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## Effect of 1 MeV neutron-irradiation on the electrical properties of Si-based diodes.

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The impact of radiation on Si-based detectors has garnered interest due to the observed degradation in their stability in high-radiation environments. In this study, we examined the effects of 1 MeV neutron-irradiation at different fluences on the electrical properties of undoped n-Si diodes using current-voltage (I-V) technique. The irradiation fluences ranged from 0 to 1017 n/cm<sup>2</sup>. The obtained results indicated that the diodes were well fabricated, and neutron-irradiation resulted in a diode behaviour changing from normal exponential to ohmic I-V behaviour. This ohmic behaviour was explained in terms of irradiation-induced defect levels that were positioned at the centre of the energy gap. An I-V ohmic region increased with fluence indicating that the density of defect levels has increased with neutron-irradiation fluence. A change in diode conduction mechanism domination and parameters with different radiation fluence were also investigated. The obtained I-V properties of neutron-irradiated Si-based diodes were similar to those of the diodes that were fabricated on radiation-hard materials, indicating that neutron-irradiation at certain fluences improve radiation-hardness of Si to be used in high energy physics experiments.

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