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Simulation of high-time-resolution silicon LGAD sensors with Allpix2

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Once the Large Hadron Collider (LHC) enters the high-luminosity phase, the number of proton-proton interactions will increase by an estimated factor of 3, which calls for a detector with very precise timing measurements to distinguish between collisions in time, as well as in space. To that end, the ATLAS detector will be upgraded with a High Granularity Timing Detector (HGTD) consisting of LGAD sensors that are capable of providing a time resolution of 30 to 50 ps per track. The topic of this talk will be the simulation of LGAD sensors in the Allpix^2 framework, where we will focus on the necessary steps involved in generating efficiency plots and how these compare to test beam results.

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