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Hyperfast Sensor Development for the HL-LHC Era

Abstract:

There is a growing interest in applying timing measurement of physics objects (leptons, jets, photons) in the high pileup environment planned for the next decade at the LHC. Time of occurrence of events within the same bunch ("in-time pileup") can be used analogously to the more commonly used "event vertex position" tagging to resolve events of interest in this busy environment.

Extending to this 2-D tool (time and space discrimination) is likely key to enabling the challenging measurements

of the next decade by suppressing pileup background.

Currently both ATLAS and CMS are exploring the potential of this tool for improving physics capability.