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Medical Applications of the Geant4 Simulation Toolkit JOSEPH PERL, Stanford Linear Accelerator Center — Geant4 is a toolkit for the simulation of the passage of particles through matter. While Geant4 was originally developed for High Energy Physics (HEP), applications now include Nuclear, Space and Medical Physics. Medical applications of Geant4 in North America and throughout the world have been increasing rapidly due to the overall growth of Monte Carlo use in Medical Physics and the unique qualities of Geant4 as an all-particle code able to handle complex geometry, motion and fields with the flexibility of modern programming and an open and free source code. Work has included characterizing beams and brachytherapy sources, treatment planning, retrospective studies, imaging and validation. This talk will provide an overview of these applications, with a focus on therapy, and will discuss how Geant4 has responded to the specific challenges of moving from HEP to Medical applications.

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