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[364] Real-time track reconstruction for the ATLAS HL-LHC

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At the High Luminosity LHC, the ATLAS trigger and data acquisition (TDAQ) system necessary to select in real-time interesting data will have to deal with severe reconstruction challenges due to the unprecedented rates of particle collisions. The Hardware-based Tracking for the Trigger (HTT) is a critical element to deal with these data-taking conditions. It implements track reconstruction using fast and highly-parallel Associative Memories ASICs and FPGAs, but many are the challenges that we are facing in order to meet the demanding requirements.

In this work we present the HTT basic principles for track reconstruction and track fitting, the HTT design and its data-flow. We also demonstrate the challenges to implement such system.

Primary author: POGGI, Riccardo (Universite de Geneve (CH))

Presenter: POGGI, Riccardo (Universite de Geneve (CH))

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