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L1 Tracking at CMS For the HL-LHC using the Tracklet approach

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The High Luminosity LHC (HL-LHC) is expected to deliver luminosities of $5 \times 1034 \ \mathrm{cm2/s}$, with an average of about 140 overlapping proton-proton collisions per bunch crossing. These extreme pileup conditions place stringent requirements on the trigger system to be able to cope with the resulting event rates. A key component of the CMS upgrade for HL-LHC is a track trigger system which would identify tracks with transverse momentum above 2 GeV already at the first-level trigger. This talk presents a proposal for implementing the L1 tracking using tracklets for seeding.

Results from a recently completed demonstrator project will be presented, which shows good performance and ability to reconstruct tracks within $4\mu s$ of the collision, and projections for ultimate system performance.

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Track Classification: 9 : Real Time Pattern Recognition