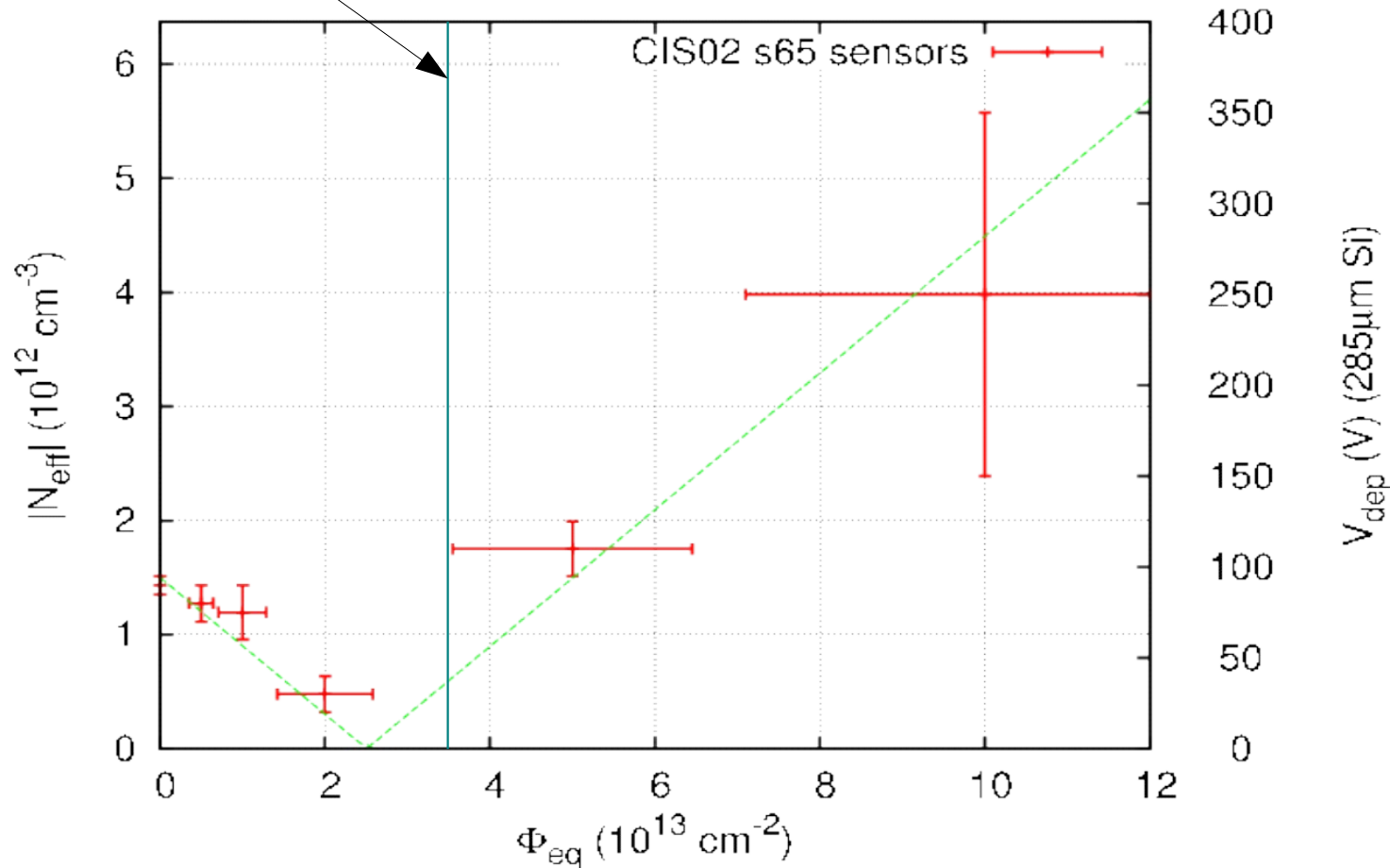


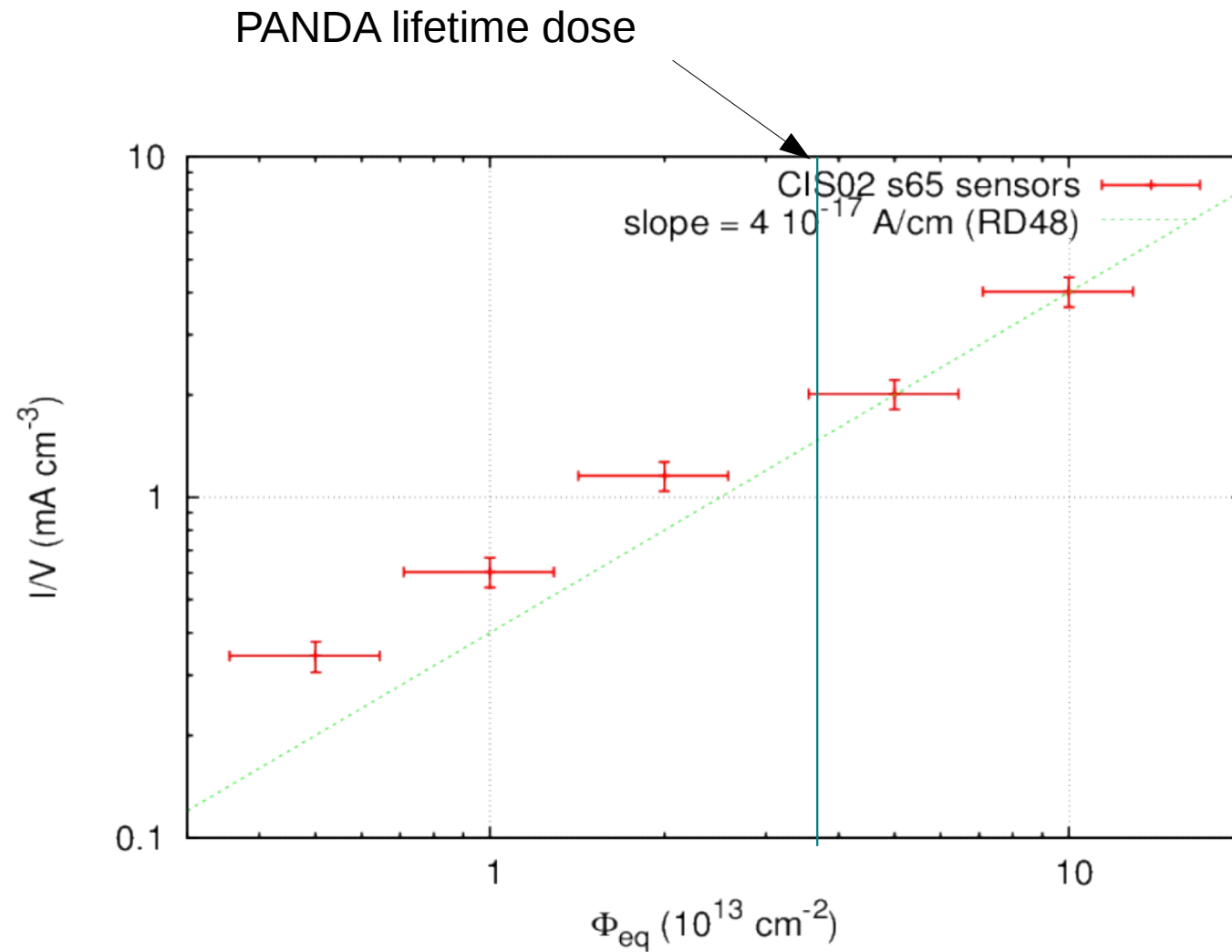
# Development of Depletion Voltage

PANDA lifetime dose



Barrel Sensors, (S1+S2), CiS02 run, poly-Si biasing,  $U_{dep,0} = 100V$

# Development of Leakage Current

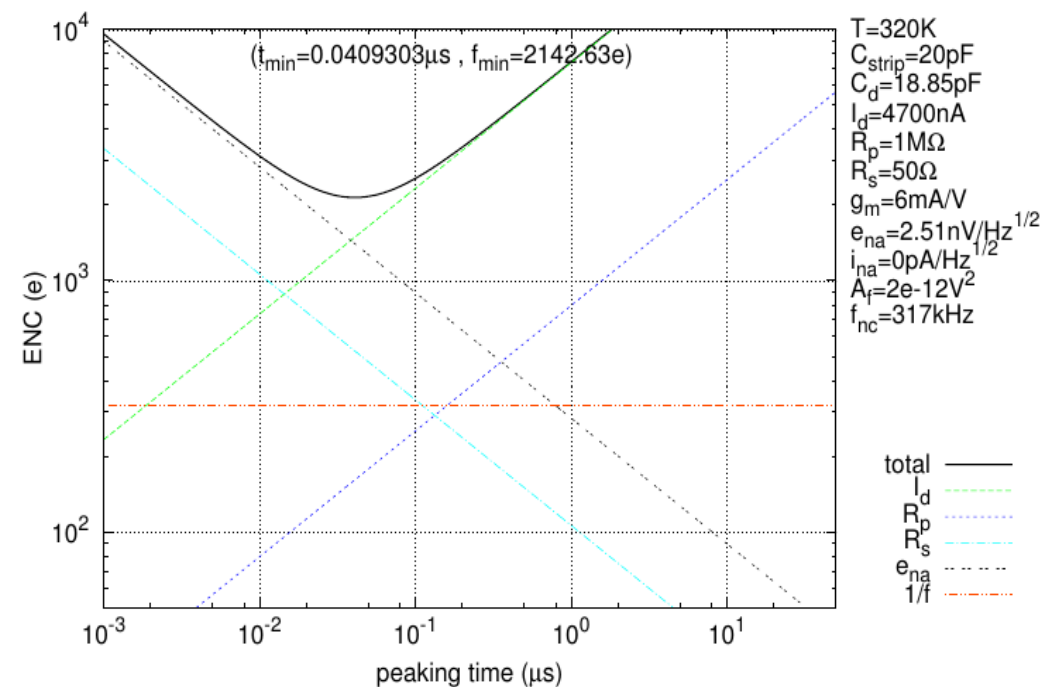
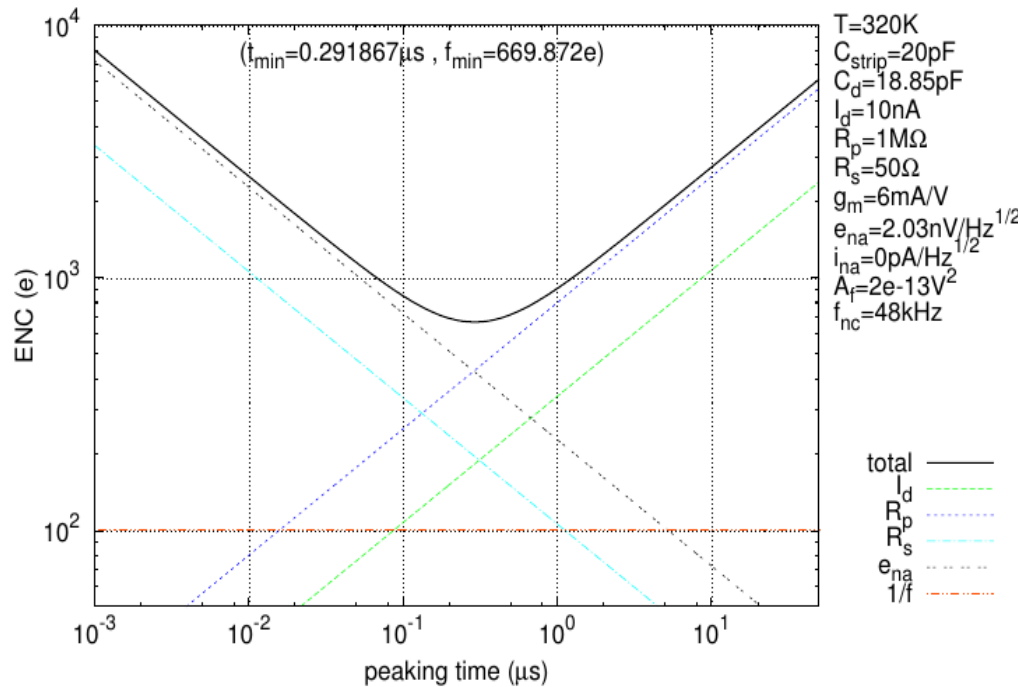


# FE Baseline Noise vs. Fluence

Total Noise:  $q_n^2 = \sum_i q_{n,i}^2$

No irradi.

3E+13 neq



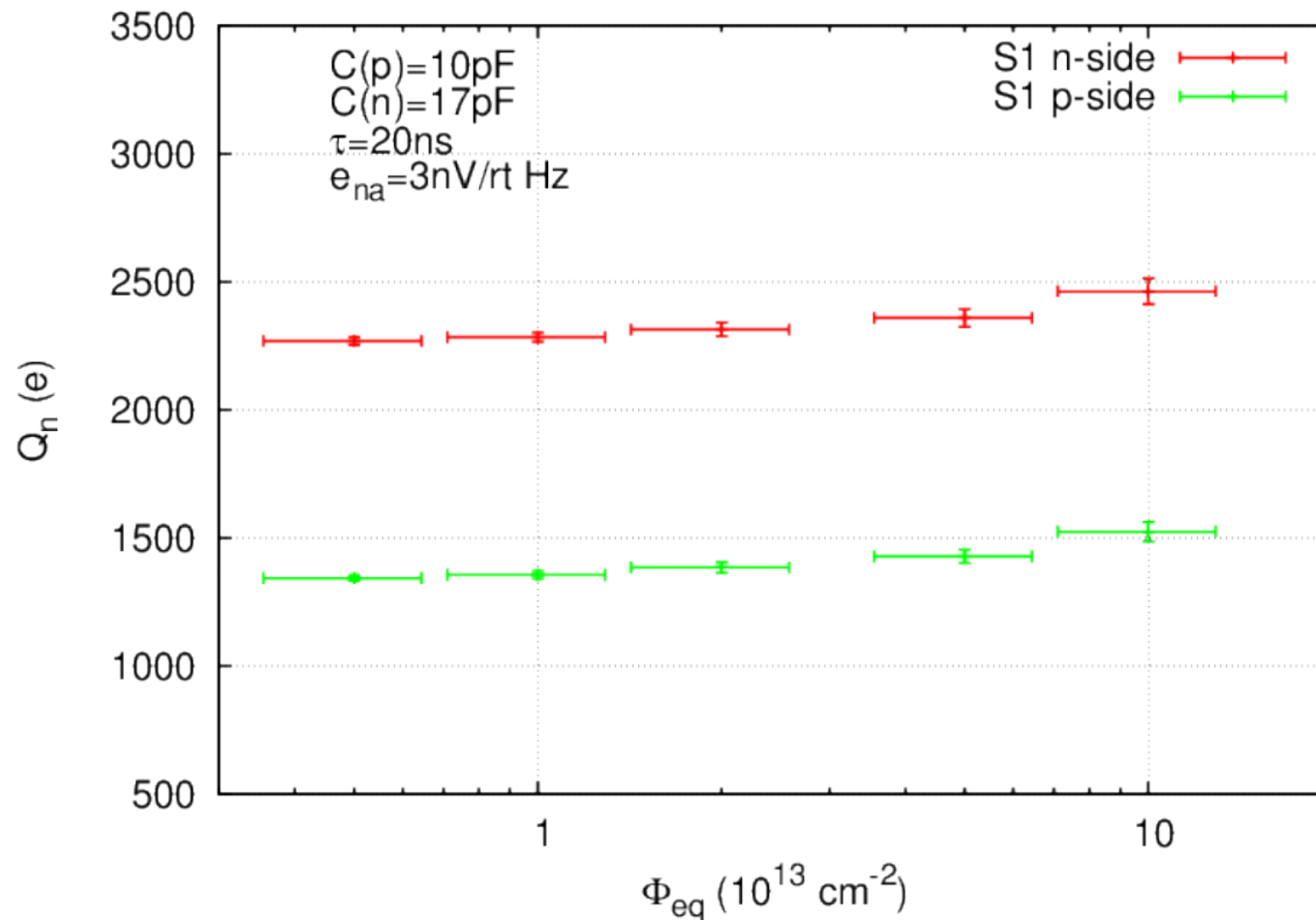
$$q_{n_{I_L}}^2 = A \cdot 2eI_L \cdot \tau$$

$A \approx 1$  (Shaper Constant)

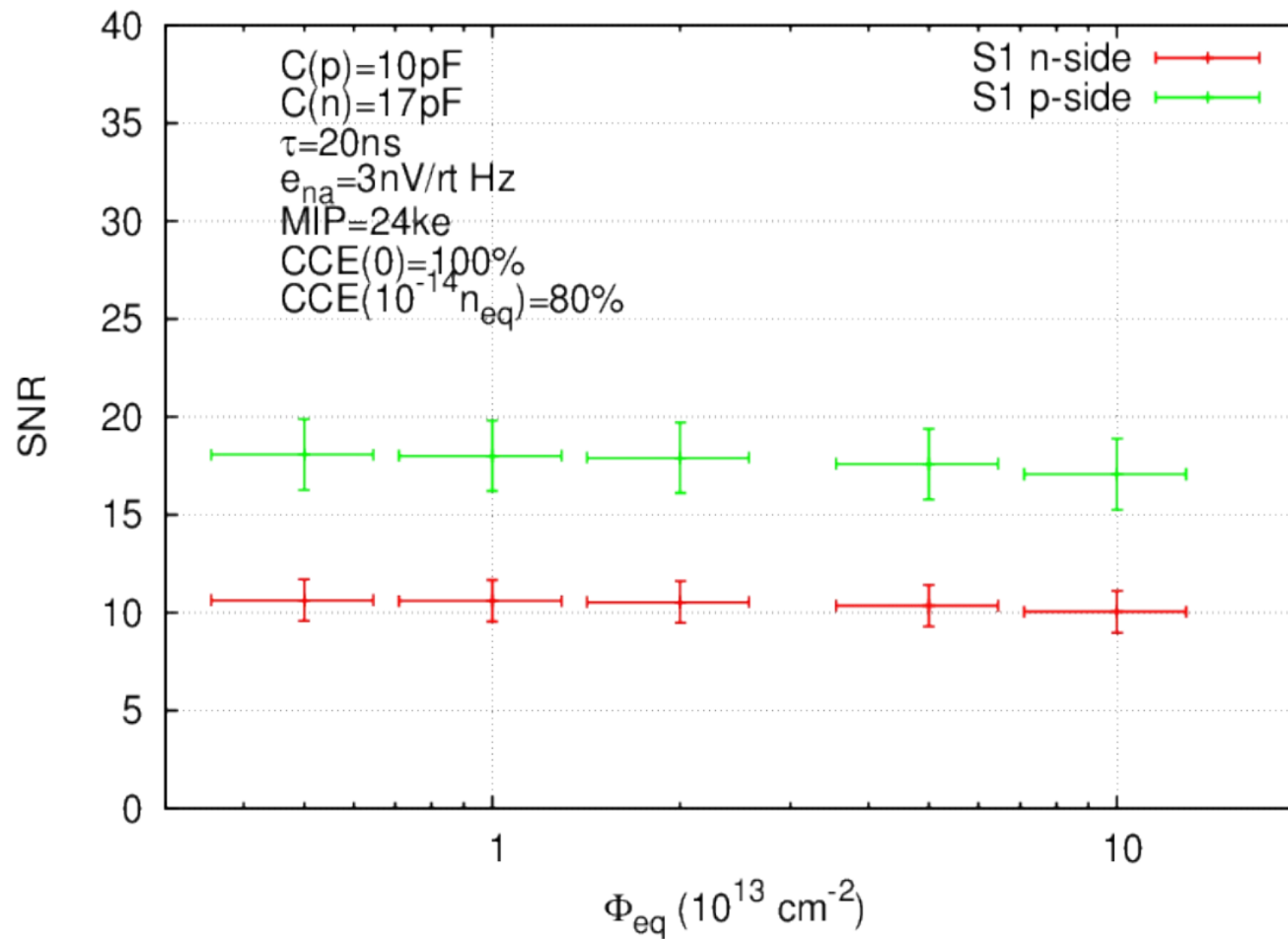
$$q_{n_A}^2 = A \cdot e_{na}^2 \cdot \frac{C_{strip}^2}{\tau}$$

# Baseline Noise (p/n-side)

- PASTA FE ASIC:**
- 20ns shaping in analog stage
  - Baseline noise determines overall noise figure (ToT time jitter negligible)

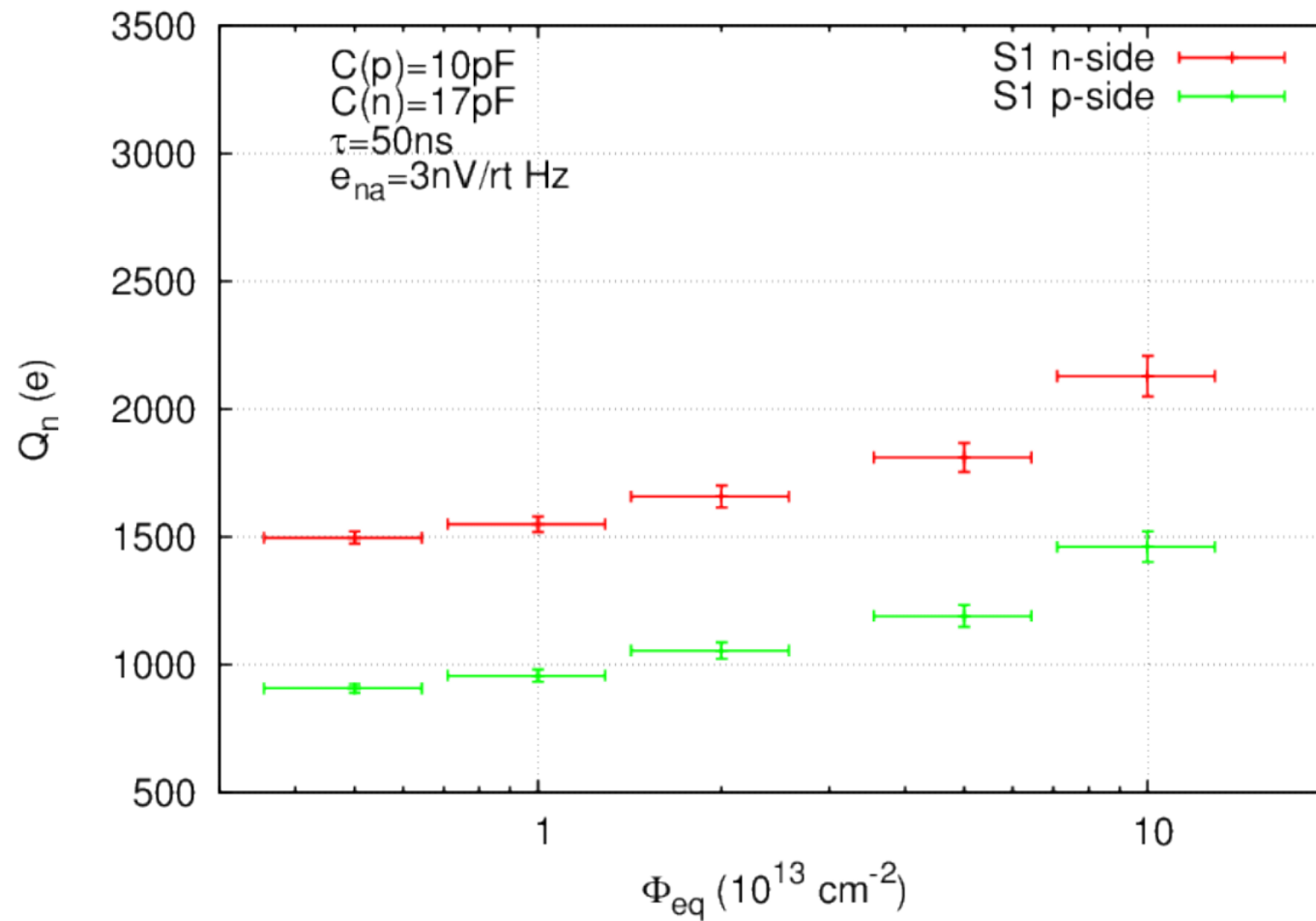


# Baseline Noise (p/n-side)

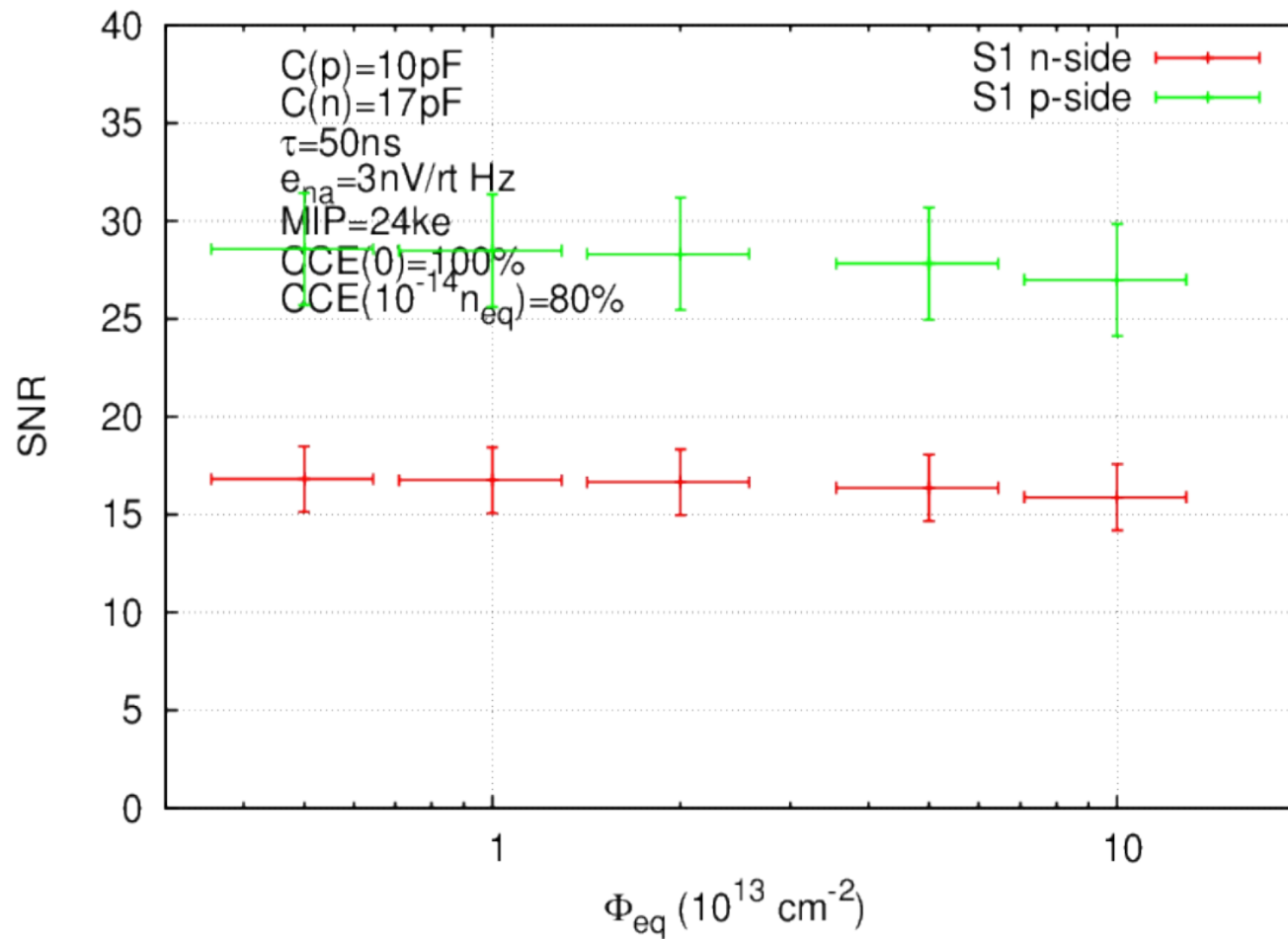


# Baseline Noise (p/n-side)

If analog shaping time constant was 50ns



# Baseline Noise (p/n-side)



# Spatial Resolution

r/o pitch ( $\mu\text{m}$ )	worst RMS resolution $\frac{p}{\sqrt{12}}$ ( $\mu\text{m}$ )	nr. of intermediate strips	SNR	spacial resolution RMS ( $\mu\text{m}$ )
65	18.8	0	10	$16.09 \pm 0.02$
			16	$13.08 \pm 0.02$
			25	$10.63 \pm 0.01$
130	37.5	0	10	$34.70 \pm 0.05$
			16	$31.64 \pm 0.04$
			25	$29.28 \pm 0.04$
130	37.5	1	10	$24.92 \pm 0.03$
			16	$16.13 \pm 0.02$
			25	$12.11 \pm 0.02$
195	56.3	2	10	$44.52 \pm 0.06$
			16	$26.68 \pm 0.03$
			25	$13.84 \pm 0.02$
260	75.1	3	10	$54.62 \pm 0.07$
			16	$35.92 \pm 0.05$
			25	$18.11 \pm 0.02$