

## The History of the Accept and Rise of Geant4

*Thursday, 23 March 2023 09:00 (40 minutes)*

Geant4 is an open-source software toolkit that has been in development since 1994 and is used to simulate the interactions between particles and matter. It is widely used in a variety of fields, including high energy physics, nuclear physics, accelerator physics, medical physics, and space science. The first paper on Geant4, published in Nuclear Instruments and Methods in Physics Research A in 2003, has received more than 16,000 citations according to the SCOPUS database and is the second most frequently cited paper in fundamental physics.

Geant4 is the first large-scale software designed and developed using object-oriented technology in particle physics. Its design is based on an earlier effort in Japan called ProDigi. The Japanese team introduced object-oriented analysis, design, and development to Geant4, which was a new technology at the time. Without these technologies, likely, Geant4 would not have been accepted as a detector simulation toolkit in particle physics or achieved success in other fields. In this presentation, the speaker will discuss the unknown history of Geant4 and how its adoption of object-oriented technology contributed to its success.

In addition to discussing the technical aspects of Geant4's development, the speaker will also delve into the cultural aspects of the collaboration. Geant4 has more than 100 collaborators from different parts of the world, which has greatly enriched the project and led to various challenges. The speaker will discuss how these cultural differences have affected the development process and how they have been addressed.

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**Session Classification:** Keynote Speech III