

Evolution of pulsed current and of carrier lifetime characteristics in Si structures during 25 MeV neutrons irradiation using a spallator type source

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Evolution of pulsed current and of carrier lifetime characteristics in Si structures measured in situ during neutron irradiation will be discussed. A spallator type source producing neutrons with energy peak at 25 MeV was exploited in these experiments to perform the on-line measurements at room temperature by combining several techniques operating in distant measurement mode. The obtained changes of pulsed currents and of carrier lifetime characteristics well correlate mutually when considered relatively to an increasing neutron fluence value. Thereby, it has been approved that measurements of correlated lifetime changes, performed in contactless and distant manner and calibrated with other parameters, can be a powerful tool for rather precise prediction of detector performance in a wide dynamic range.

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