Sample Project: Validation framework for detector simulation

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Title

Validation framework for detector simulation

Description

The Geant-Vector prototype is a software initiative for the simulation of the passage of particles through a detector whose goal is to make efficient use of modern hardware at all performance dimensions. For the simulation of the physics interactions of radiation with matter, it offers the option of pre-sampled interactions and physical models based on phenomenology and theory. In order to obtain accurate results it is important that a comprehensive validation is carried out. Comparisons with real experiments both in simple setups (thin target) and for the combined models in full setups are essential

This project aims to start from existing comparison programs used with Geant4, adapt them for simultaneous use with GeantV models, add statistical measures and automate their execution to enable regular testing of the code. In collaboration with authors of models, the suite of comparisons will be used to undertake the optimisation of key physics models. Skills

Knowledge of Web programming tools (some or all of PHP, Javascript, Django) is essential

Experience with a Unix environment (Linux or MacOS) is important

Use of statistics or tools for comparison of data is an asset.

Interest in fundamental physics and/or nuclear interactions is an asset.

Skills

Disciplines

Information Technologies