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12.12 Radiation hardness in Si detectors

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Conventional silicon detectors are used due to the availability of good quality homogeneous material, high charge carrier transport properties and their radiation hardness. Silicon detectors will be an important tool to understand the plasma physics in future fusion reactors thanks to their excellent spectroscopic and particle diagnostics performances in harsh environments. The international fusion community will benefit from the large experience accumulated in the last years within the CERN's very-high-luminosity experiments, which has developed new kinds of radiation-hardened silicon sensors able to withstand fluences of 10E17 neutrons/cm2. The requirements at the Large Hadron Collider (LHC) at CERN have pushed today's silicon tracking detectors to the very edge of the current technology, the detectors must be ultra-radiation hard, provide a fast and efficient charge collection and be as thin as possible. In this poster, I will report recent results from CERN RD50 collaboration, which is aiming to provide detector technologies, which are able to operate safely and efficiently in such an environment.

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