

Radiation Hard Sensor Materials for the CMS Tracker Upgrade

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The upgrade of the LHC machine to deliver a significantly higher luminosity of about $5 \times 10^{34} \text{ cm}^{-2}\text{s}^{-1}$ is planned to be operational after 2020. This will significantly increase the radiation dose of the inner detector systems, requiring new radiation hard sensor materials for the CMS Tracker. To identify the appropriate materials which are able to withstand the radiation environment in the middle to outer layers of the CMS Tracker during the full lifetime of the high luminosity LHC, a large irradiation and measurement campaign has been conducted. Several test structures and sensors have been designed and manufactured on 18 different combinations of wafer materials, thicknesses and production technologies. The structures will be electrically characterised before and after irradiation with different doses of neutrons and protons.

The talk will present the close-to-final status and results from this campaign.

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