

# GPGPU for track finding and triggering in High Energy Physics

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The LHC experiments are designed to detect large amount of physics events produced with a very high rate. Considering the future upgrades, the data acquisition rate will become even higher and new computing paradigms must be adopted for fast data-processing: General Purpose Graphical Processing Units (GPGPU) can be used in a novel approach based on massive parallel computing. The intense computation power provided by GPGPU is expected to reduce the computation time and speed-up fast decision taking and low-latency applications. In particular, this approach could be hence used for high-level triggering in very complex environments, like the typical inner track detectors of the LHC experiments, where a large amount of pile-up events overlaying the interesting physics processes are expected with the luminosity upgrade.

In this contribution we discuss two typical use-cases where a parallel approach is expected to reduce dramatically the execution time: a track pattern recognition algorithm based on the Hough transform and a trigger model based on track fitting.

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