

Characterization of P-type Silicon Detectors Irradiated with Neutrons

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Silicon p-type detectors are being investigated for the development of radiation tolerant detectors for the luminosity upgrade of the CERN large hadron collider (super-LHC). Microstrip detectors have been fabricated by CNM-IMB with a n-side read-out on p-type high resistivity float zone substrates. They have been irradiated with neutrons at the TRIGA Mark II nuclear reactor in Ljubljana. The irradiation fluxes match with the expected doses for the inner tracker at the sLHC (up to $8E015$ equivalent 1MeV neutrons cm^{-2}). DOFZ and MCz silicon substrate technologies are evaluated. The macroscopic properties of the irradiated prototypes after irradiation were characterized at the IFIC-Valencia laboratory. The charge collection studies were carried out by means of a radioactive source setup as well as by an infrared laser illumination.

Primary author: MINANO MOYA, Mercedes (Instituto de Fisica Corpuscular (IFIC) UV-CSIC)

Presenter: MINANO MOYA, Mercedes (Instituto de Fisica Corpuscular (IFIC) UV-CSIC)

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