

## Applications of Geant4 to ion beam and synchrotron science

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Geant4, a toolkit for simulating the passage of particles through matter, is the result of a world wide collaboration of over 100 scientists and software engineers spanning the last 20 years. Since the development of its original implementation, a total of nine additional versions have been released. With each release the core tracking, geometry and hits collection architecture has been incrementally improved and optimised. At the same time new particle types and physics models, including electromagnetic, hadronic and optical processes, spanning energies of a few eV to hundreds of TeV have been added to increase the functionality of Geant4. In this talk I will present an overview of Geant4, outline its capabilities for accelerator science, and discuss a few select Geant4 based ion beam and synchrotron science studies.