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Type: Poster

Status of the Phase-2 Tracker Upgrade of the CMS experiment at the HL-LHC

The High Luminosity Large Hadron Collider (HL-LHC) will begin operations in 2027 delivering pp collisions at a centre-of-mass energy of 14 TeV at the unprecedented peak instantaneous luminosity of about $5-7.5 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$, eventually reaching an integrated luminosity of 3000-4500 fb^{-1} .

To fully exploit the delivered luminosity and to cope with the challenging operating conditions the entire silicon Tracker of the CMS experiment will be replaced with a new low mass and high granularity detector, featuring increased radiation hardness, providing robust tracking in high track-density environment (up to 200 pileup events at the highest luminosity) as well as input for the Level-1 trigger.

In this contribution, we present the main design choices for the upgraded Tracker together with highlights from R&D and prototyping activities.

Consider for young scientist forum (Student or postdoc speaker)

Yes

Second most appropriate track (if necessary)

Novel approaches and algorithms, and theoretical analysis

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