



mDOT_chan0b Test

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Introduction

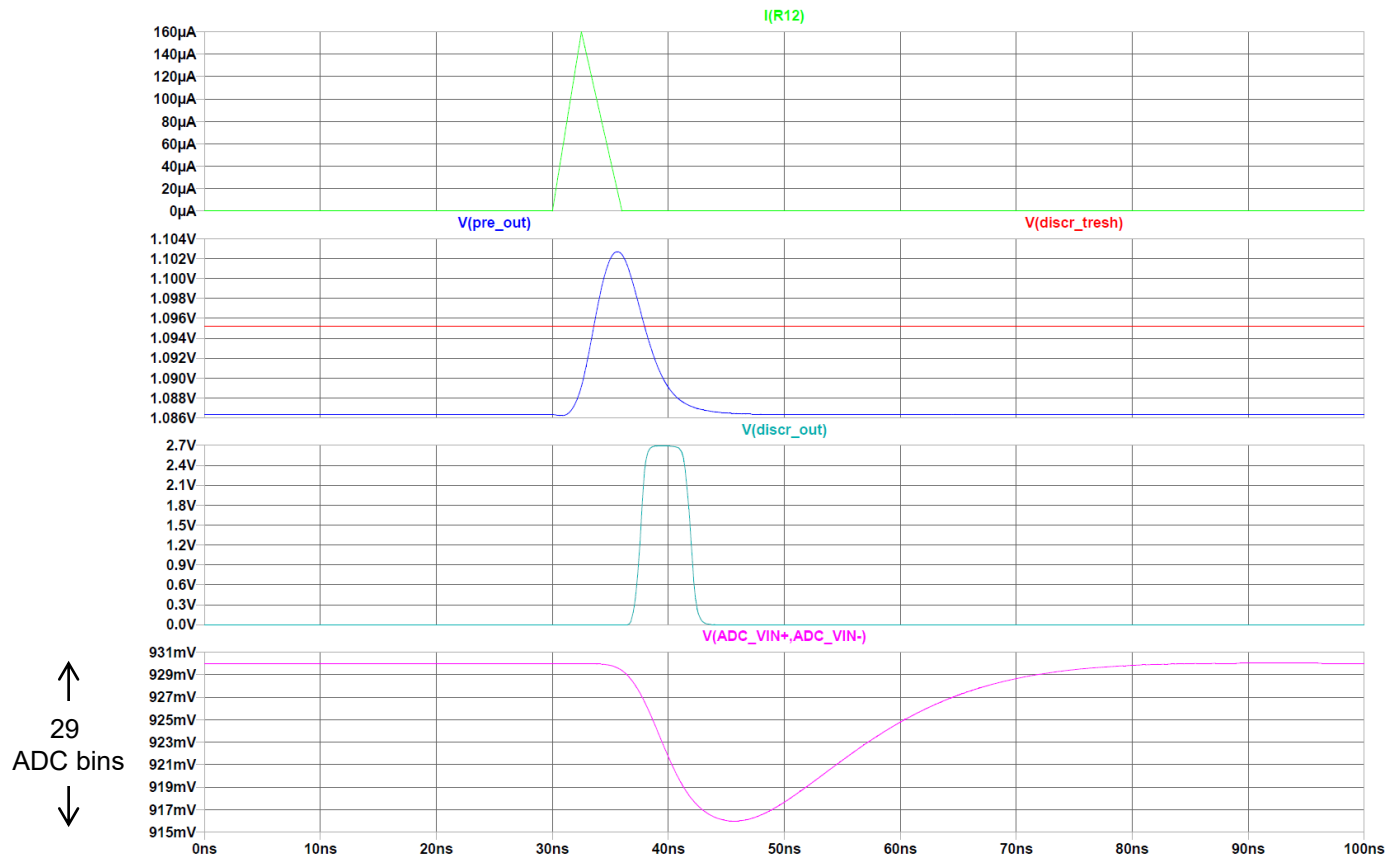


- Available now: 4 x mDOT_chan0b + 5 x mDOT_chan0, assembled by Mandy Hemp
- chan0b almost identical with chan0, except
 - Optional, extra DAC channel could be used to tune the preamps working point
 - Not used presently
 - additional input and improved ADC protection
- Present tests with **bigger time constant** for the pulse shaper
 - 91ohm x 100pF instead of 49.9ohm x 100pF (like at chan0 and chan2)

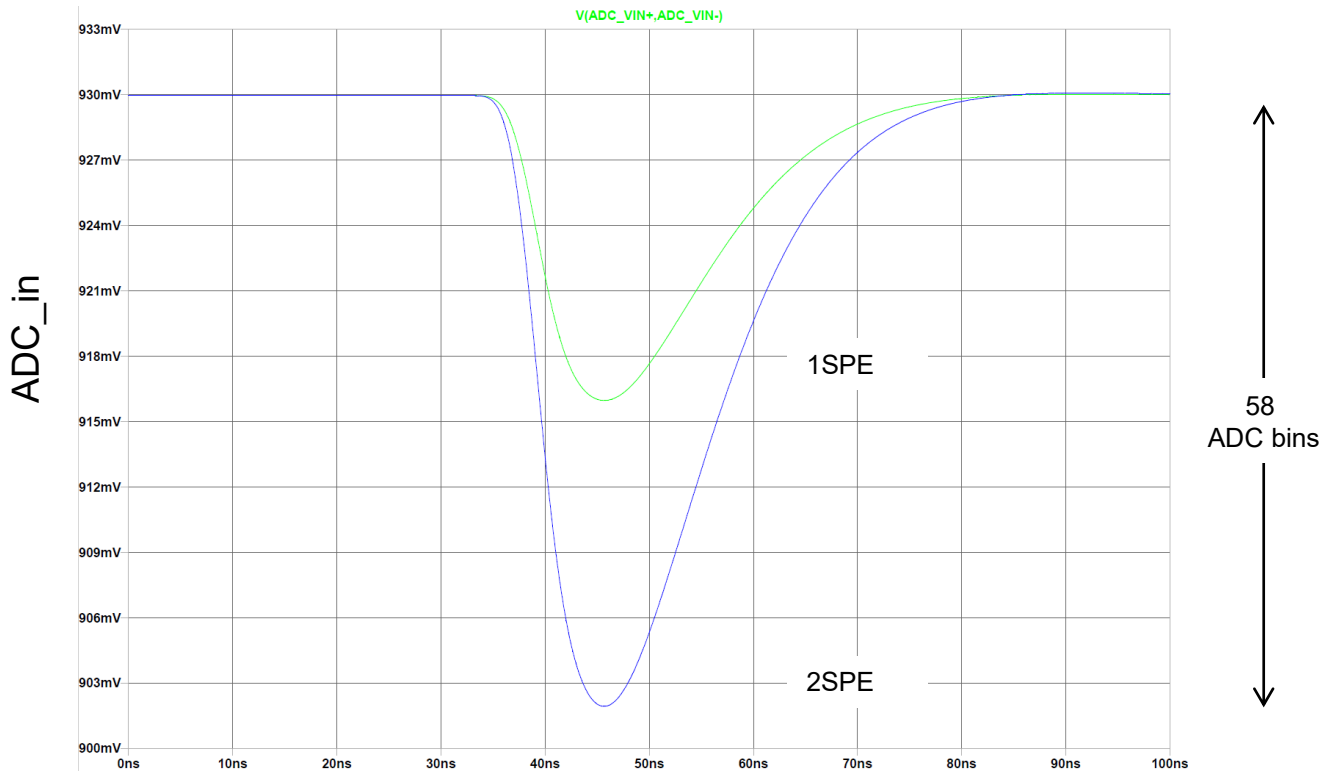
ICECUBE
UPGRADE



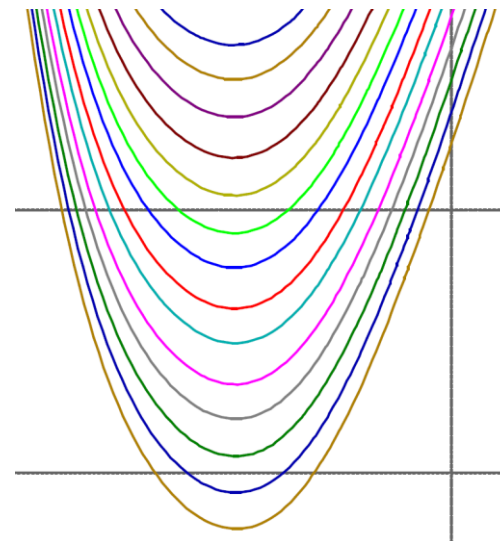
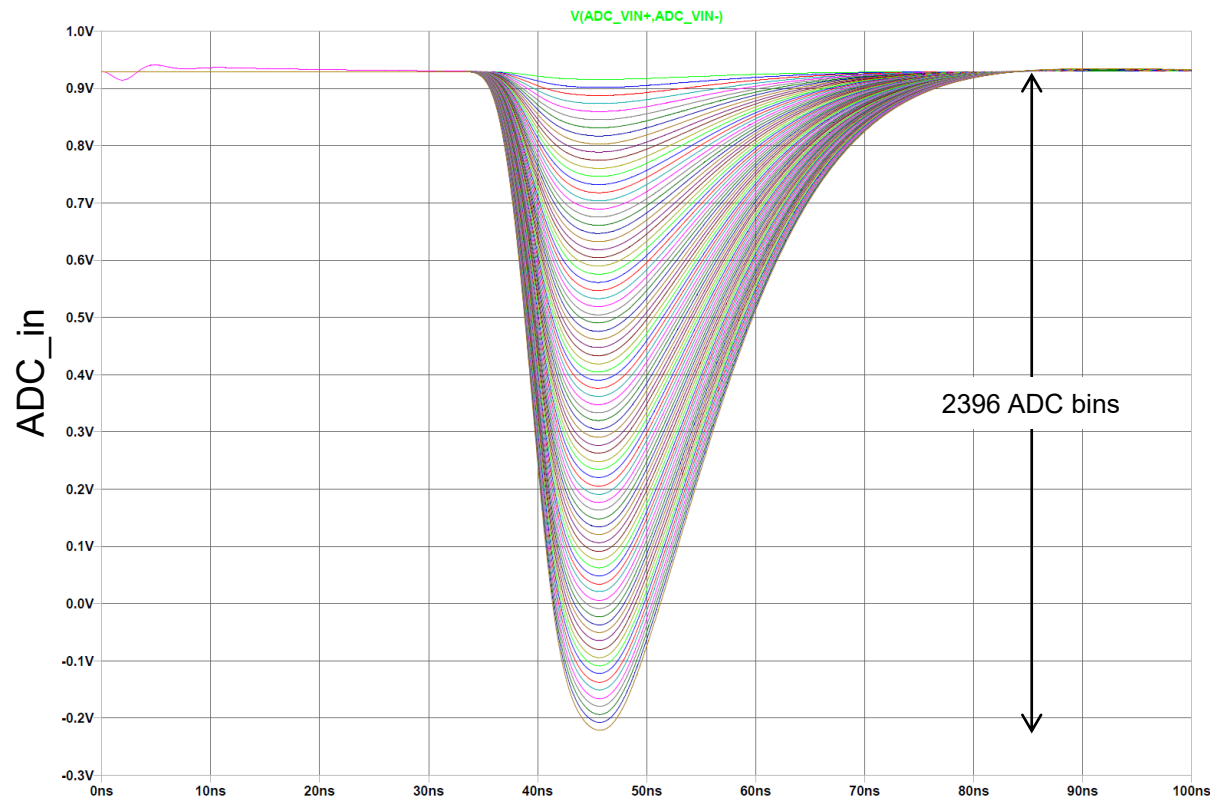
SPE Signal, LTSpice Simulation, 1SPE



SPE Signal, LTSpice Simulation, 1-2 SPE

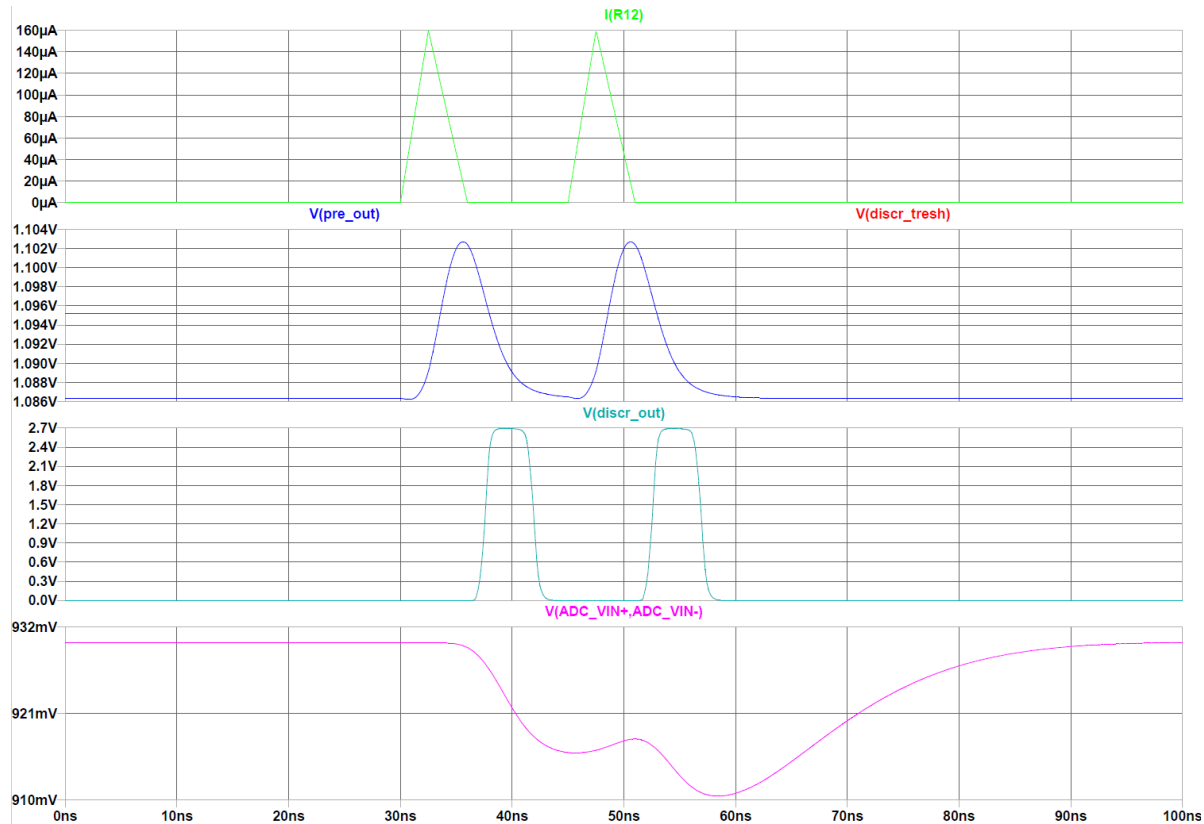


SPE Signal, LTSpice Simulation, 1-80 SPE, Linearity

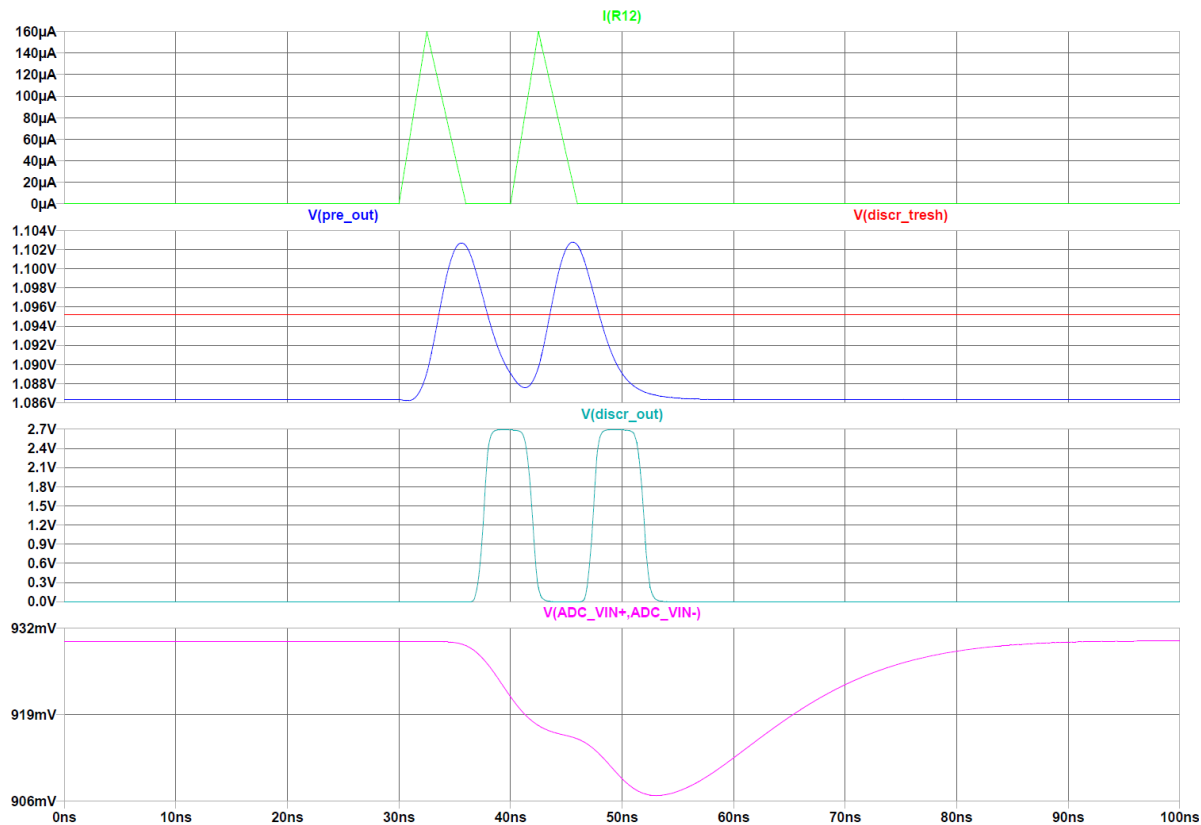


Linearity, zoomed view

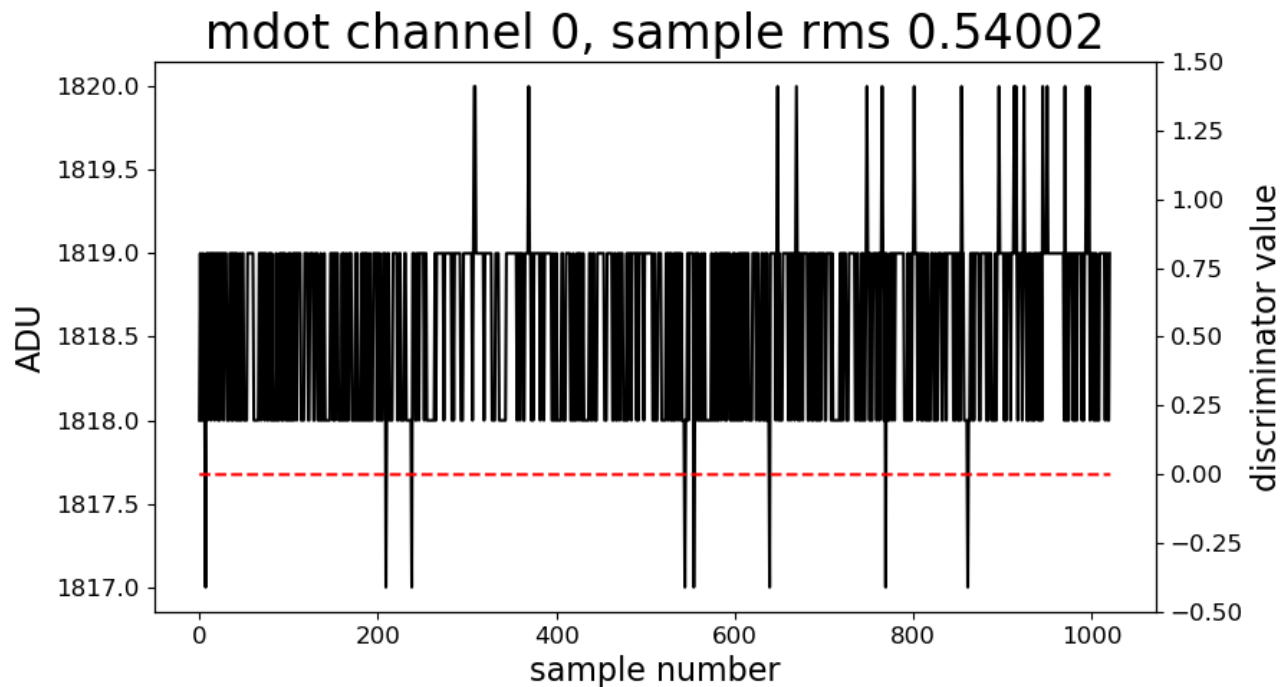
SPE Signal, LTSpice Simulation, 2x 1SPE, 15ns



SPE Signal, LTSpice Simulation, 2x 1SPE, 10ns

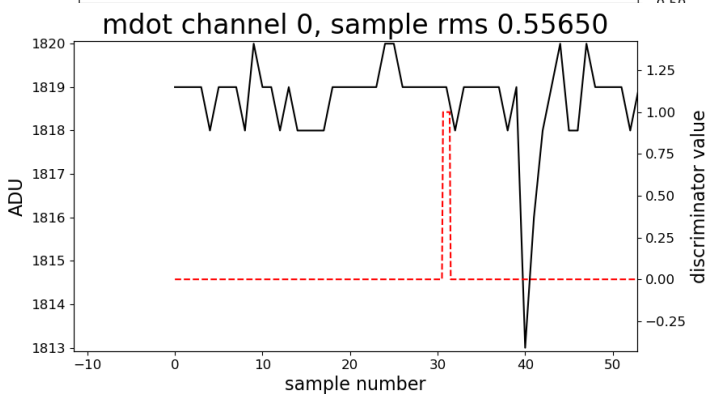
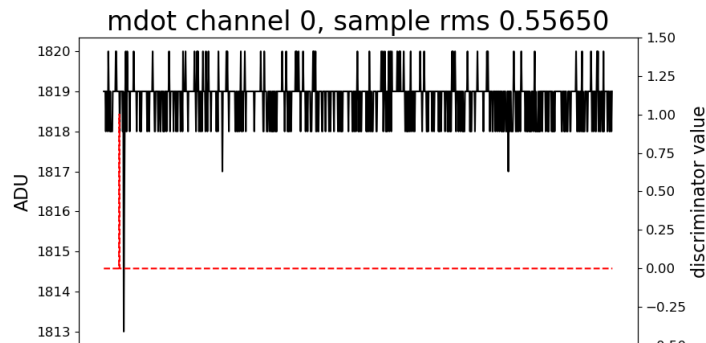
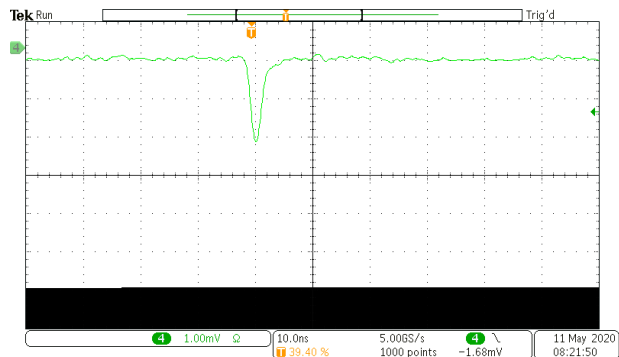


Typical noise, with open input



Rin=910R, Rn = **180R**, Cn=610p, LP = 91R x **100p**, gain_2 ~ 5, DAC0_e = 37000, DAC1_a = 37200

1/4 SPE input (2mV pk)

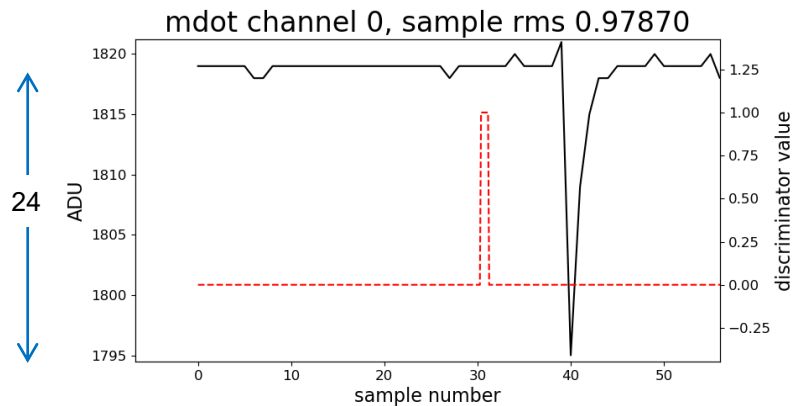
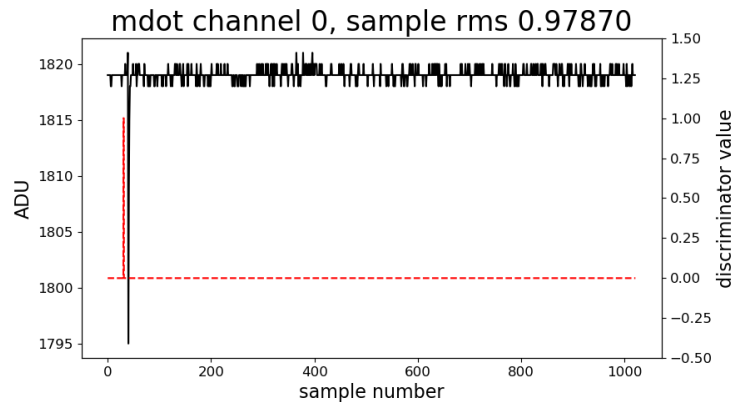
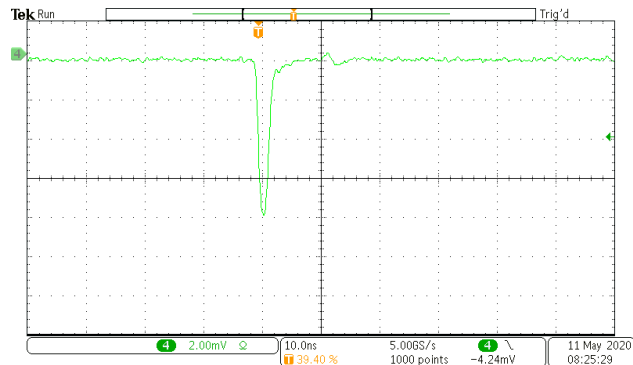


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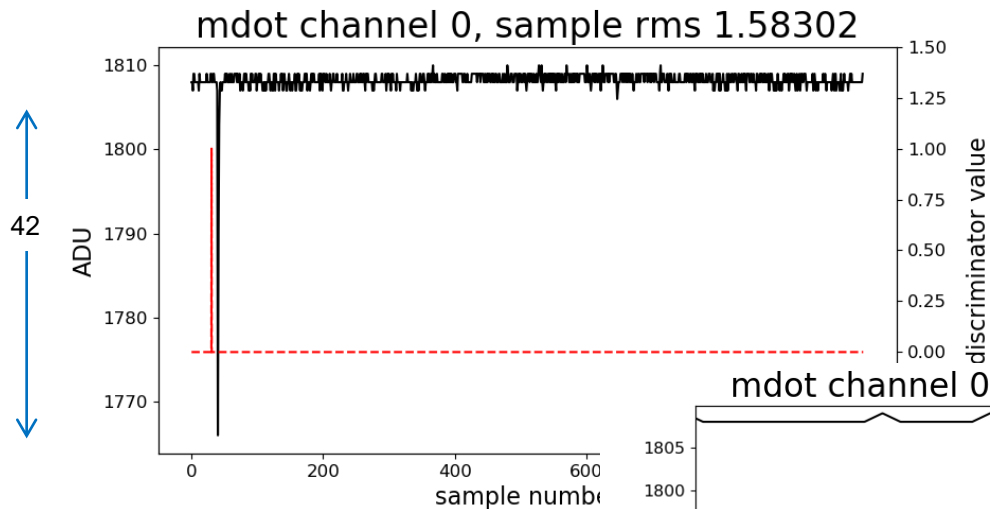
```
(base) C:\icecube2\mdot_rev1_fw_psu\python>python get_scaler_rate.py -c 0
INFO:root:Scaler period for channel 0 set to 0.99943 s
INFO:root:Scaler value for channel 0 is 100 (Rate is 100.00 Hz)
```

100% trigger rate

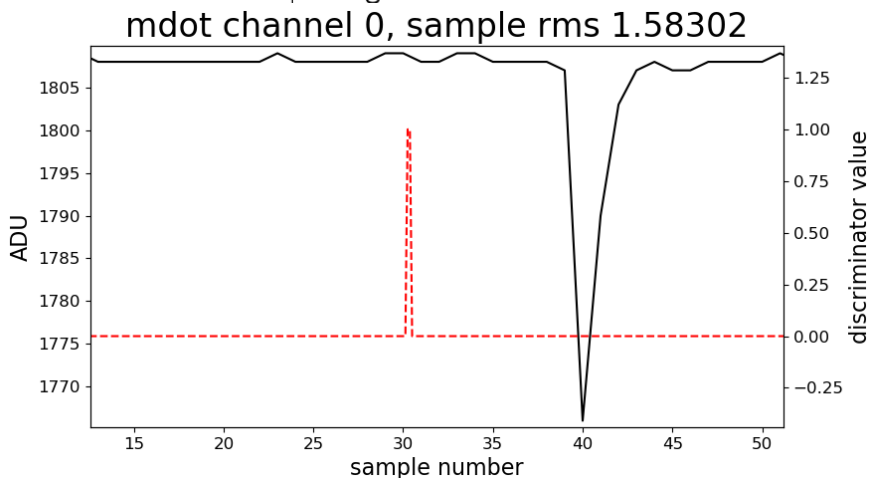
1SPE input (8mV pk)



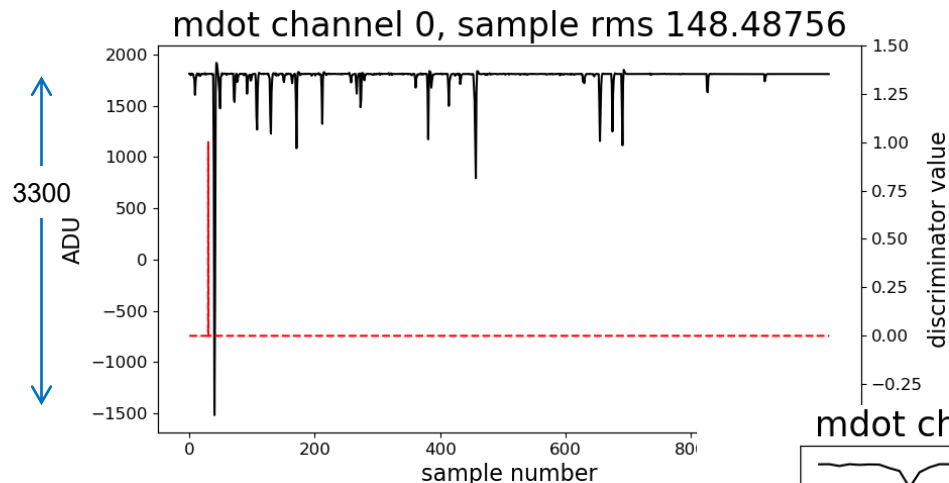
PMT signal, HV = 800V, discr_thr = 1SPE



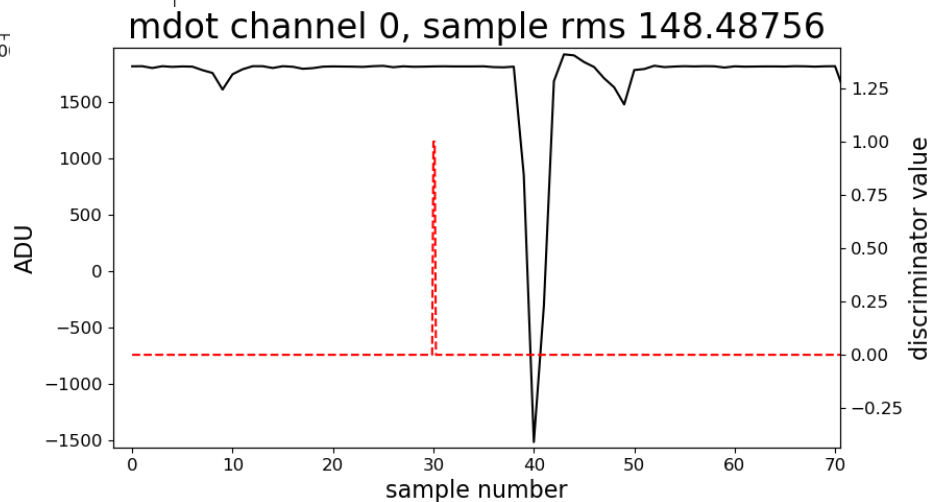
- PMT-Testbox used
 - R5900-3-M4
 - Typ. HV: 800 +/-50V



PMT signal, HV = 1000V (!), discr_thr = very high

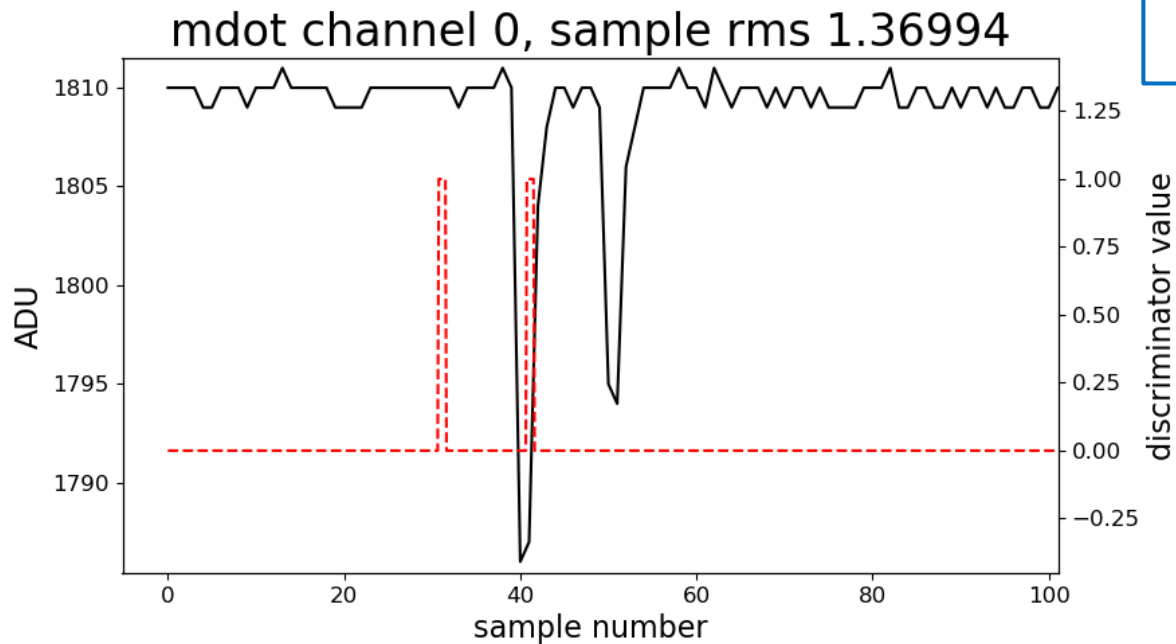


- PMT-Testbox used
 - R5900-3-M4
 - Typ. HV: 800 +/-50V
- DAC1_a = 55000



Double Pulse, HV = 800V, discr_thr = 0.1 SPE

➤ PMT-Testbox used



Double Pulse, HV = 900V, discr_thr = 0.25 SPE

➤ PMT-Testbox used

