic calorimeter concepts that combine fine granularity, excellent time resolution and possibly dual readout capabilities. The goal of this new calorimetric techniques is to compensate for effects that limit the performance of current hadronic calorimetry like non-linear response to hadrons, energy deposition fluctuations etc. and will require a high level of confidence in the performance of the simulation and its ability to make predictions. The GEANT4 collaboration continuously evaluates the physics performance of the simulation utilizing mainly two approaches:

first detailed comparisons between GEANT4 predictions and thin target experimental results are performed, directly comparing physics observables of single particle interactions. This is somewhat limited by the quality and availability of experimental data.

The other approach is the simulation and comparison with test beam results. These comparisons evaluate the overall performance of a detector system including the physics simulation, simulation of signal generation and other readout effects. In this presentation we report on recent developments of various Geant4 physics models and go over the validation results relevant to hadronic calorimetry and see how well experimental data is described and where there is need for improvements.

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