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Enhanced scope of a Phase-2 CMS detector for the study of physics beyond the SM at the high-luminosity LHC

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To extend the LHC physics program, it is foreseen to operate the LHC in the future with an unprecedented high luminosity. To maintain the experiment's physics potential in the harsh environment of this so-called phase-2, the detector will be upgraded. At the same time the detector acceptance will be extended and new features such as a L1 track trigger will be implemented. Simulation studies evaluated the performance of the new, proposed detector components and the impact on representative physics channels. In case of searches for new physics, these studies also shape the future research program. The sensitivity to find new physics beyond the SM is significantly improved and will allow to extend the reach for heavy vector bosons, for SUSY, dark matter and exotic long-lived signatures, to name a few.

Author: HOEPFNER, Kerstin (Rheinisch Westfaelische Tech. Hoch. (DE))

Presenter: HOEPFNER, Kerstin (Rheinisch Westfaelische Tech. Hoch. (DE))

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