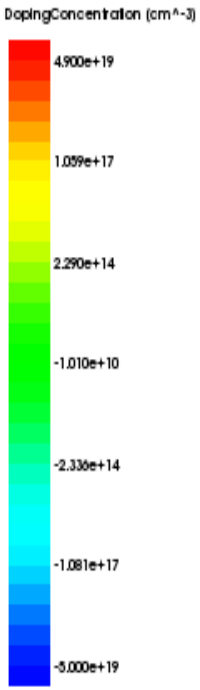
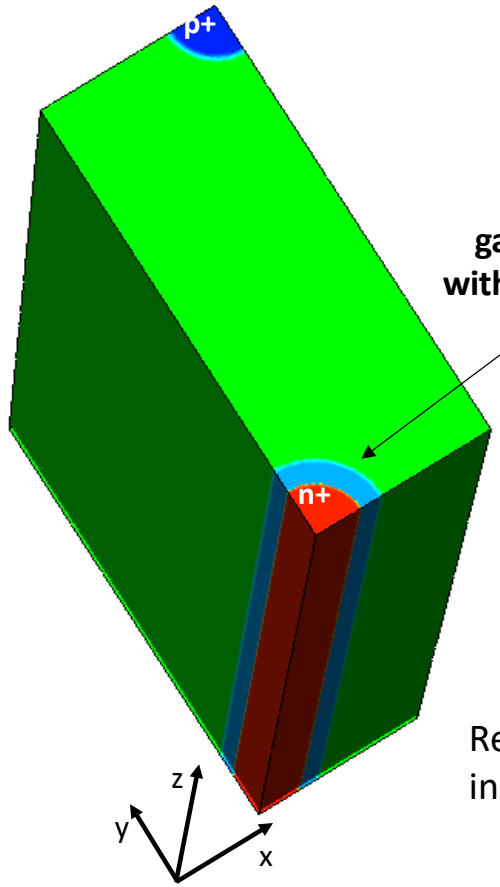


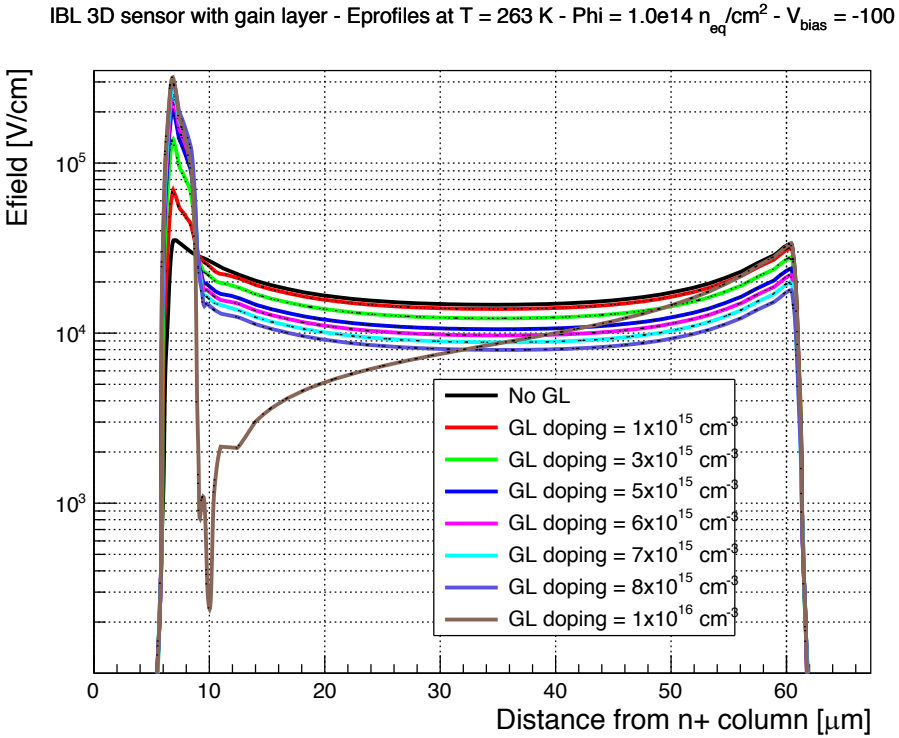


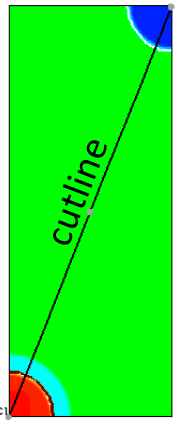
gain layer with p doping

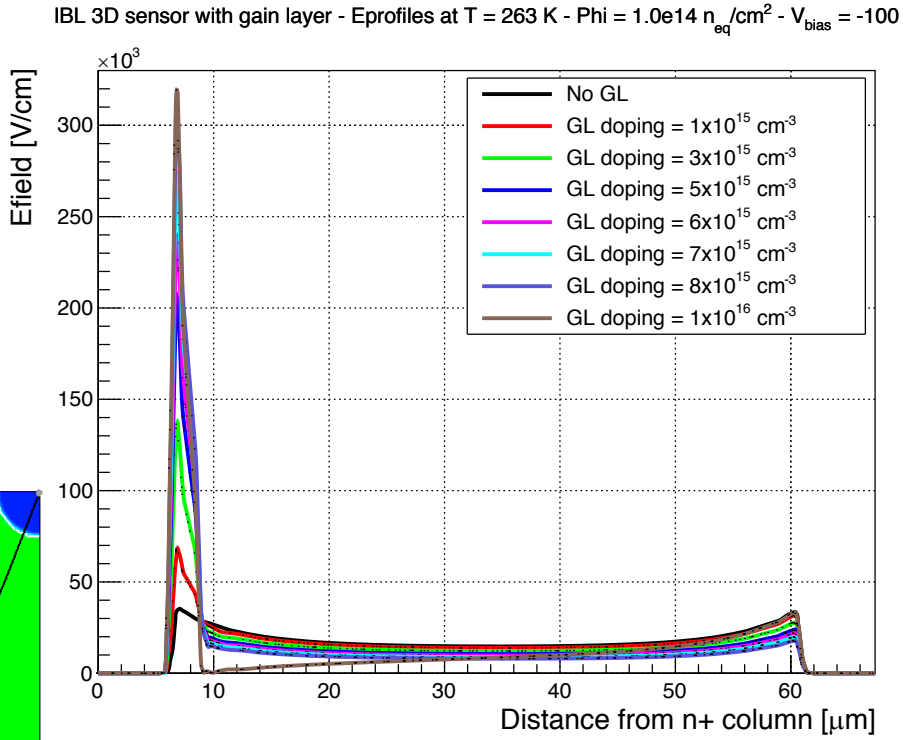
Reduced box used in TCAD simulations

Efield profile along a cut line from n+ to p+ columns at various GL doping
V_{bias} = -100 V

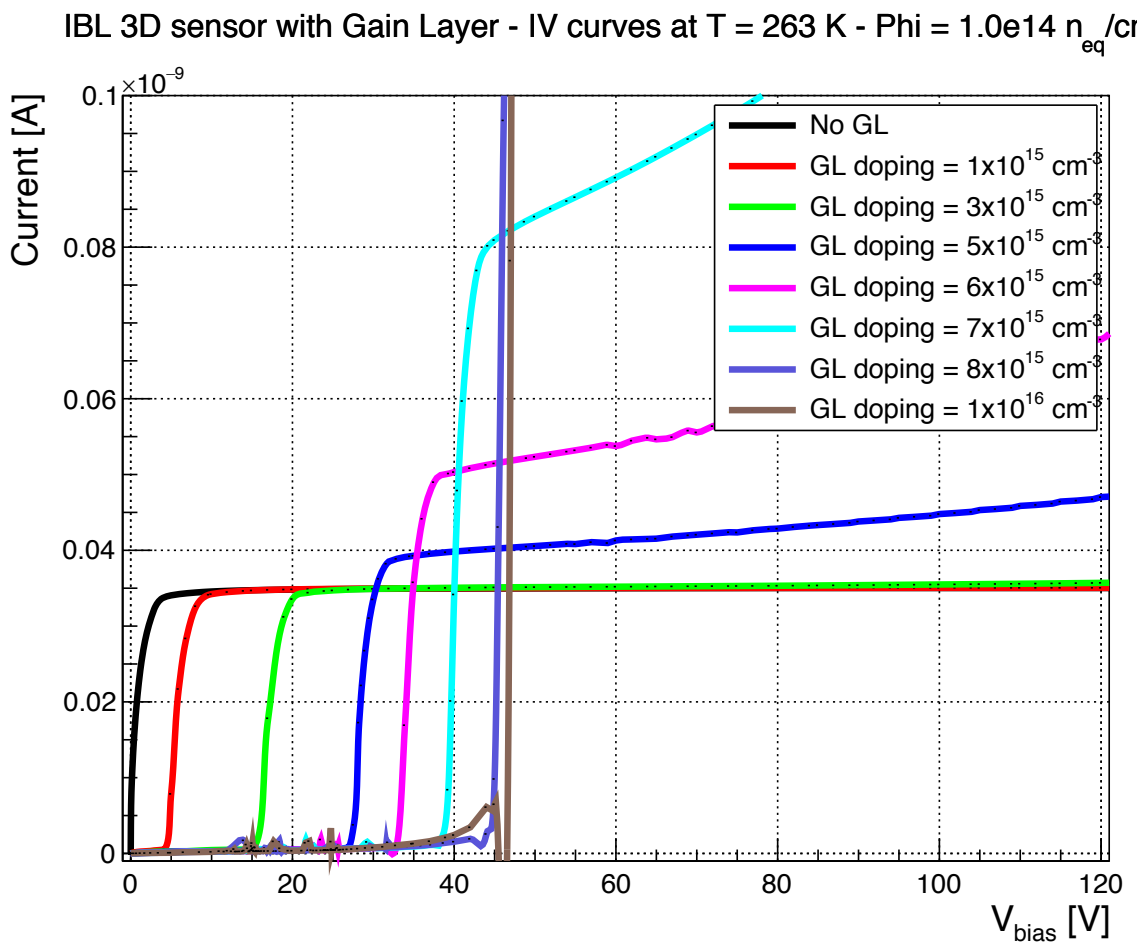
T = 263 K





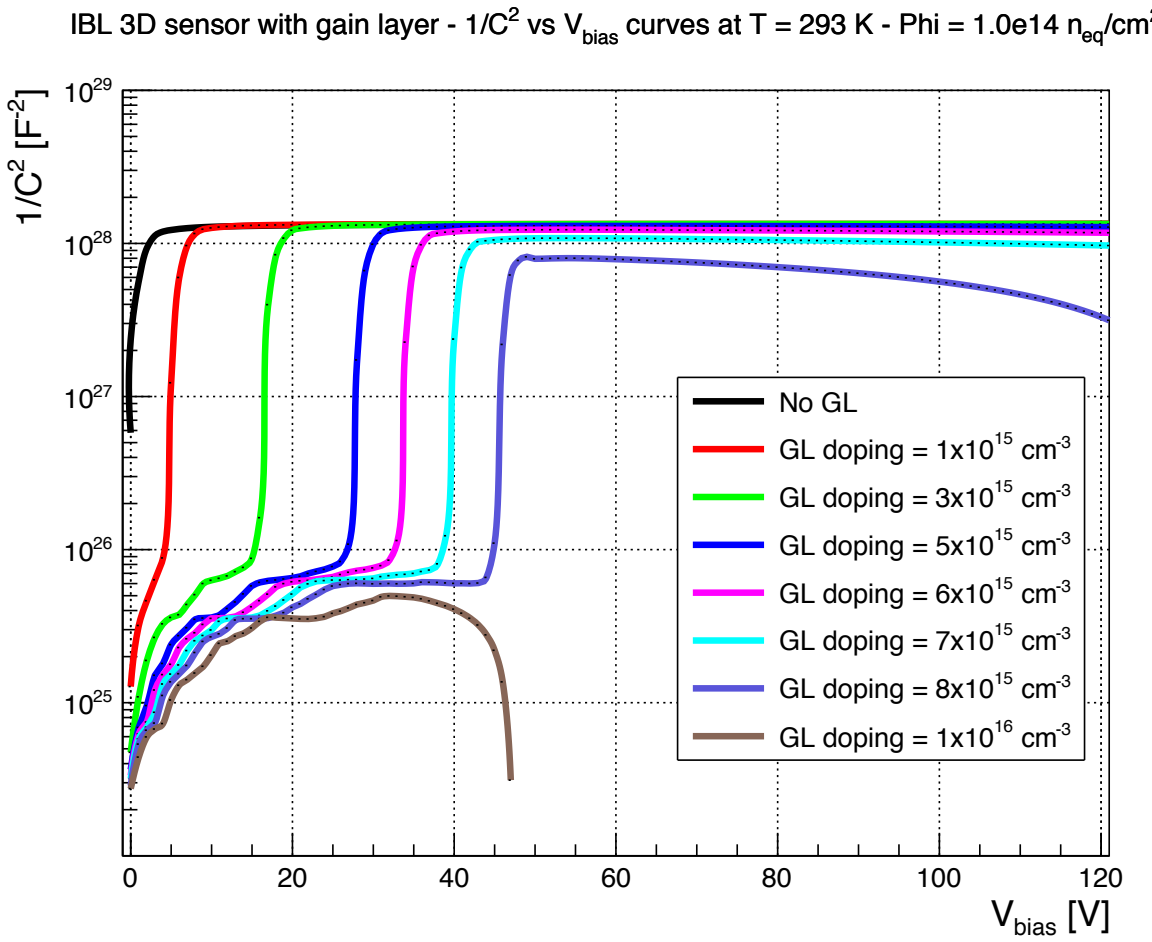


I-V curves behavior as a function of GL doping

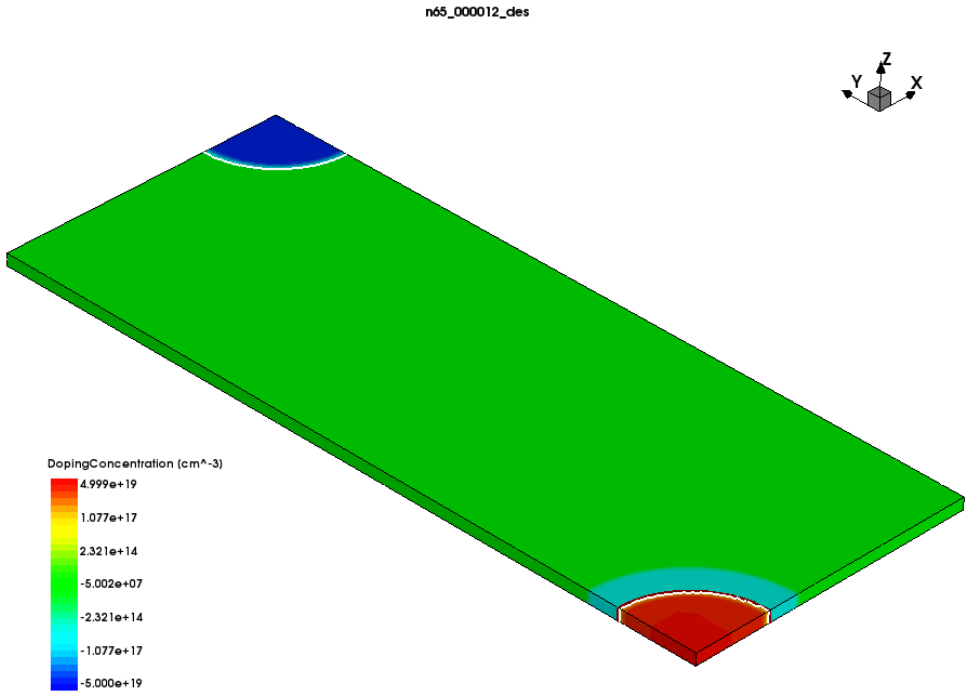


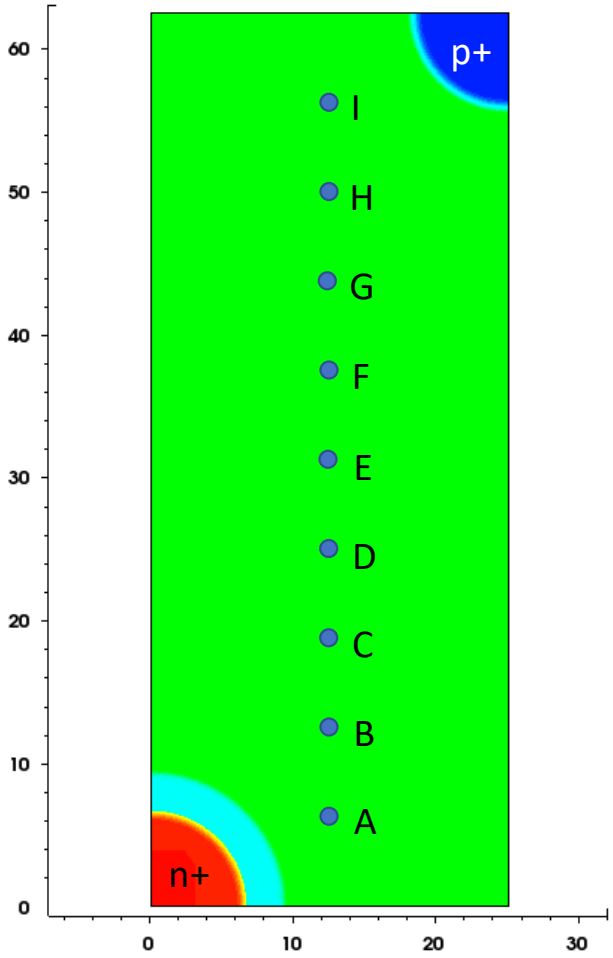
T = 263 K

$1/C^2$ curves behavior as a function of GL doping



T = 263 K



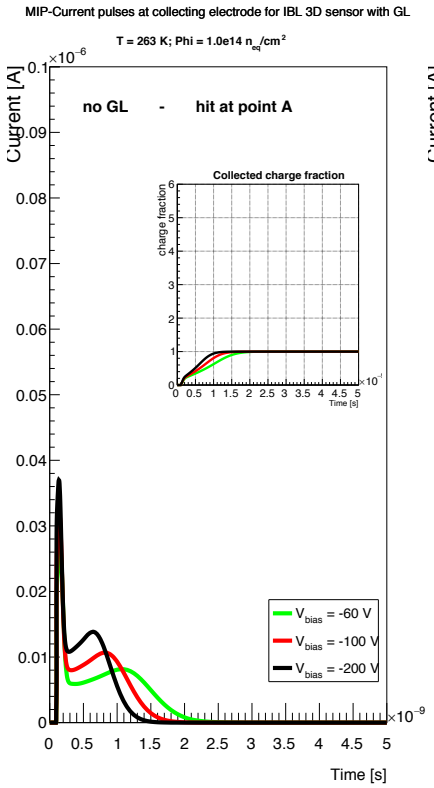


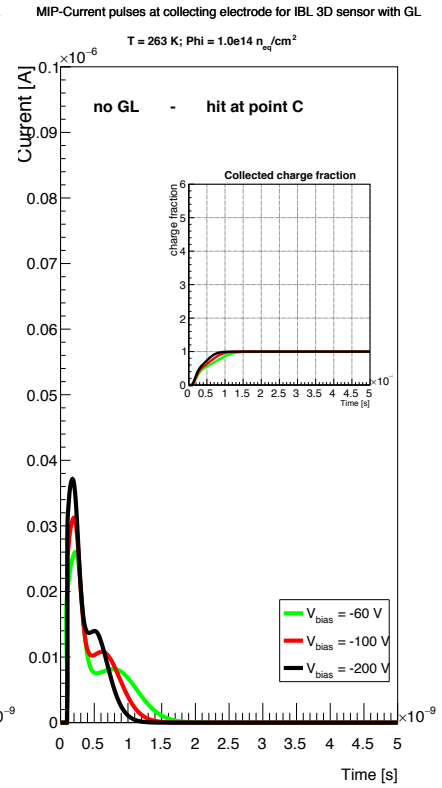
Charge collection for MIPs where obtained for a 1 µm thick slice. Perpendicular hits where considered at the 9 points (A, B, …., I) marked in the rigth picture.

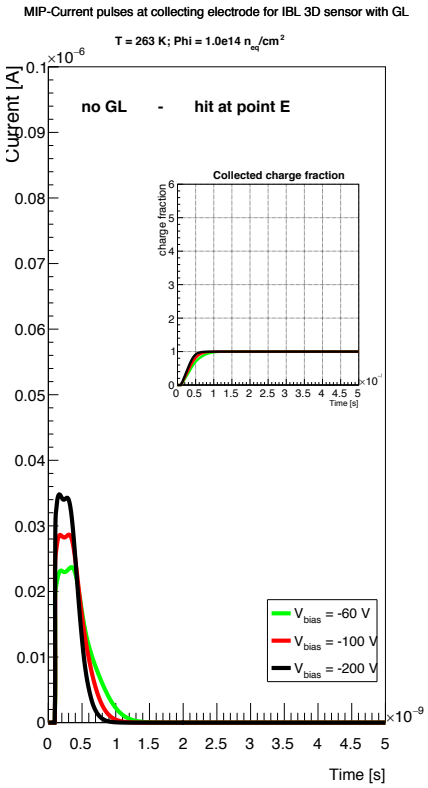
Current and collected charge at readout electrode (n+) for hits at A, C, E, G, I points

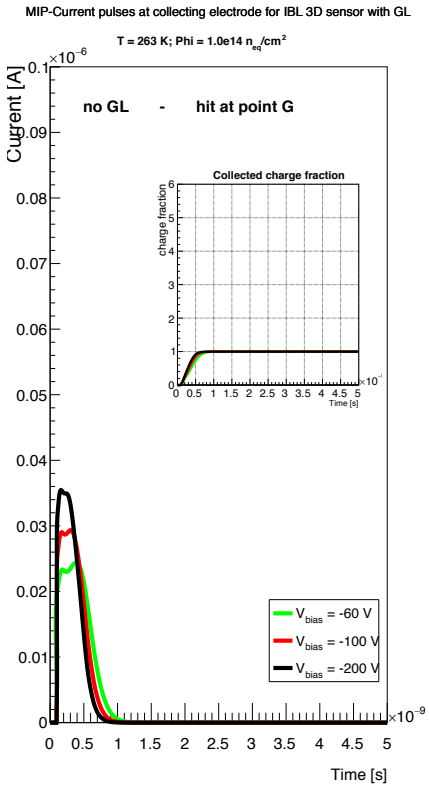
Sensor with No Gain Layer

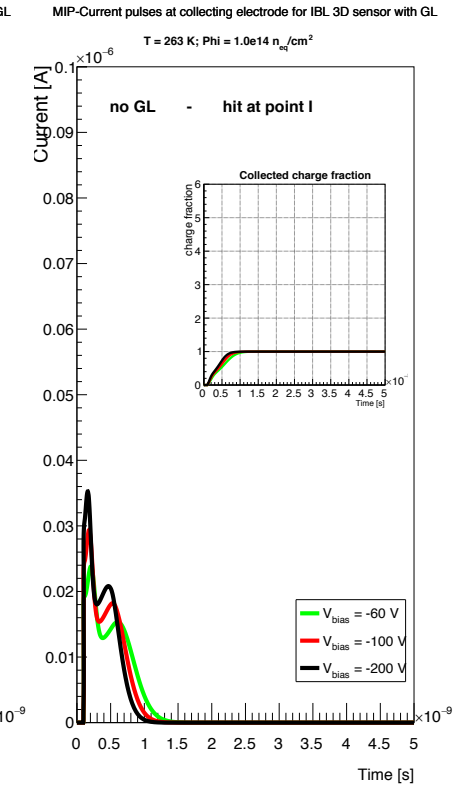
T = 263 K







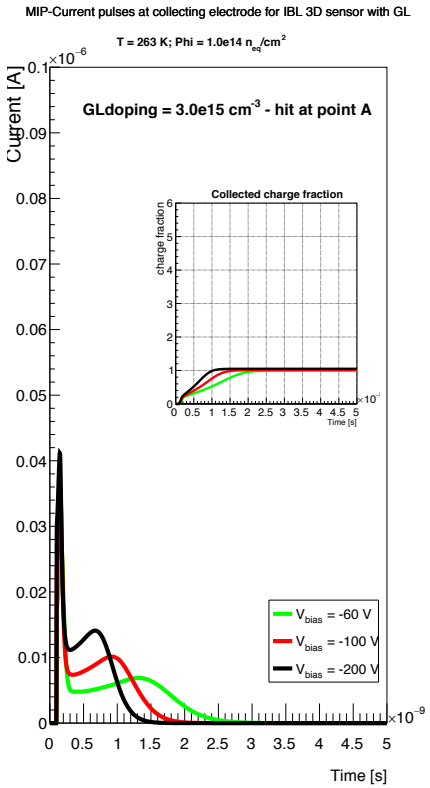


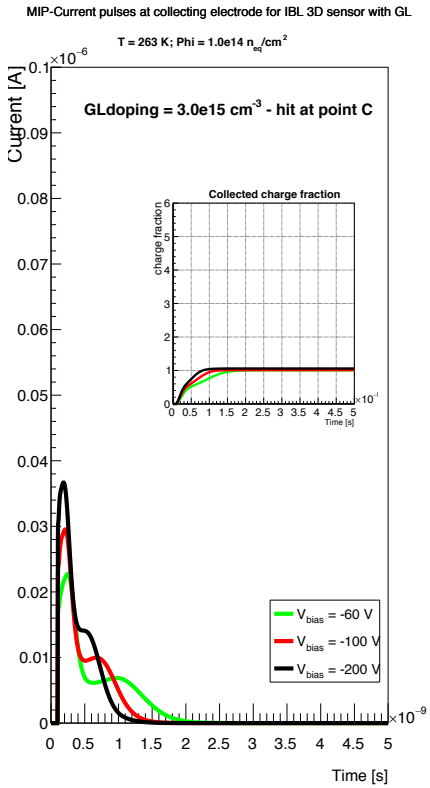


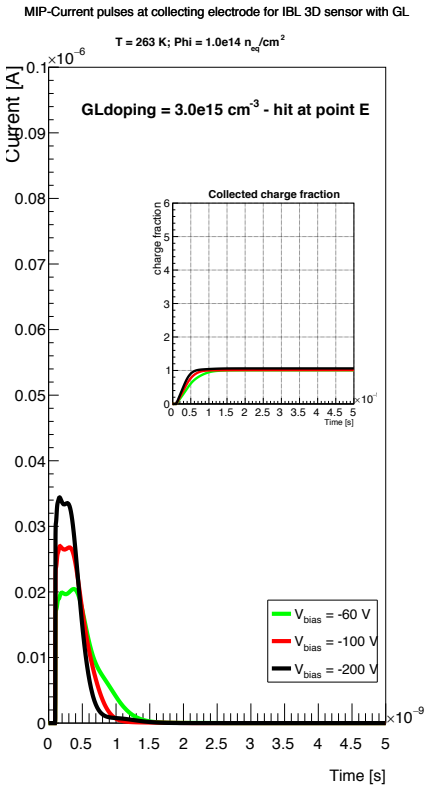
Current and collected charge at readout electrode (n+) for hits at A, C, E, G, I points

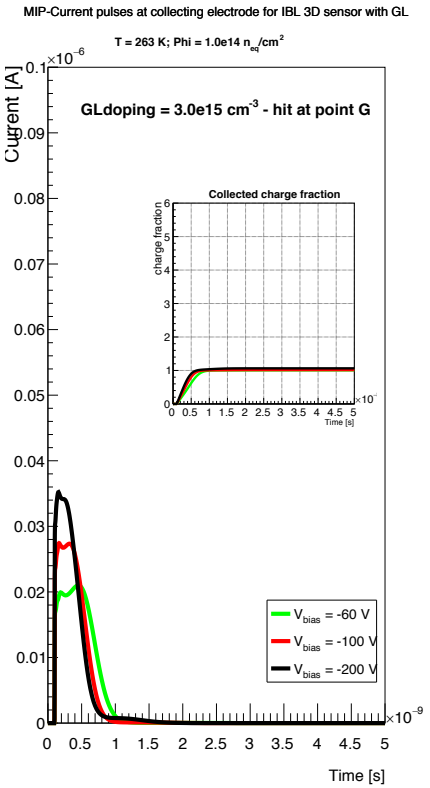
Gain Layer doping = 3.0e15 cm^{-3}

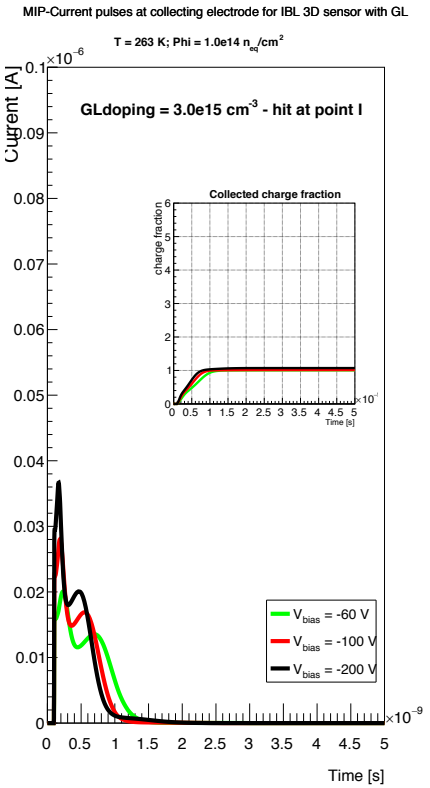
T = 263 K







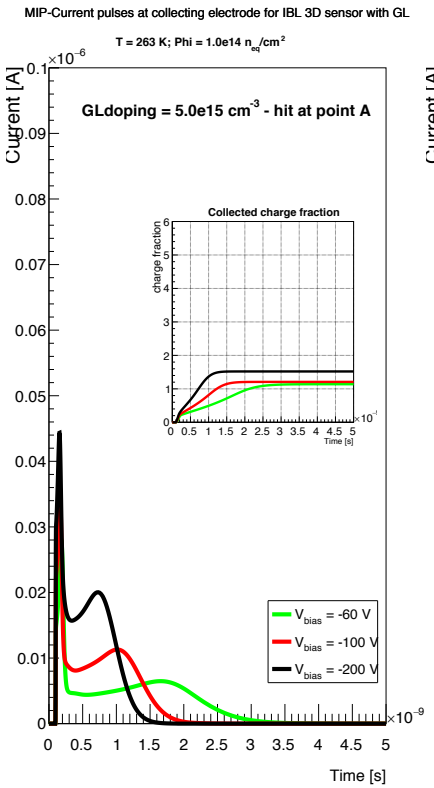


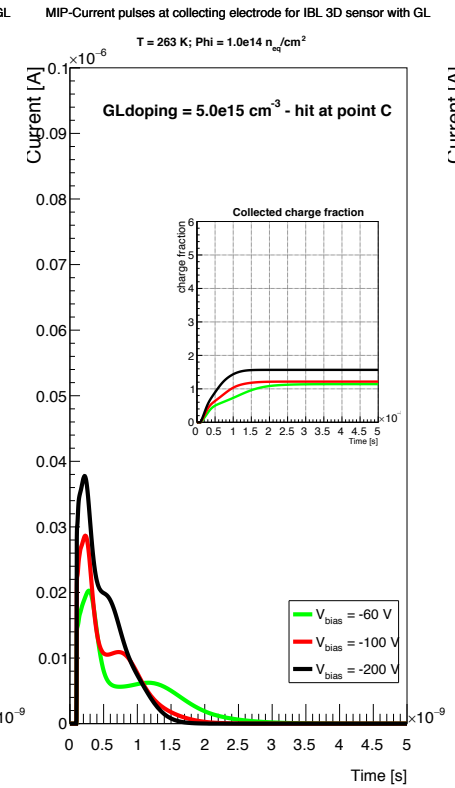


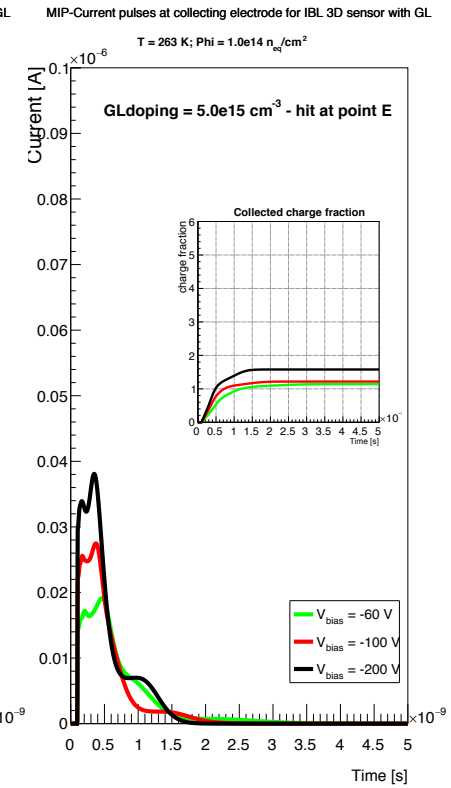
Current and collected charge at readout electrode (n+) for hits at A, C, E, G, I points

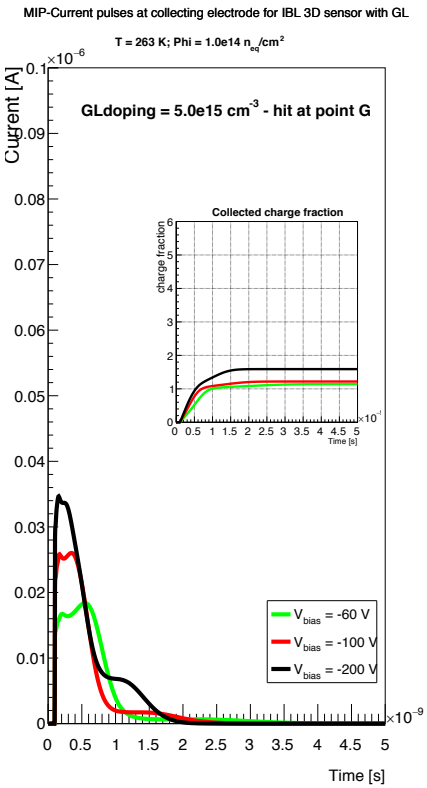
Gain Layer doping = 5.0e15 cm^{-3}

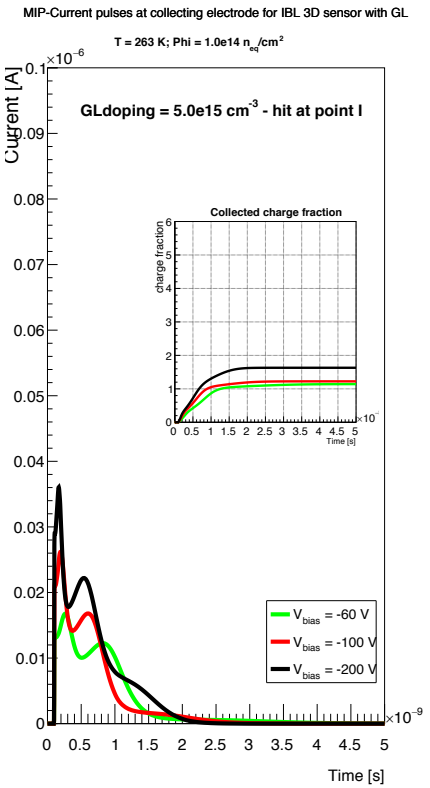
T = 263 K







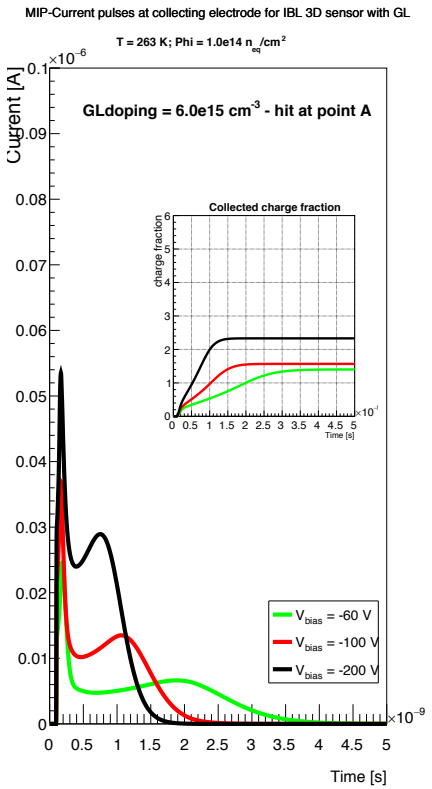


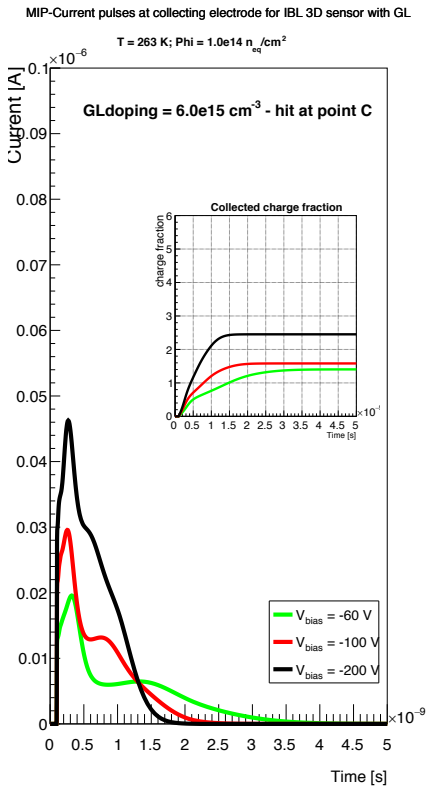


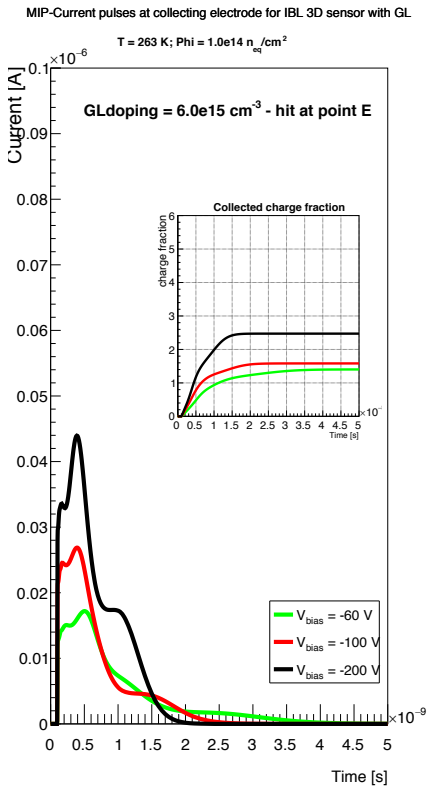
Current and collected charge at readout electrode (n+) for hits at A, C, E, G, I points

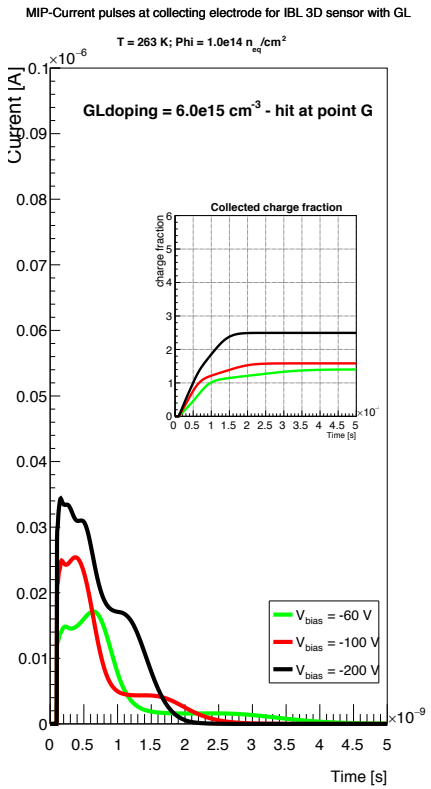
Gain Layer doping = 6.0e15 cm^{-3}

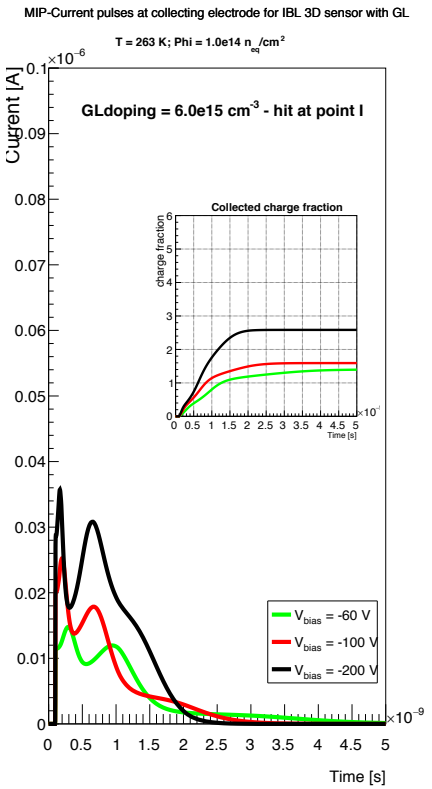
T = 263 K







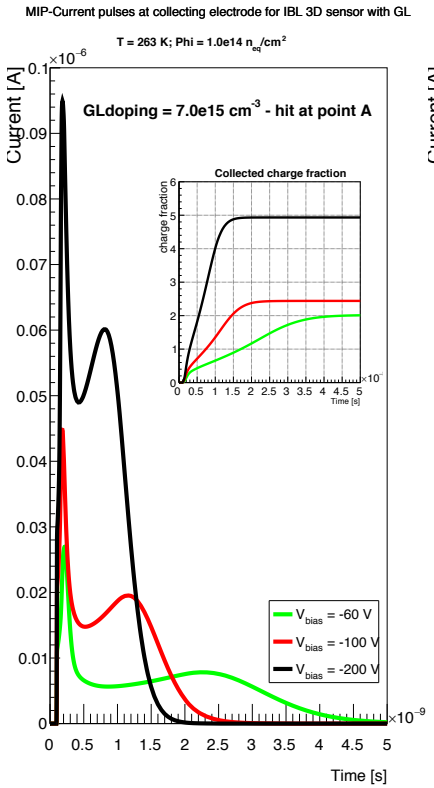


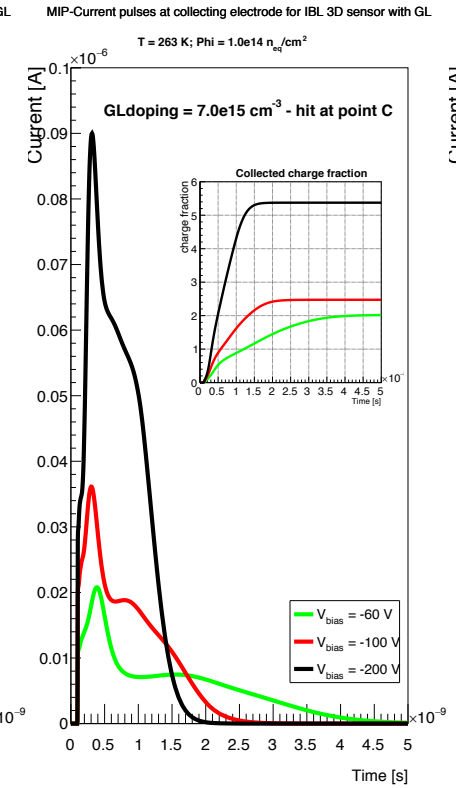


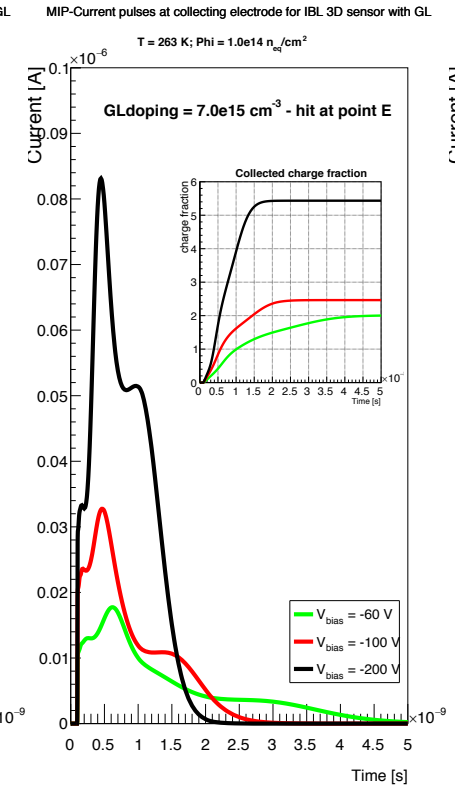
Current and collected charge at readout electrode (n+) for hits at A, C, E, G, I points

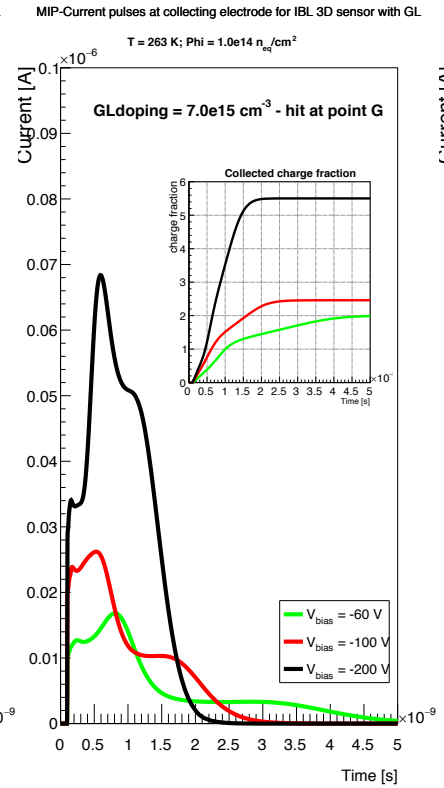
Gain Layer doping = 7.0e15 cm^{-3}

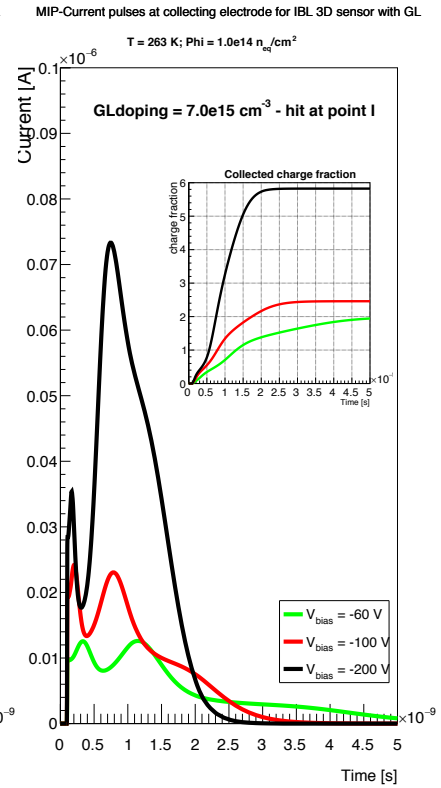
T = 263 K







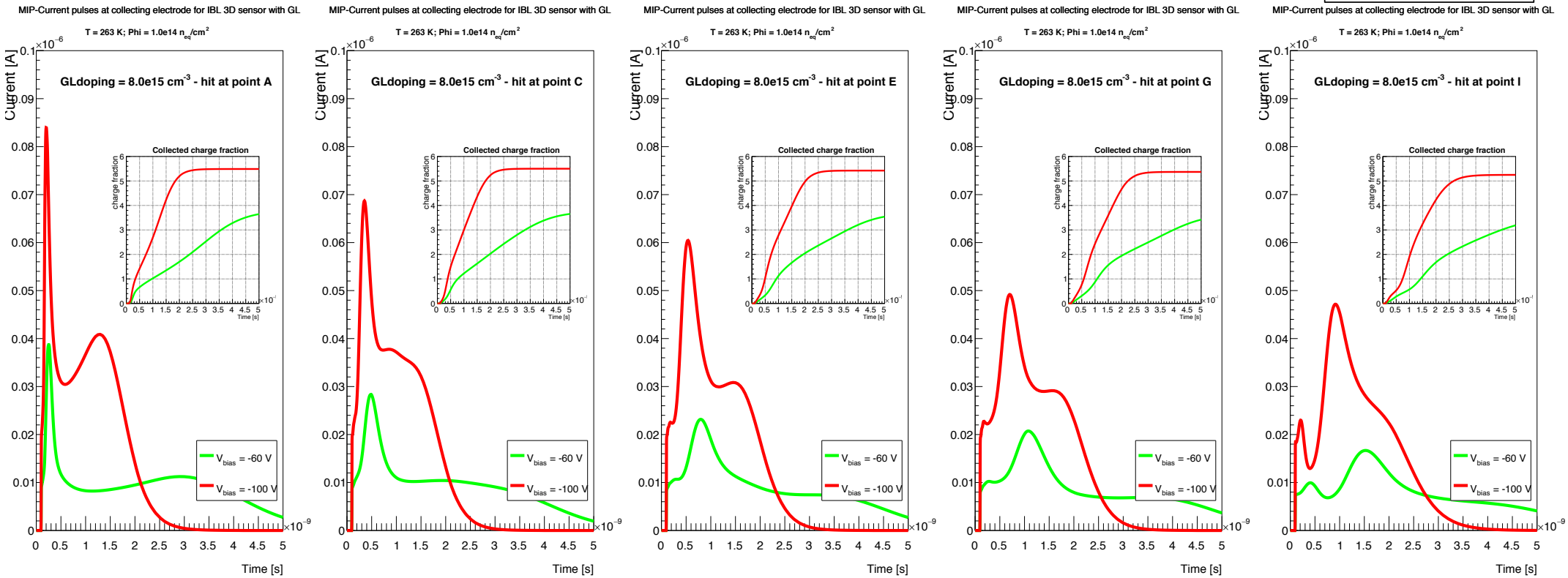




Current and collected charge at readout electrode (n+) for hits at A, C, E, G, I points

Gain Layer doping = 8.0e15 cm^{-3}

T = 263 K



Note that current and collected charge curves (versus time) are not shown for V_{bias} = -200 V.
Actually, this V_{bias} is very close to breakdown and thoose curves where found very critical!

Collected Charge Fractions for MIPs hits at different points

GL doping [cm^{-3}]	Vbias [V]	A	B	C	D	E	F	G	H	I	Average
No GL	-60	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	-100	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	-200	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3.0e15	-60	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	-100	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.01
	-200	1.05	1.05	1.06	1.06	1.06	1.06	1.06	1.07	1.07	1.06
5.0e15	-60	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
	-100	1.21	1.21	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
	-200	1.52	1.56	1.57	1.57	1.58	1.58	1.59	1.60	1.63	1.58
6.0e15	-60	1.40	1.41	1.40	1.40	1.40	1.40	1.40	1.40	1.39	1.40
	-100	1.57	1.58	1.58	1.58	1.58	1.58	1.58	1.59	1.59	1.58
	-200	2.33	2.43	2.45	2.46	2.47	2.48	2.49	2.52	2.58	2.47
7.0e15	-60	2.01	2.04	2.02	2.01	2.00	2.00	1.99	1.97	1.94	2.00
	-100	2.44	2.49	2.47	2.47	2.46	2.46	2.46	2.45	2.46	2.46
	-200	4.93	5.32	5.38	5.41	5.43	5.46	5.50	5.58	5.82	5.43
8.0e15	-60	3.65	3.75	3.65	3.59	3.54	3.49	3.42	3.33	3.19	3.51
	-100	5.49	5.61	5.50	5.45	5.42	5.40	5.37	5.30	5.25	5.42
	-200	-	-	-	-	-	-	-	-	-	-