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The Level-1 Trigger upgrade of the CMS experiment at the LHC: challenges and future prospects

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The HL-LHC will open an unprecedented window on the weak-scale nature of the universe, providing high-precision measurements of the standard model (SM) as well as searches for new physics beyond the SM. Collecting the information-rich datasets required by such measurements and searches will be a challenging task, given the harsh environment of 200 proton-proton interactions per bunch crossing. For this purpose, CMS is designing an efficient data-processing hardware trigger including tracking and high-granularity calorimeter information. Trigger data analysis will be performed through sophisticated algorithms including widespread use of Machine Learning. The system design is expected to take advantage of advances in FPGA and link technologies, providing a high-performance, low-latency computing platform for large throughput and sophisticated data correlation across diverse sources. The expected impact on the physics reach of the experiment will be summarised in this presentation.

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Clasificación de la sesión: Presentaciones invitadas