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TCAD simulation and test results of neutron irradiated OVERMOS, a CMOS 180nm MAPS detector

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We will present latest results of dark current (I-V) and charge collection efficiency (CCE, obtained using a calibrated laser source) of OVERMOS, a high resistivity TJ 180nm CMOS MAPS, irradiated with neutrons up to 1e15 cm-2 fluence. Results of charge collection within the 40 x 40 um2 pixel region,with 5um resolution, and charge collection time will be shown.
Test results are compared with 3D TCAD results using a device structure obtained through process simulator SPROCESS and using SDEVICE for electro/optical simulations.Implemented models in TCAD include SiO2 and CoSi2 optical attenuation, Si/SiO2 surface traps model and HPTM (Hamburg Penta Traps Model) for bulk radiation damage.

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