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## Ambiguity Resolution for Event Filter Tracking in ATLAS for the HL-LHC

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The ATLAS experiment is currently preparing for the High Luminosity LHC era, scheduled to begin in a few years time with the start of run 4. ATLAS will be upgraded to support at least 200 simultaneous protonproton interactions per bunch crossing. As part of these upgrades, the trigger system is also being upgraded to support a 10x increase in readout rate, and- for the first time- a dedicated tracking subsystem as part of the second-stage Event Filter trigger. The Event Filter will receive data from the entire detector at 1 MHz and need to output events at a rate of 10 KHz; due to high pileup conditions, efficiently reconstructing tracks and vertices can provide a major improvement in determining whether to accept or reject events of potential interest. A number of possible Event Filter Tracking designs are currently under study, with a final decision on the system architecture expected by next year, but due to power and latency concerns, there is significant interest in "accelerator" options, where a FPGA (or GPU) serves as a tracking co-processor for the CPU based Event Filter cluster. In this talk, I will discuss some of the studies ongoing towards FPGA-based EF tracking solutions, with a particular focus on ways to efficiently reject fake tracks on the FPGA itself, such as fast linearized fits or neural network-based methods.

## Mini Symposia (Invited Talks Only)

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