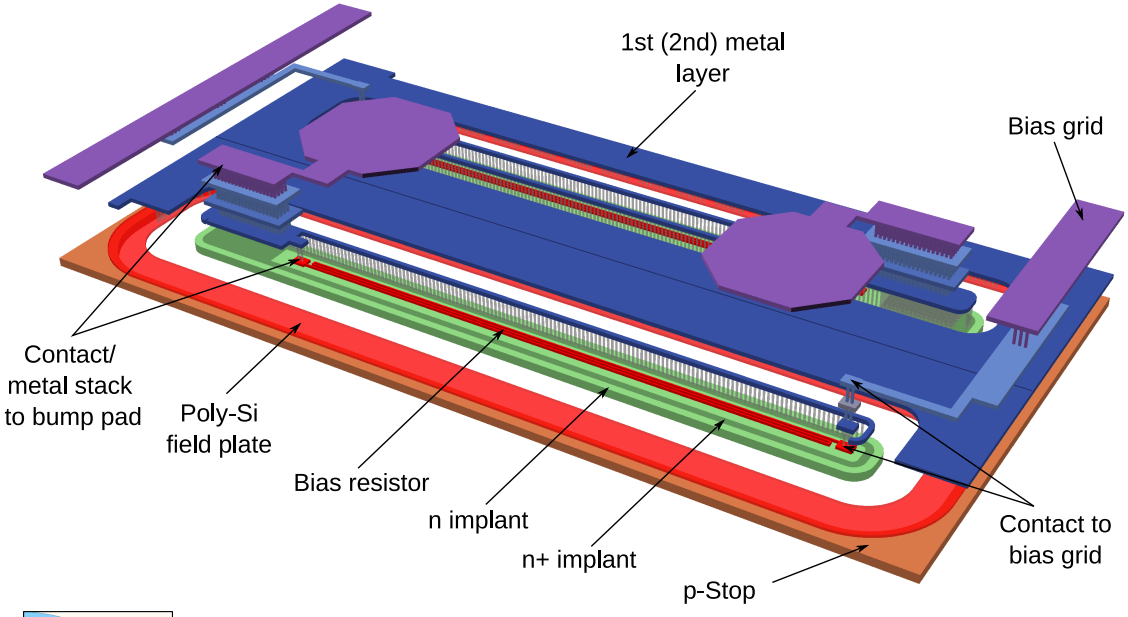
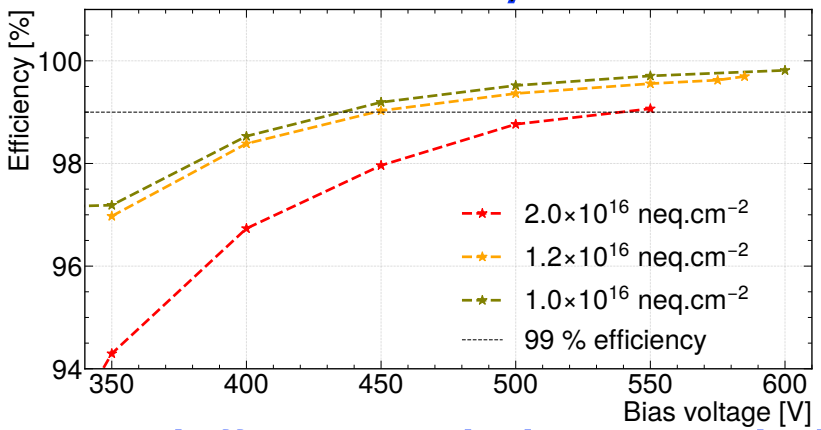
Characterization of irradiated passive CMOS sensors for tracking in HEP experiments

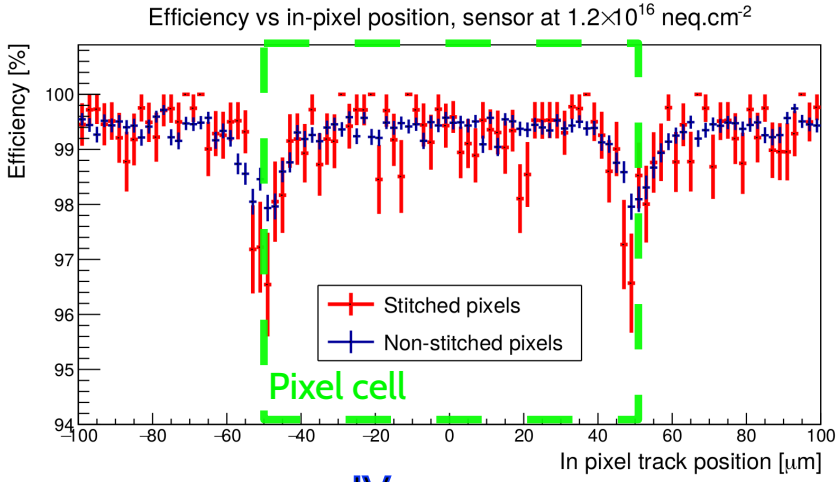
Planar hybrid n^+-in-p sensors with a pixel size of 25x100 μm^2 were developed for the Phase II upgrade of the CMS Inner Tracker. The sensors are built in a 150 nm CMOS process where no active components are used (they are thus named passive CMOS sensors). The CMOS production is promising in terms of throughput and costs and gives access to new sensor features. The sensors were irradiated up to fluences of $2x10^{16}$ neq.cm^{-2} and intensively tested in particle beams. The performances of the sensors match the requirements for the HL-LHC Inner Tracker Upgrade and are comparable to established technologies.



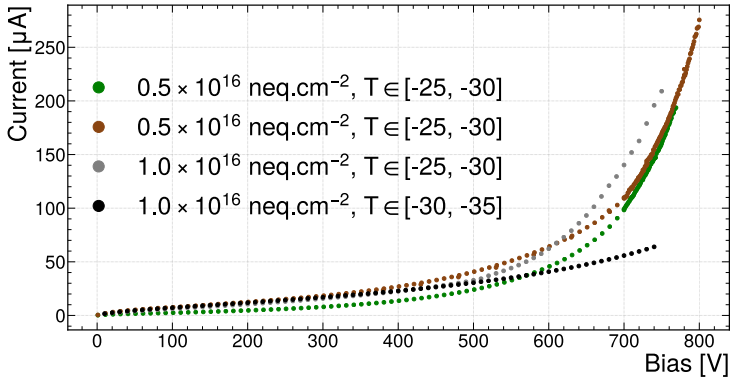
Efficiency



In-pixel efficiency, stitched vs non-stitched



IV curves



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