

⑥ Irradiation tests

major purpose: monitoring of (oxidation) process - Processing changes may affect post-irradiation performance which may not be apparent from pre-irradiation measurements

Samples:

3 baby detectors ($1 \times 1 \text{ cm}^2$) from each lot (lot=30~40 good sensors)
 full size detectors from initial lots and at modifications in processing
 some modules : using B-class sensors, if needed

Baby and full size detectors are glued on ceramic boards

Proton fluence: $3 \times 10^{14} \text{ p/cm}^2$ (cf $1.4 \times 10^{14} \text{ n/cm}^2$ in 10 LHC years)

Detectors are kept at -10°C

measurements:

I-V ($I < 1 \text{ mA}$ @ 350 V and @ -10°C)

C-V (V_b up to 350 V and @ -10°C)

Oxide puchthroughs (Ccp probing @ RT)

Data run and Laser scan for full-size detectors and modules @ -10°C
 (w/ chips \rightarrow noise, charge collection efficiency)

time estimates:

$$6000 / (30 \text{ lot}) \times (3 / \text{lot}) / 12$$

sample preparation: ~ 50 baby sets \times (glue + w.b.) = 150h = 18d
 $\sim 20?$ full-size detectors \times (glue + w.b.) = 60h = 8d
 $\sim 20?$ detectors \times (chip mounting after irradi) = 60h = 8d

measurements: I-V and C-V 2hr/sample = 140h = 17d \times 2 (pre/post)
 Ccp 2hr/sample = 140h = 17d \times 2 (pre/post)
 Noise (data run) 2hr/sample = 40h = 5d
 Laser scan 3hr/sample = 60h = 8d

