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E-TCT measurements of irradiated HV-CMOS test structures

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E-TCT measurements with HVCMOS detectors produced by different foundries on substrates with different resistivities will be presented. Samples were irradiated with reactor neutrons in Ljubljana and with protons at CERN PS. Measurements were made with passive detector structures in which current pulses induced on charge collecting electrode could be directly observed. In reverse biased HVCMOS sensors investigated in this work the depleted region is formed in the p-type substrate. With Edge-TCT method the thickness of this layer could be estimated and it was studied as the function of irradiation fluence. It was observed that in some substrates the thickness of depleted layer increased with irradiation in certain range of fluences. The increase of depleted layer was attributed to initial acceptor removal.

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