

Contribution ID: 40

Type: **not specified**

Acceleration of tracking reconstruction algorithms using GPUs at ATLAS

Thursday 9 February 2023 14:35 (15 minutes)

The ATLAS detector is one of the two multi-purpose experiments at the Large Hadron Collider. Its main goals are to search for signs of physics beyond the Standard Model of Particle Physics, and to make precise measurements of the Standard Model itself. In order to analyse the data recorded by the detector, one of the most complex operations is to reconstruct the tracks left by electrically charged particles in the middle of the detector, the so called tracker. With the advent of heterogeneous hardware capable of high performance computing, especially General Purpose GPUs, and because ATLAS plans to record data during the High-Luminosity LHC data taking period with a much higher rate than before, using GPUs in the charged particle reconstruction software of ATLAS is currently being investigated very actively. In order to demonstrate that reconstructing charged particles with the help of GPUs would be viable for the High-Luminosity LHC era in ATLAS, a research and development project is under way to implement the majority of track reconstruction using heterogeneous code. In this project I have been implementing and optimising algorithms taking part in charged particle reconstruction, on GPUs. The major goal in the coming months is integrating this code into the production environment of the software used by the ATLAS experiment.

Author: METELO RITA DE ALMEIDA, Guilherme (Universidade de Lisboa (PT))

Presenter: METELO RITA DE ALMEIDA, Guilherme (Universidade de Lisboa (PT))