



The FNAL Detector Simulation Group

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What we do in a few words



Detector simulation support to the FNAL scientific program, Geant4 infrastructure/physics development, Geant4 computing performance profiling and benchmarking, R&D for the next generation of detector simulation tools

- Detector simulation applications for FNAL energy and intensity frontier experiments, including CMS, Minos, NOvA, MINERvA, Mu2e, lepton colliders.
- G4 physics models development: hadronic showers (intermediate energy), stopping particles including π , κ , muons.
- Physics validation framework

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- Monitor Geant4 performance by doing timing/benchmarking measurements and profiling cpu and memory usage of agreed upon Geant4 releases/applications.
- Identify performance issues or opportunities for code improvement and optimization.
- Develop/evolve the performance benchmarking/profiling tools/protocol as needed (includes the evolution of the framework to monitor future detector simulation software developed to use multi-core processors).

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- Collaboration with CERN and main HEP experiments in R&D activities toward re-engineering the Geant4 simulation toolkit to run in multi-core environments