Strips: p+ implant responsible for charge multiplication covers only part of the strip.

Investigate extension of p+ to cover the entire sensor and topush it deeper into the bulk

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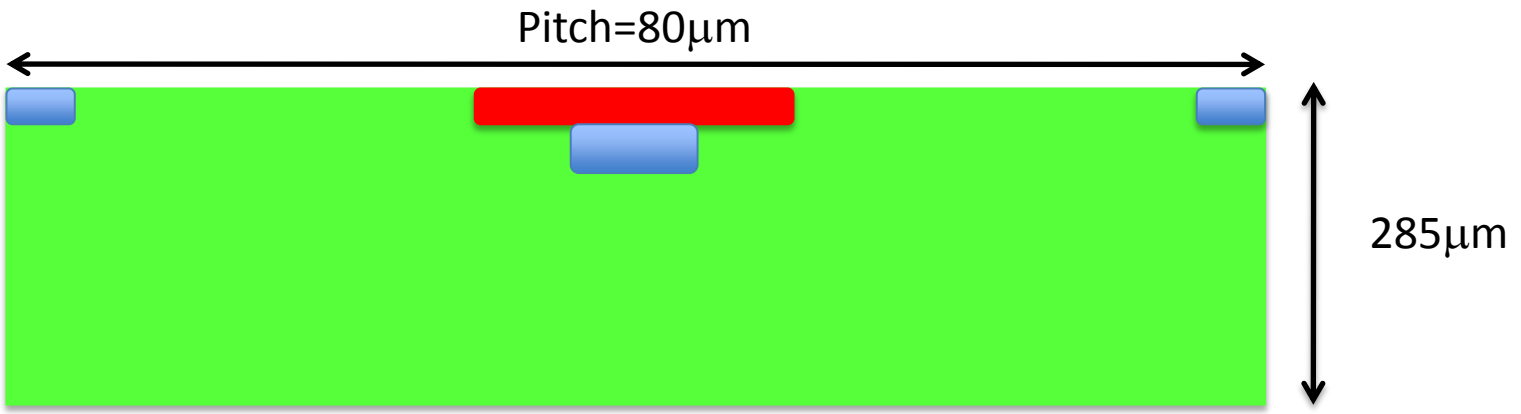
SCIPP, UC Santa Cruz

Strip detectors

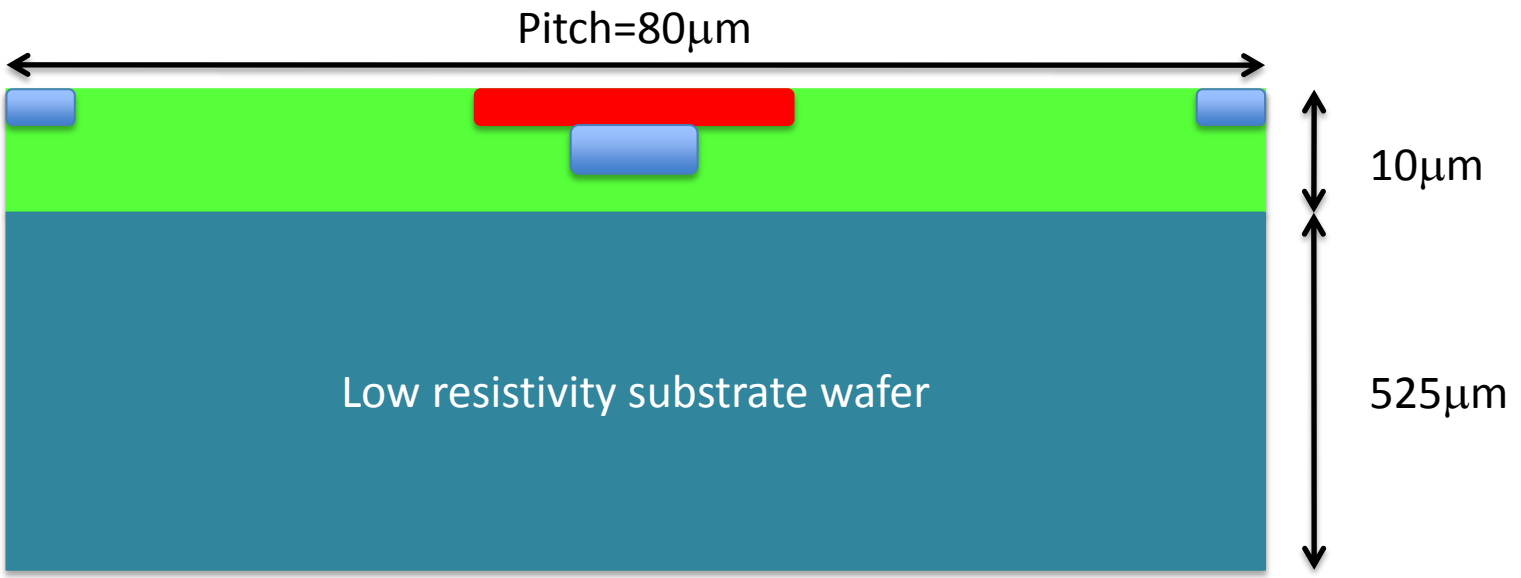
Pitch p=80 μm

	Strip w [μm]	Metal [μm]	P-implant [μm]	w/p	P-implant/pitch
AC1	24	20	6	0.3	7.5%
AC2	24	24	6	0.3	7.5%
AC3	24	28	6	0.3	7.5%
AC4	48	44	30	0.6	37.5%
AC5	48	48	30	0.6	37.5%
AC6	48	52	30	0.6	37.5%
AC7	62	58	44	0.775	55%
AC8	62	62	44	0.775	55%
AC9	62	66	44	0.775	55%
AC10/AC11/DC	32	40	14	0.4	17.5%

Float Zone

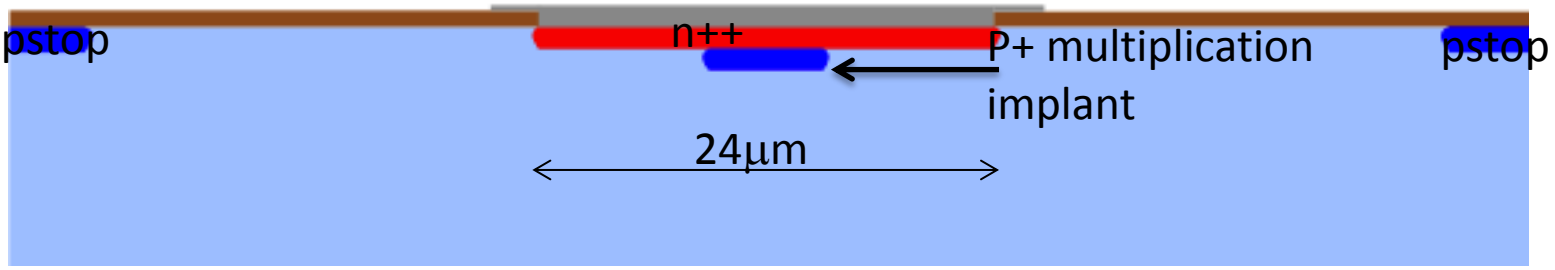


Epitaxial wafer

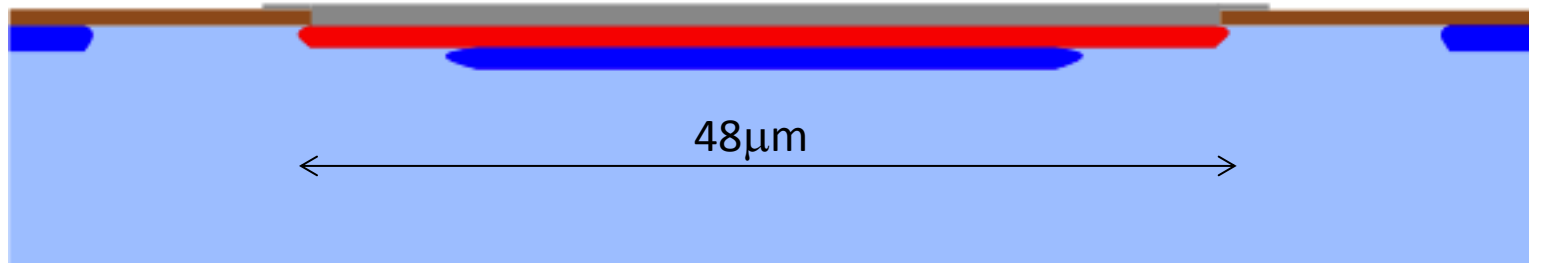


Pitch 80um

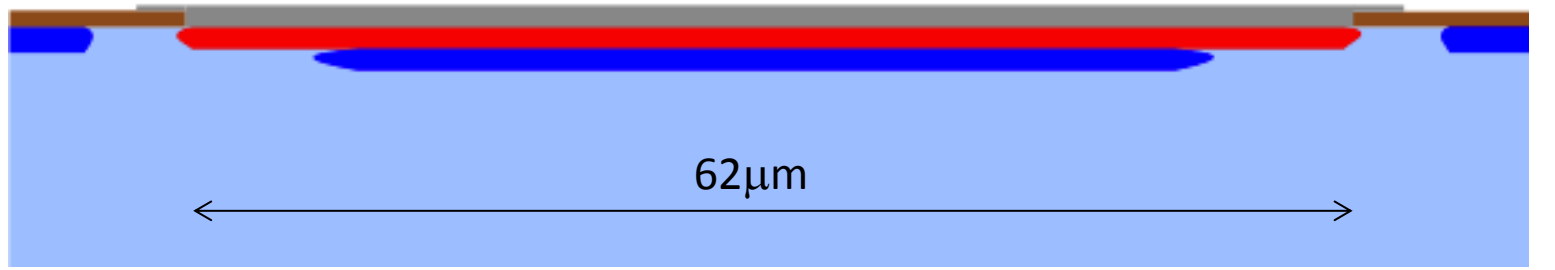
AC3



AC6

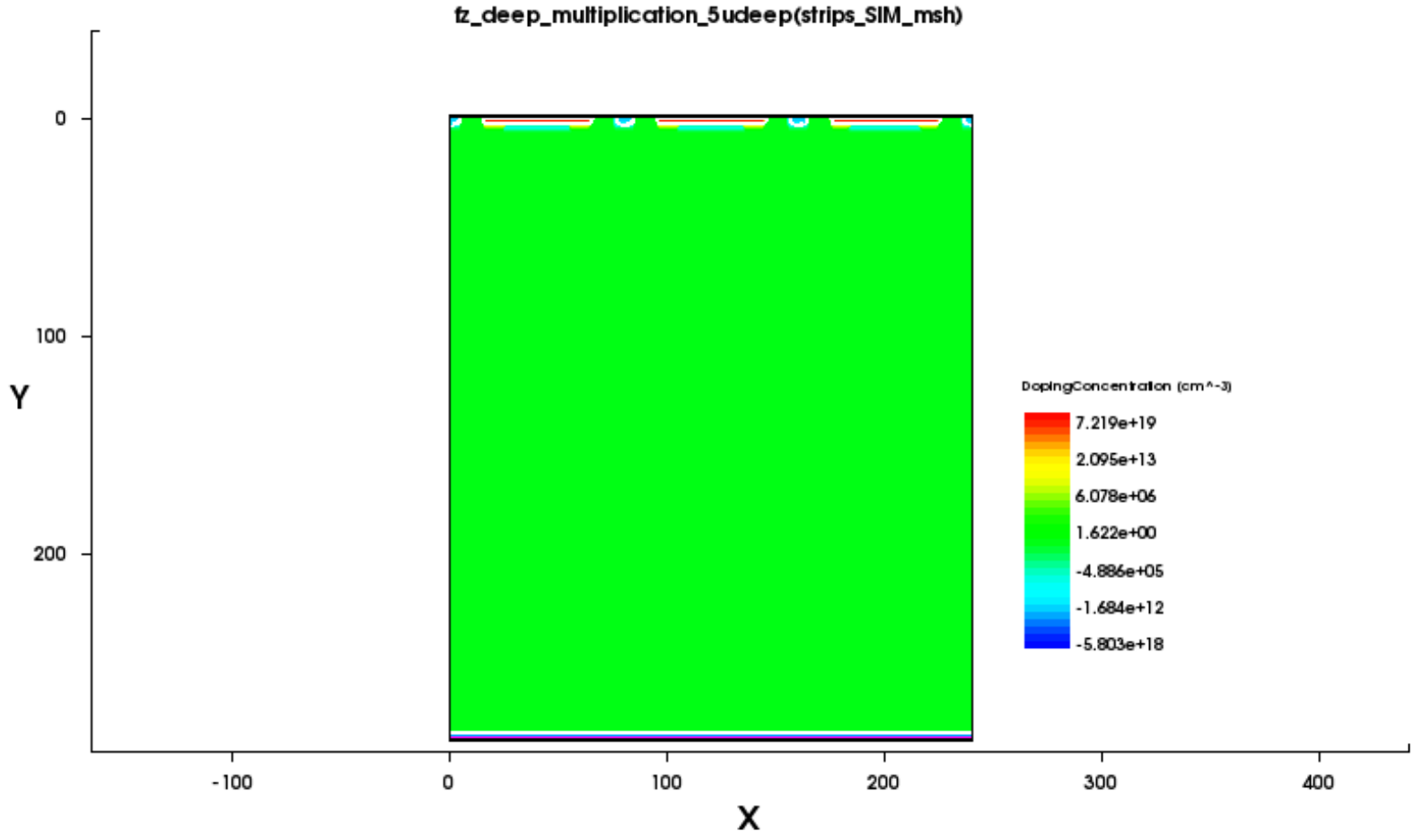


AC9

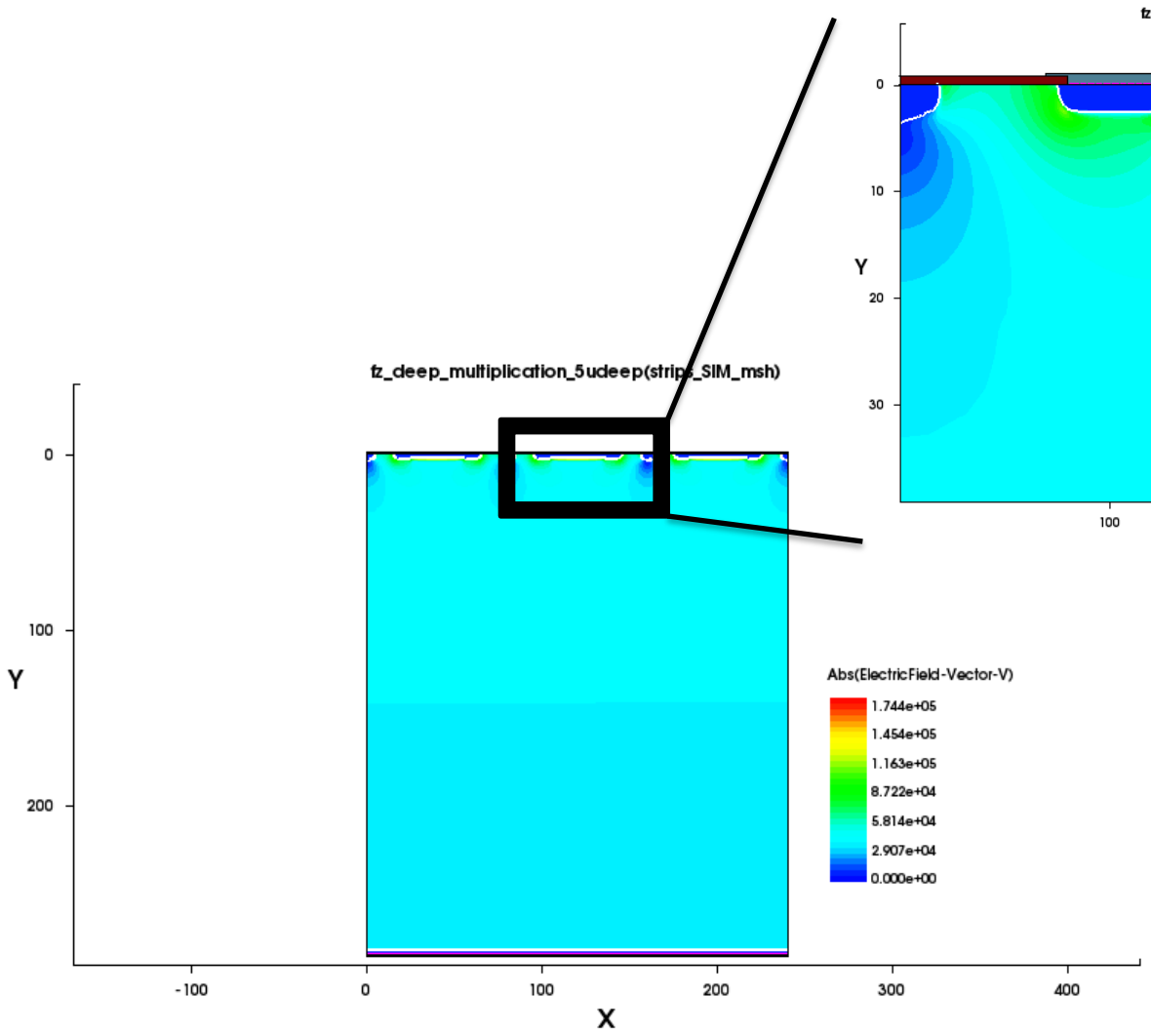


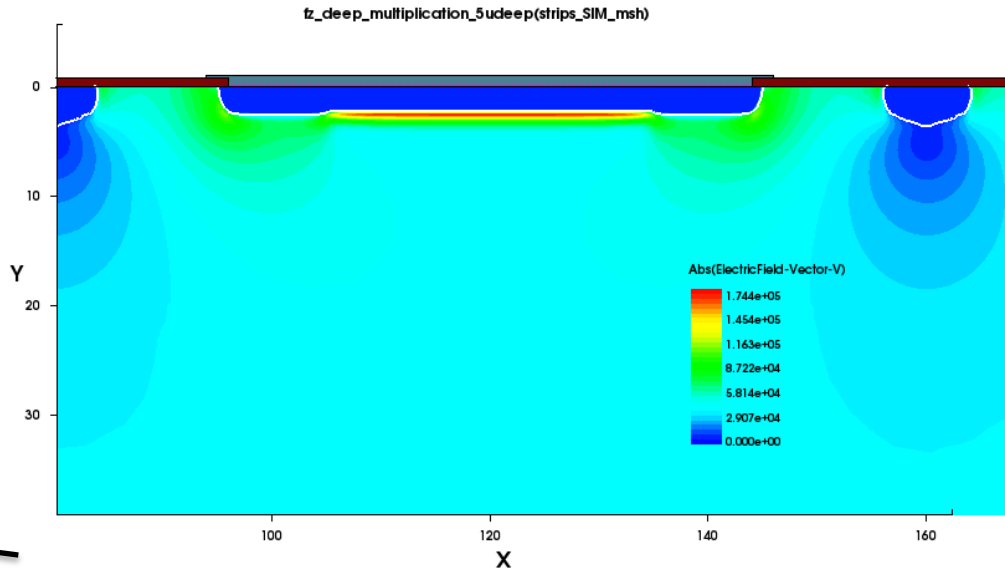
REGULAR STRIPS AC6

Regular Strips
(AC 6 FZ Deep annealing)

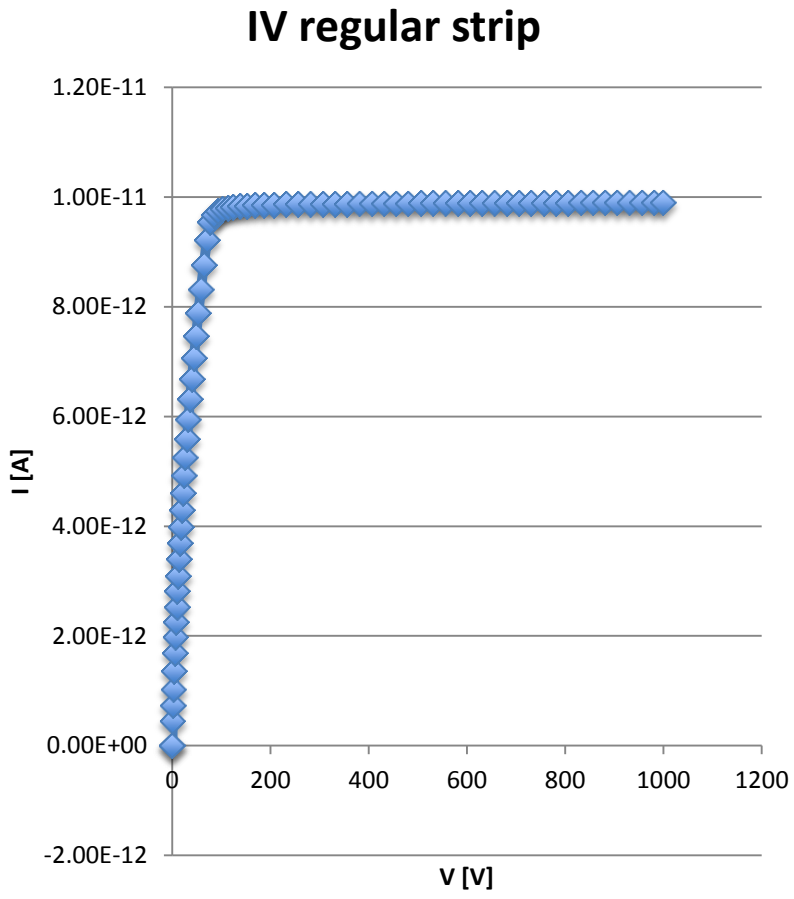


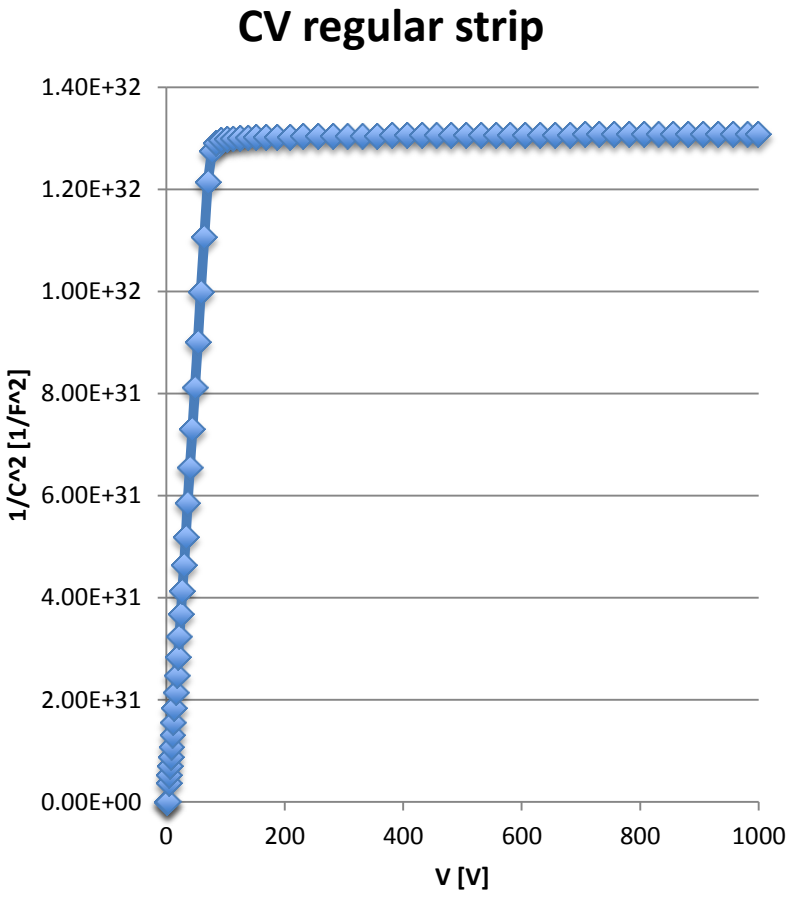
Electric field of regular strips @1000V (AC 6 FZ Deep annealing)





IV and CV for regular strips (AC 6 FZ Deep annealing)

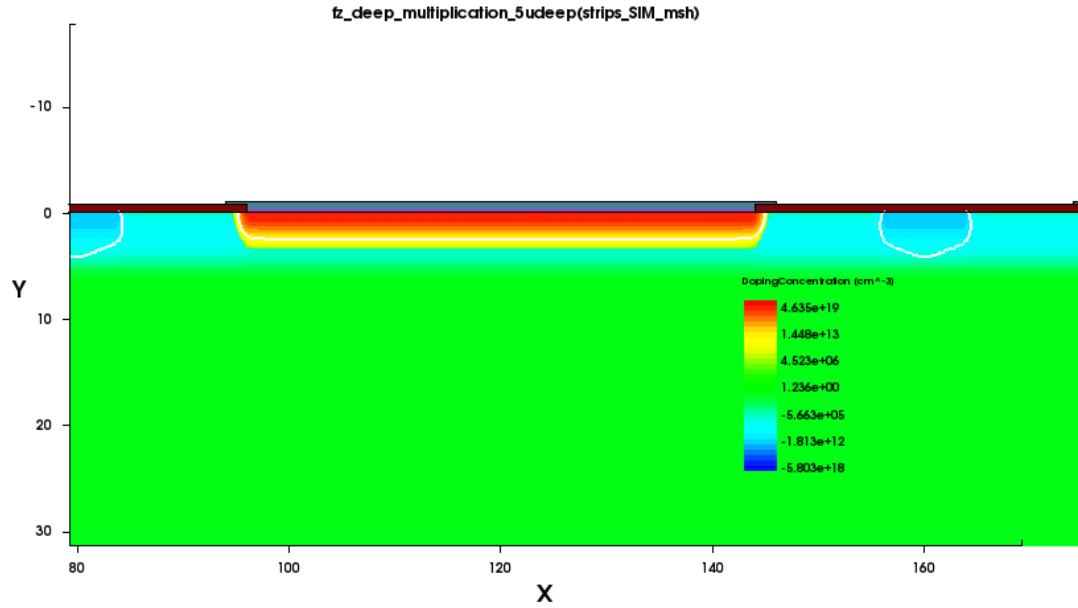


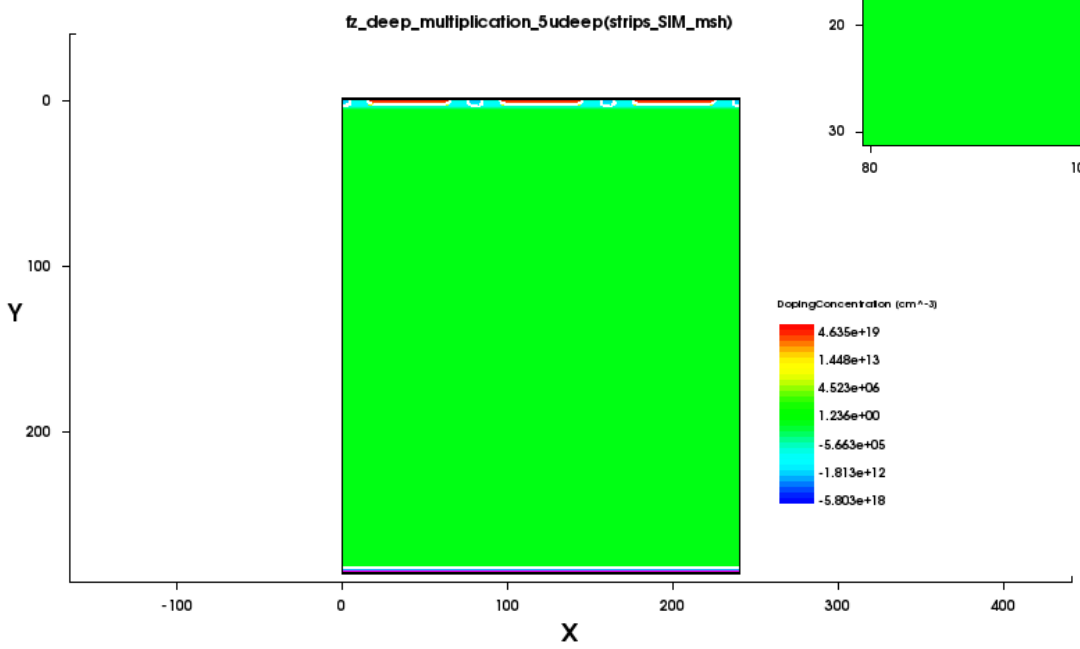


NEW STRIPS

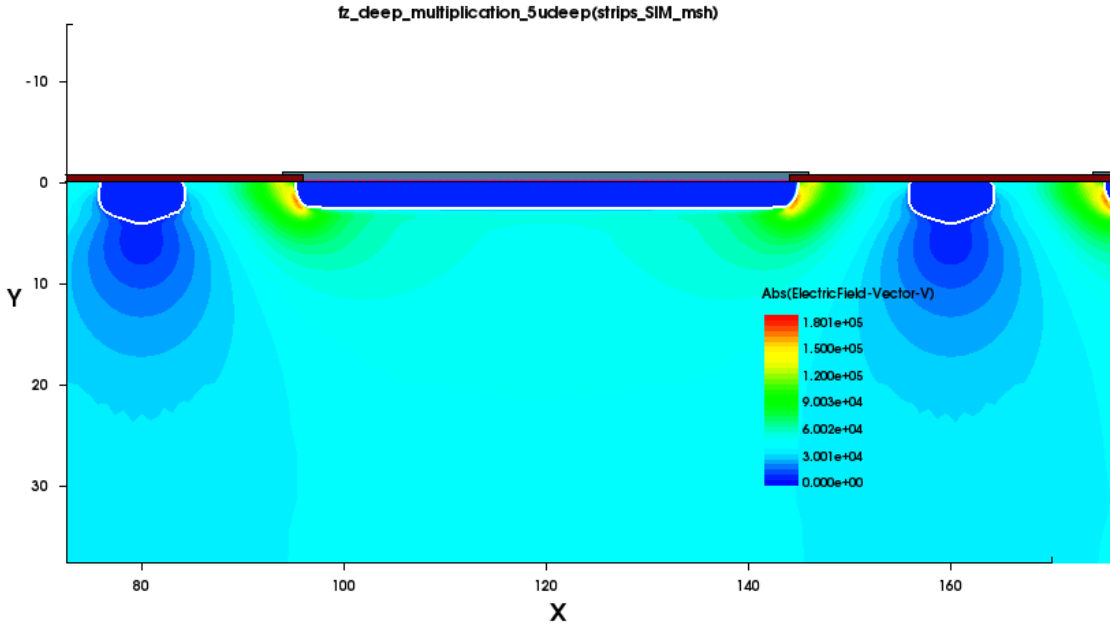
Doping boron peak 1e15cm^-3 boron at 2um

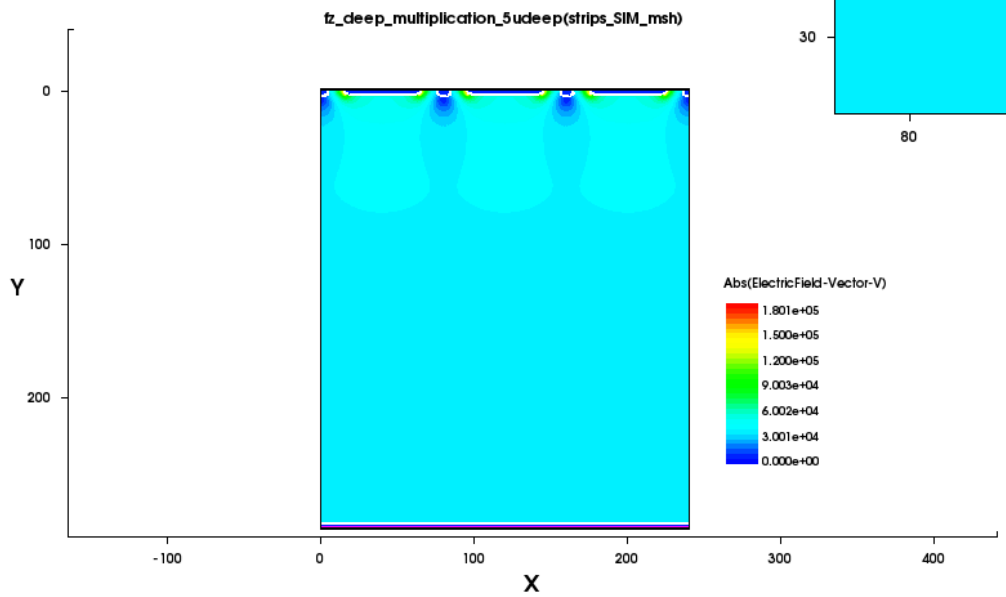
New strips (boron at 2um from the surface) doping boron 1e15cm^-3



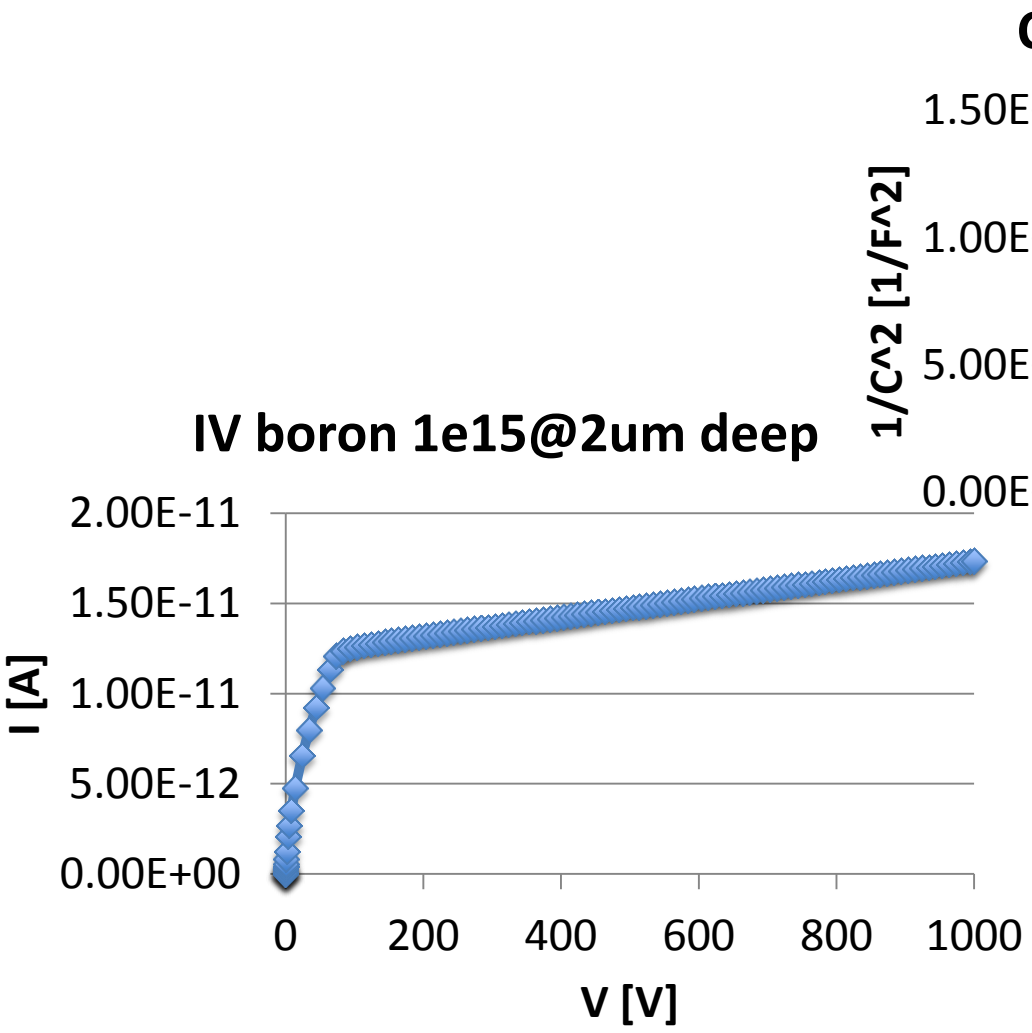


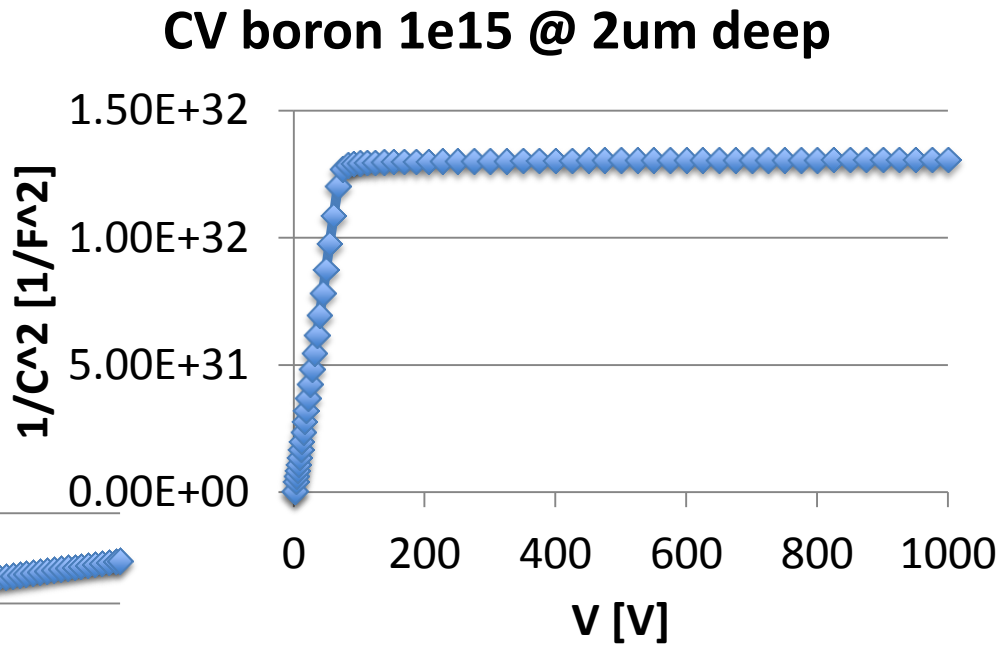
New strips electric field @1000V doping boron 1e15cm^-3 @2um





IV and CV for strips with boron @ 2um boron doping 1e15cm^-3

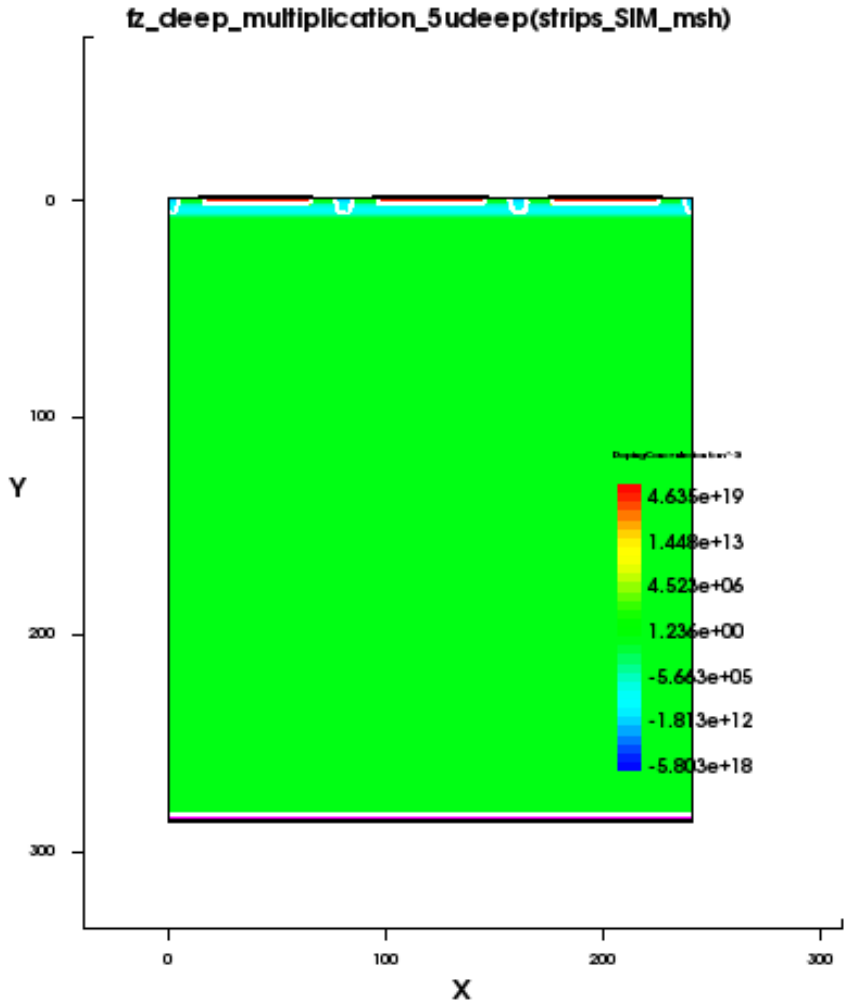


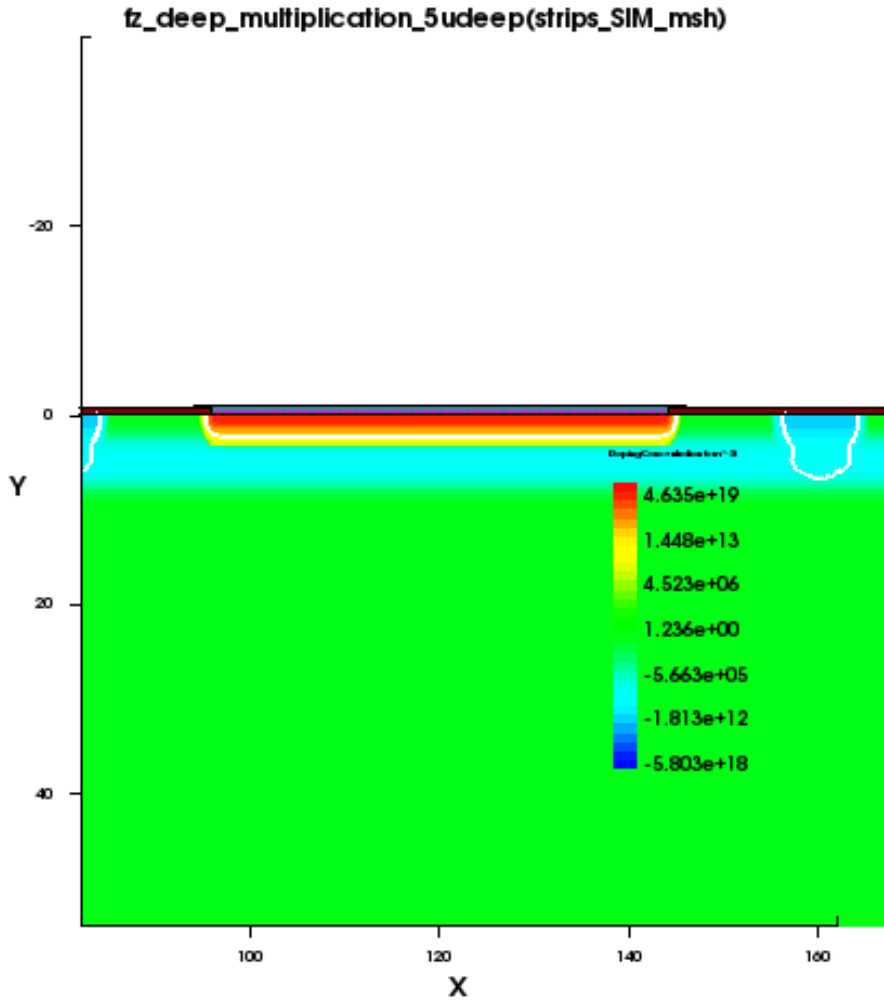


NEW STRIPS

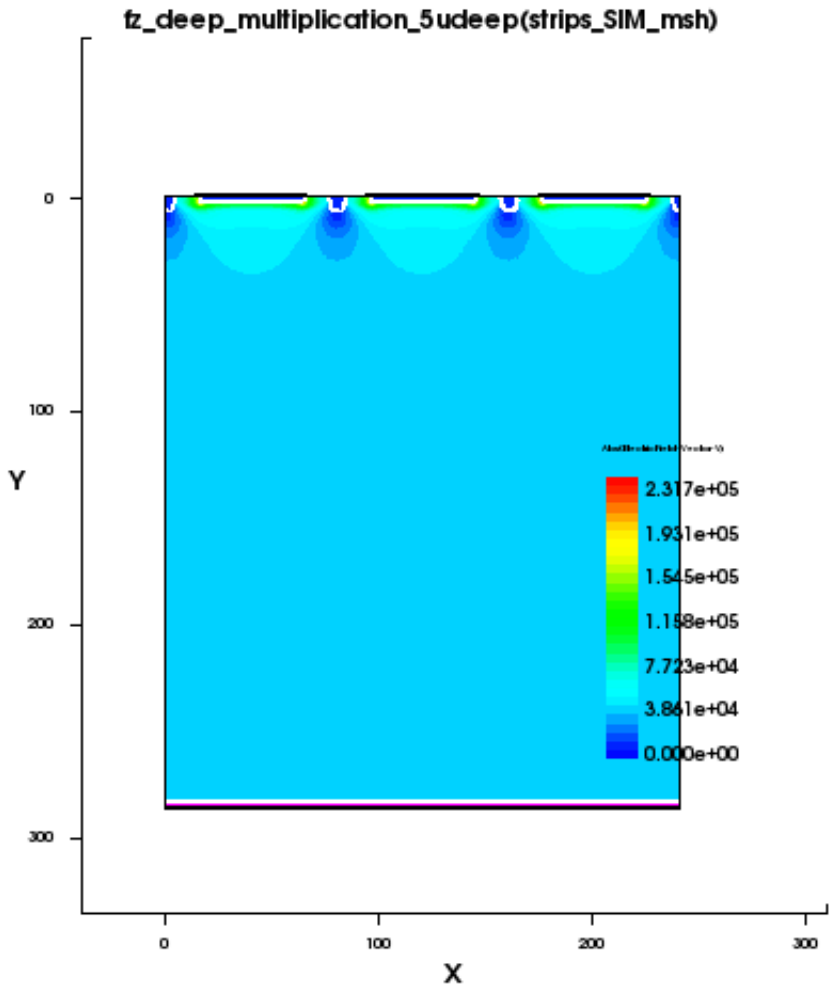
Doping boron peak 1e15cm^-3 at 5um deep

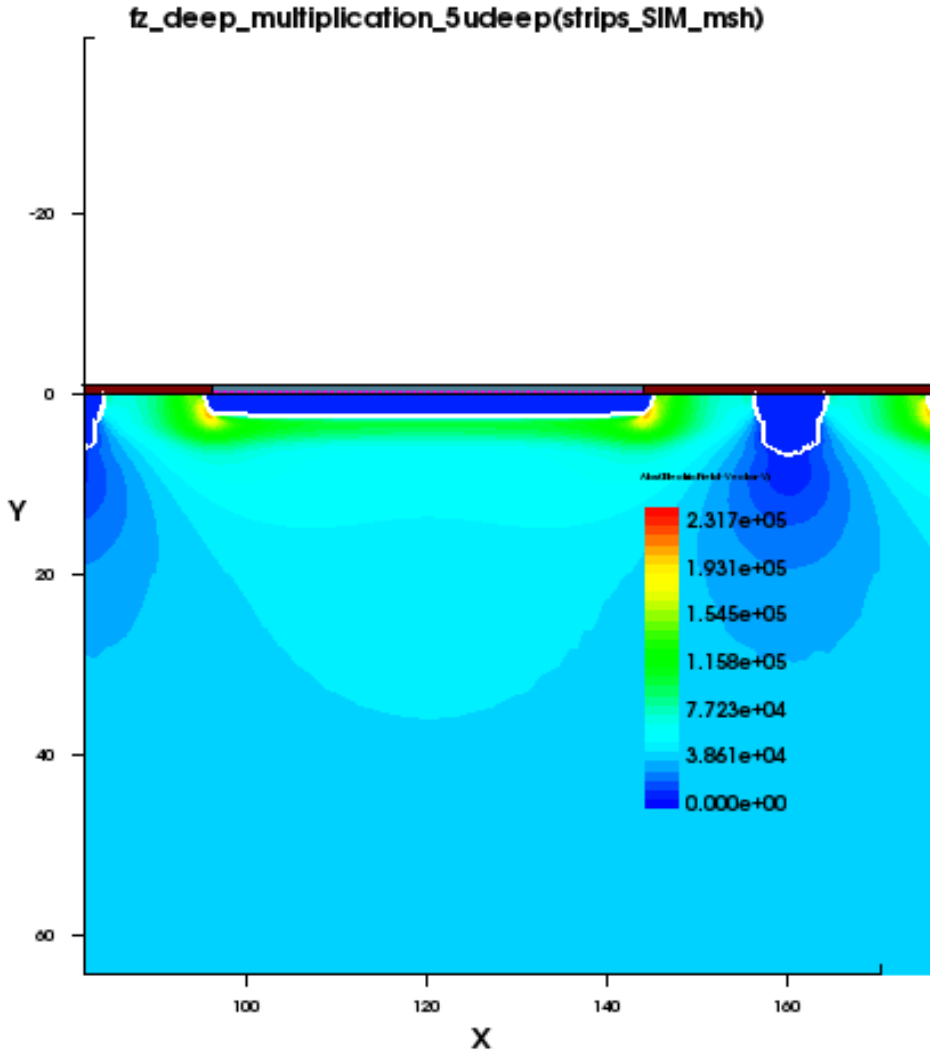
New strips (boron at 5um from the surface) doping boron 1e15cm^-3





New strips electric field @1000V doping boron 1e15cm^-3





IV and CV for strips with boron @ 5um boron doping 1e15cm^-3