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Gated Mode on Hybrid 4



Gated Mode with RO - 1200ns





Gated Mode with RO - 400ns

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Gated Mode with Read Out – all Frames



Gate Mode with RO - 1200ns



- Start of the gated mode shifted by ~ 100ns (one row) (may be due to bad FPGA delay setting)
- Question: how do the pedestals change?
- Would the analog CMC help



Gate Mode with RO – 1200ns



Three methods of pedestal and common mode correction:

- 1) Pedestal \rightarrow offline CMC
- 2) Offline CMC \rightarrow Pedestal
- 3) Analog CMC \rightarrow Pedestal \rightarrow offline CMC



Pedestal \rightarrow offline CMC



Gate Mode with RO – 1200ns



Offline CMC \rightarrow Pedestal





Analog CMC \rightarrow Pedestal \rightarrow offline CMC





- DCDPP provides an analog CMC which can be switched on and off by software
- TIA is disconnected from AmpLow (still the current of AmpLow changes only by less then 10% for 128 channels)
- VDDA current increases (for 256 channels we reach the current limit of the used power supply prototype)
- Noise increases when analog CMC is on



Noise Distribution Comparation



- Gated mode can be applied with the SWBv2 in a fast way (has to be confirmed for the capacitive load of a large matrix)
- Significant change of the pedestal during the gated mode
 - For the gate mode with RO: how to handle data in DHPT?
- Analog CMC seems to improve the pedestal variation (on a small increase of noise)
 - Analog CMC is also important to correct for inhomogeneous irradiation along z.
- We should write down how to test the analog CMC: setup, who and when



Backup



Analog CMC on





Analog CMC off



Noise Distribution Analog CMC Disabled



Gated Mode with Read Out – all Frames



Gate Mode with RO 1600ns during frame 3







Subtraction Map Frame 1 – Frame 2



Pedestal substraction Map (1 - 2)



Comparison Pedestal Map R&C - Gated



Pedestal Reference Frame (1)

Pedestal Compared Frame (4)





Substracted Charge Distribution (1 - 4)

Pedestal substraction Map (1 - 4)





Comparison of Pedestal Map with normal mode after Gating (Frame 1 vs Frame 5)



Pedestal Compared Frame (5)















