Contribution ID: **21**

Type: **Talk**

AdePT - Offloading electromagnetic showers in Geant4 simulations to GPU

Tuesday 6 May 2025 11:00 (20 minutes)

The Geant4 simulation throughput of LHC experiments is limited by increasing detector complexity in the high-luminosity phase. As high-performance computing shifts toward heterogeneous architectures such as GPUs, GPU-accelerated particle transport simulations offer a potential way to improve performance. Currently, only electromagnetic showers can be offloaded to GPUs, making an efficient CPU–GPU workflow essential. In this contribution, we present state-of-the-art detector simulations for LHC experiments using GPUs, outline the outstanding challenges, and discuss future directions.

Requested talk length

20

Authors: GHEATA, Andrei (CERN); MORGAN, Benjamin (University of Warwick); APOSTOLAKIS, John (CERN); HAHNFELD, Jonas (CERN & Goethe University Frankfurt); GONZALEZ CAMINERO, Juan (CERN); NOVAK, Mihaly (CERN); DIEDERICHS, Severin (CERN); HAGEBOECK, Stephan (CERN); POKORSKI, Witold (CERN)

Presenter: DIEDERICHS, Severin (CERN)

Session Classification: HSF

Track Classification: HSF: Common Software and Software Projects