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Effect of thinning and backplane processing on charge collection properties of irradiated CMOS detectors

Two sets of passive CMOS detectors were studied: thinned with processed and metalized backplane and not thinned without backplane processing with substrate biased through the implant on top of the device. Detectors were irradiated with neutrons in reactor in Ljubljana. Collected charge was measured with electrons from Sr-90 source using an external amplifier. Depletion depth and charge collection was measured also with Edge-TCT and compared with Sr-90 measurements. Results obtained with two sets of devices were compared and it was found that thinning and backplane processing improves charge collection after irradiation.

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