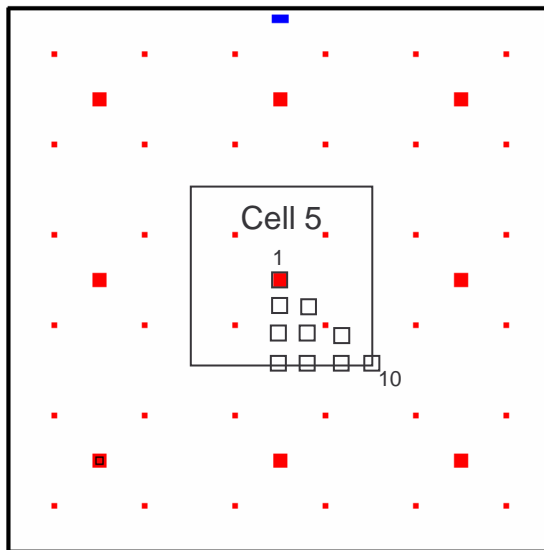


# CALICE simulation results

G.Villani 06



Cell size:  $50 \times 50 \mu\text{m}^2$

Epitaxial thickness:  $12 \mu\text{m}$

Diode location: S1/S4

Diode size:  $0.9 \times 0.9 \mu\text{m}^2$

Nwell size:  $3.5 \times 3.5 \mu\text{m}^2$

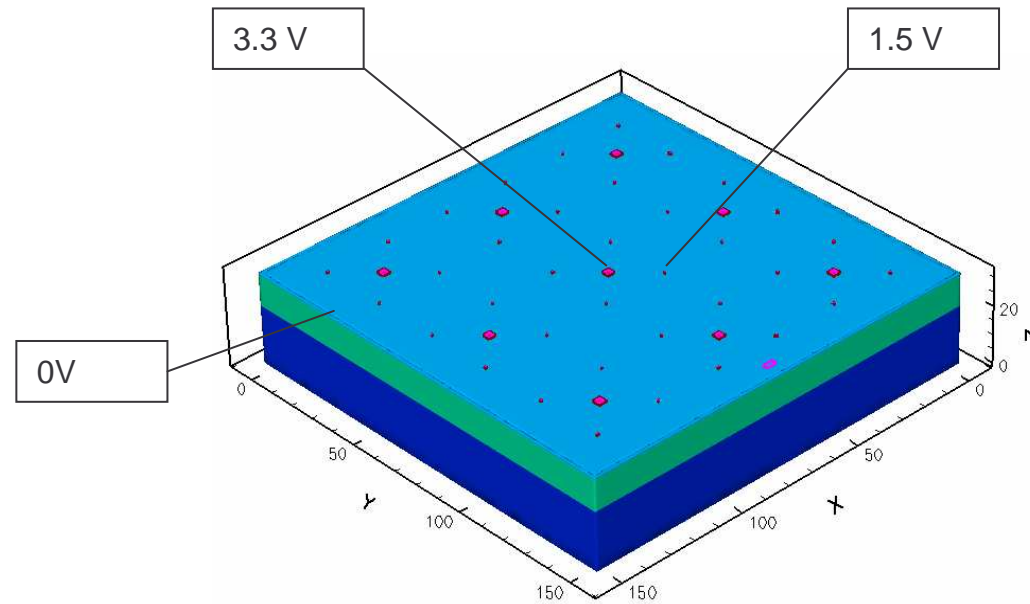
## Bias

- Diode : 1.5V fixed
- Nwell: 3.3V
- Pwell: 0V
- Subs: float

10 hits simulated: mirroring over central cell and transformation over  $3 \times 3$  cells allows surface reconstruction of  $Q_{\text{coll}}(x,y)$

# CALICE simulation results

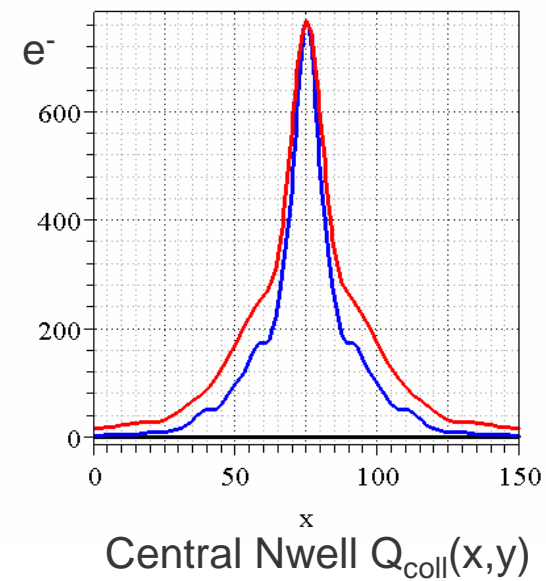
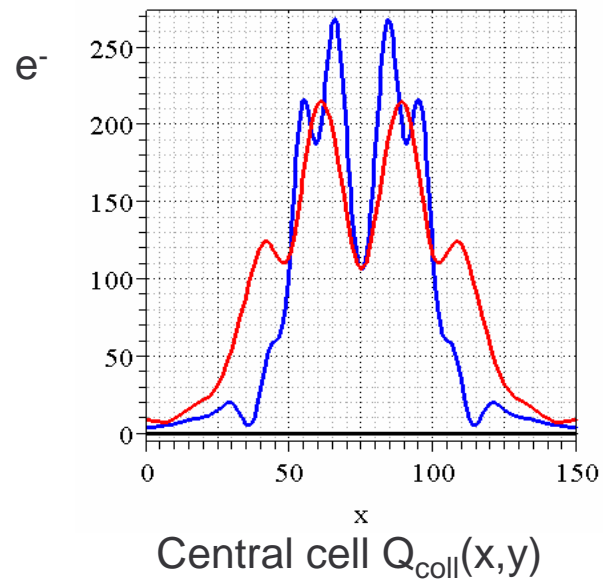
G.Villani 06



- Cell size  $50 \times 50 \mu\text{m}^2$
- Collecting diodes grouped and kept at fixed bias

# CALICE simulation results

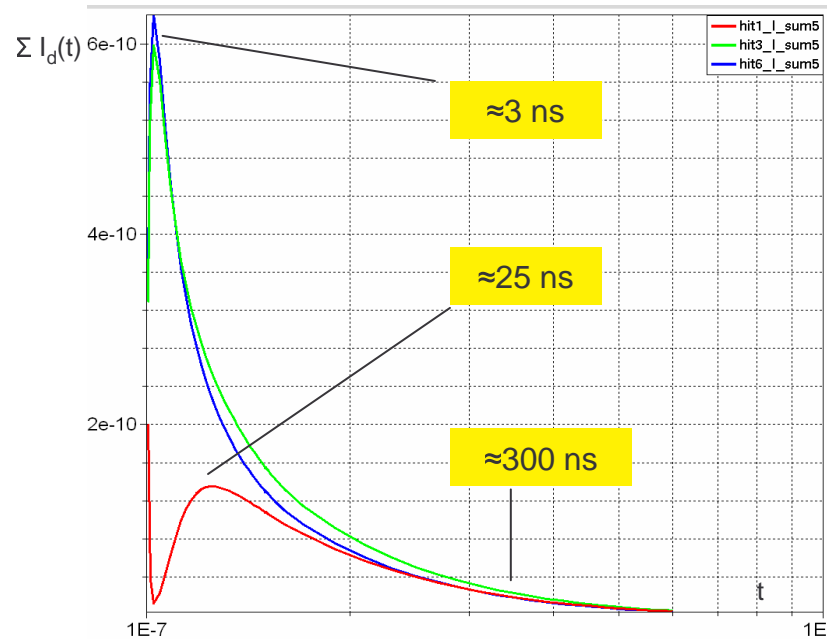
G.Villani 06



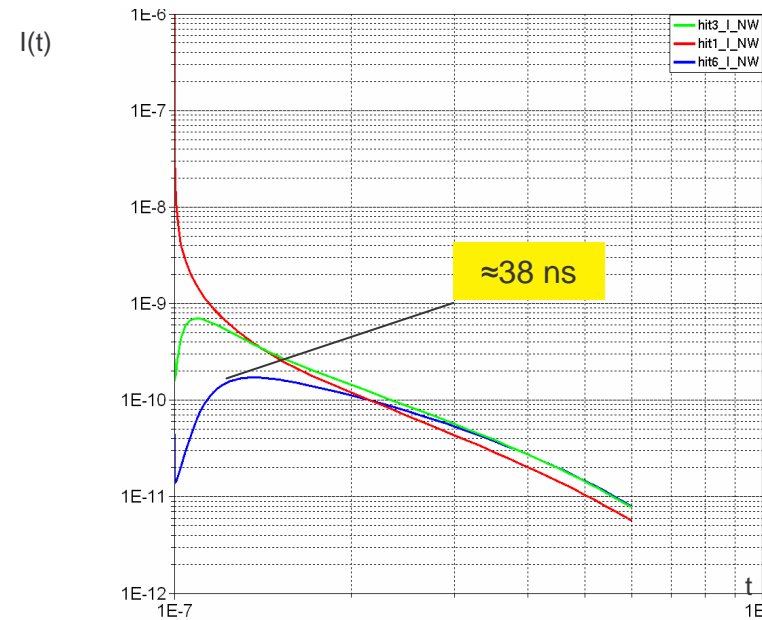
# CALICE simulation results

G.Villani 06

## Current transient



Central cell  $\Sigma I_d(t)$  hit [1,3,6]



Central Nwell  $I(t)$  hit [1,3,6]

Cell Max Peak current  $\approx 0.65$  nA

Cell Min Peak current  $\approx 0.2$  nA

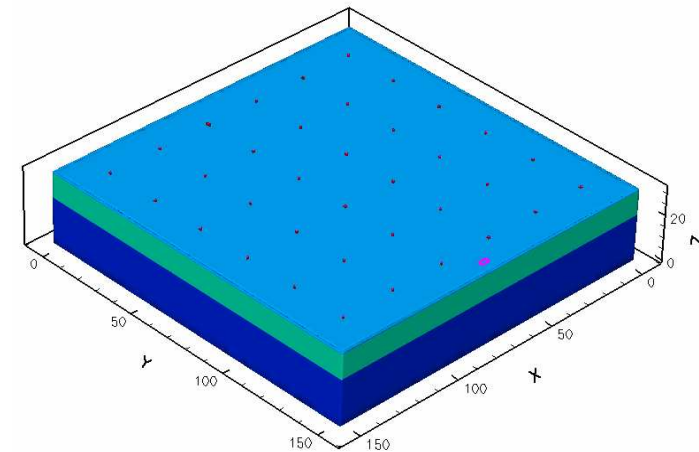
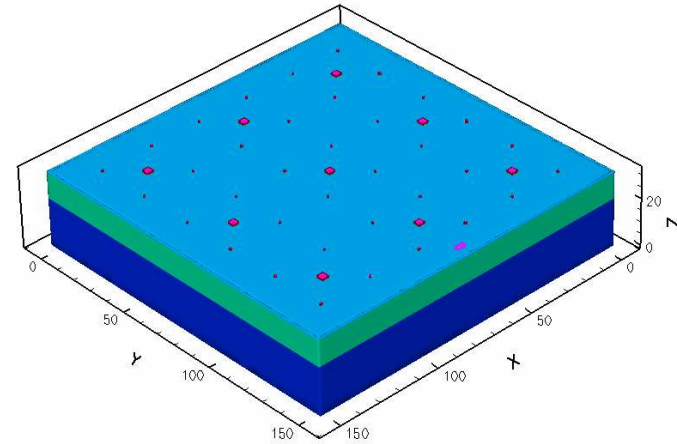


# CALICE simulation results

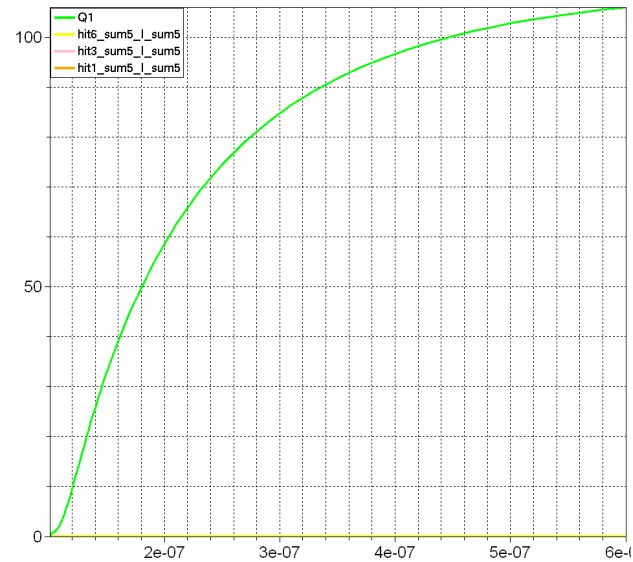
G.Villani 06

## Conclusions

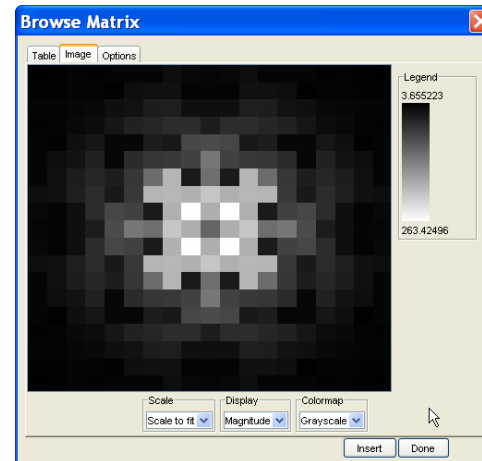
- Maximum  $\Sigma$  charge signal  $\approx 275 e^-$
- Maximum  $\Sigma$  current  $\approx 0.65 \text{ nA}$
- Threshold settings might help, but to increase the number of collecting diodes seems advisable
- Comparison with same cell size no central Nwell in progress



# addenda



- Charge collection transient hit 1 central cell



3.66	5.67	7.14	5.98	8.18	8.10	8.70	16.96	11.39	9.54	11.39	16.96	8.70	8.10	8.18	5.98	7.14	5.67	3.66
5.67	6.01	8.00	7.32	5.54	17.93	19.54	20.92	7.01	8.38	7.01	20.92	19.54	17.93	5.54	7.32	8.00	6.01	5.67
7.14	8.00	9.83	12.6318	19.21	21.76	32.92	33.99	18.03	18.90	18.03	33.99	32.92	21.76	18.1912	6.3	9.83	8.00	7.14
5.98	7.32	12.6315	6.226	0.2	37.05	41.71	48.63	48.29	31.78	48.29	48.63	41.71	37.05	26.0215	6.212	6.3	7.32	5.98
8.18	5.54	18.1926	0.210	6.5	10.55	33.25	28.54	75.01	79.45	75.01	28.54	33.25	10.55	10.6526	0.218	19.2	5.54	8.18
8.10	17.9321	7.637	0.510	5.5	47.49	58.08	60.74	69.78	124.42	69.78	60.74	58.08	47.49	10.5537	0.521	7.617	9.3	8.10
8.70	19.5432	9.241	7.133	2.5	58.08	113.45	188.57	29.79	115.91	29.79	188.57	113.45	58.08	33.2541	7.132	9.219	5.4	8.70
16.9620	9.233	9.948	6.328	5.4	60.74	188.57	189.99	183.37	205.76	183.37	189.99	188.57	60.74	28.5448	6.333	9.920	9.216	16.96
11.39	7.01	18.0348	2.975	0.1	69.78	29.79	183.37	263.42	180.78	263.42	183.37	29.79	69.78	75.0148	2.918	0.3	7.01	11.39
9.54	8.38	18.9031	7.879	4.5	124.42	115.91	205.76	180.78	106.26	180.78	205.76	115.91	124.42	4.531	7.818	9.0	8.38	9.54
11.39	7.01	18.0348	2.975	0.1	69.78	29.79	183.37	263.42	180.78	263.42	183.37	29.79	69.78	75.0148	2.918	0.3	7.01	11.39
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7.14	8.00	9.83	12.6318	19.21	21.76	32.92	33.99	18.03	18.90	18.03	33.99	32.92	21.76	18.1912	6.3	9.83	8.00	7.14
5.67	6.01	8.00	7.32	5.54	17.93	19.54	20.92	7.01	8.38	7.01	20.92	19.54	17.93	5.54	7.32	8.00	6.01	5.67
3.66	5.67	7.14	5.98	8.18	8.10	8.70	16.96	11.39	9.54	11.39	16.96	8.70	8.10	8.18	5.98	7.14	5.67	3.66

- Central cell Charge collected data matrix