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Characterization of W7 Type 10 and W7 Type 4 and comparison to W11 Type 10 LGAD prototypes

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In this presentation we report our research on W7 UFSD Type10 (2 p-stops + bias ring) and W7 UFSD Type 4 (with only bias ring in interpad region) prototype samples. Those results will be compared to the results obtained on W11 UFSD Type 10. Those UFSD prototype samples are not standard UFSD, they are produced in TI-LGAD batch as reference samples.

Wafer W7 and W11 differ in gain and in leakage current. The wafer W11 has a higher gain and a lower leakage current, while W7 has lower gain and higher leakage current. Those distinctive features will be used as parameters to estimate the influence of gain and leakage current on already reported excess in charge collection in intrepid region (reported in UFSD W11 Type 10 from Ti-LGAD). Study on W7 Type 4 (also produced in TI-LGAD batch) where only bias ring is interfaced in interpad region, and comparison to W7 Type 10 (with 2 p-stops + bias ring in interpad region) will help us to distinguish the role of each of interfaced structures in IP region on anomalous excess in charge collection in IP region.-

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