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Overview of the Timing Detectors at ATLAS and CMS for the HL-LHC

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The CMS and ATLAS detectors at the CERN Large Hadron Collider (LHC) are undergoing significant upgrades to meet the challenges posed by the High-Luminosity LHC (HL-LHC). The CMS detector is implementing an upgrade program that includes a new MIP Timing Detector (MTD) with a time resolution of approximately 30-40 ps, aimed at mitigating the effects of high pileup levels expected at HL-LHC. The MTD features an Endcap Timing Layer (ETL), equipped with Low Gain Avalanche Detectors (LGAD) read out using the ETROC chip, that enhances CMS's physics capabilities.
Similarly, the ATLAS detector is addressing the increased particle flux through the development of a High-Granularity Timing Detector (HGTD), which also relies on the LGAD technology. HGTD will assist in pile-up mitigation and enable more accurate vertex assignment for tracks in the forward region where granularities are reduced, providing a timing resolution better than 50 ps per track for MIPs across the pseudo-rapidity range of 2.4 to 4.0.
Both projects encompass rigorous technical designs and specifications, and are now closing their prototyping phase and moving towards production. An overview of the status of both projects will be presented.

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