

A timing detector for the high luminosity upgrade of ATLAS

At the high luminosity version of the LHC, which will start data taking in 2026, background from additional p-p interactions (pile-up) will be one of the main experimental challenges. High precision timing measurements provide a powerful tool to distinguish particles originating from the hard scatter (HS) vertex from those coming from pile-up collisions. The *High Granularity Timing Detector* (HGTD) - an ATLAS upgrade detector - will cover the pseudo-rapidity (η) range between 2.4 and 4.0, where the inner tracking detector (ITk) is no longer capable of resolving the longitudinal impact parameter of tracks at high resolution.

High energy physics