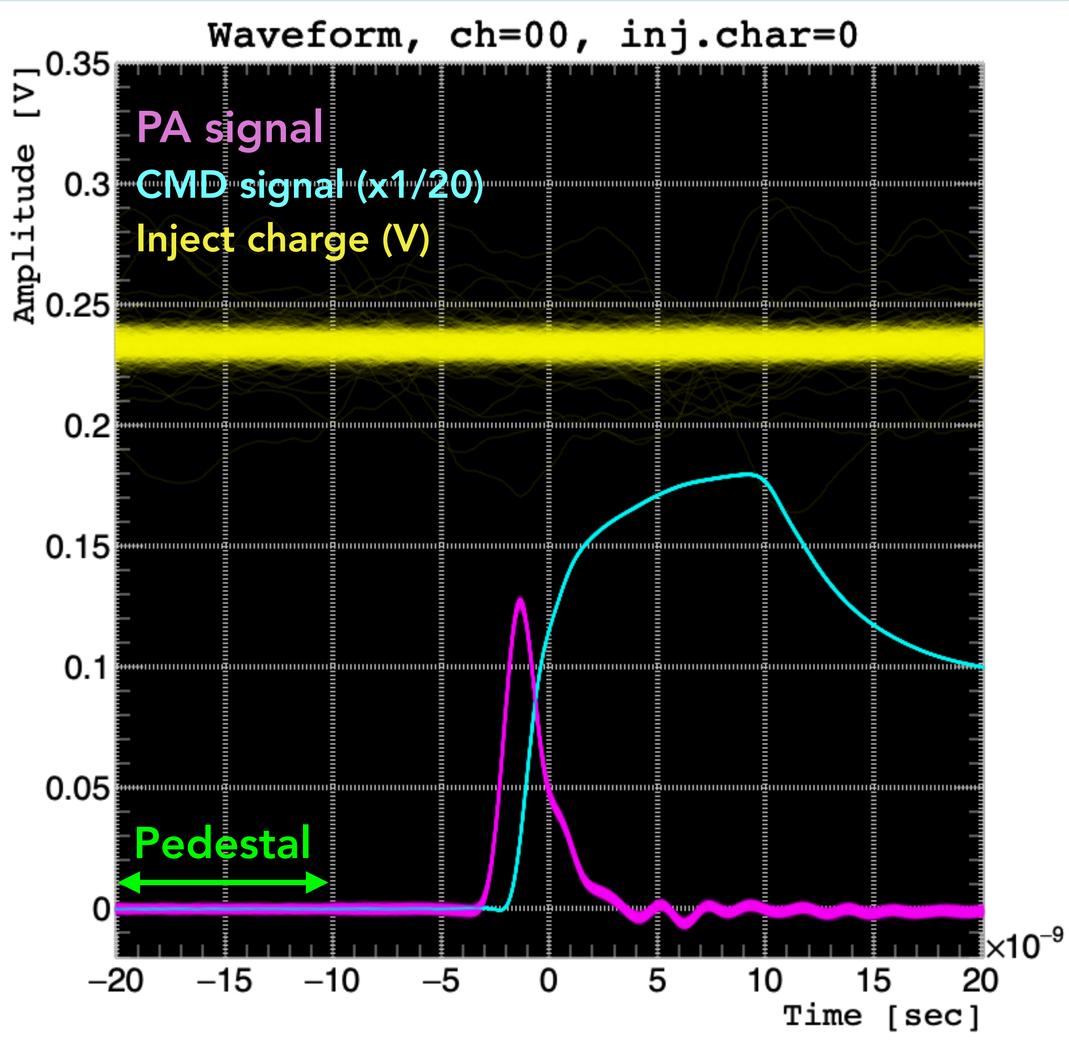
EICROC activity @ HU

Satoshi Yano

Hiroshima University SKCM²

Analog block analysis

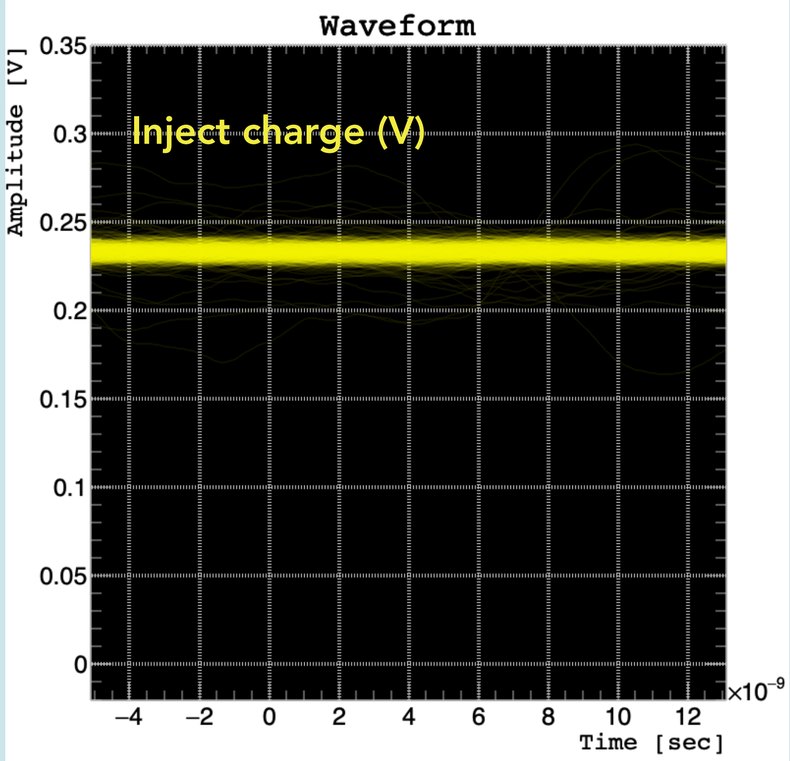


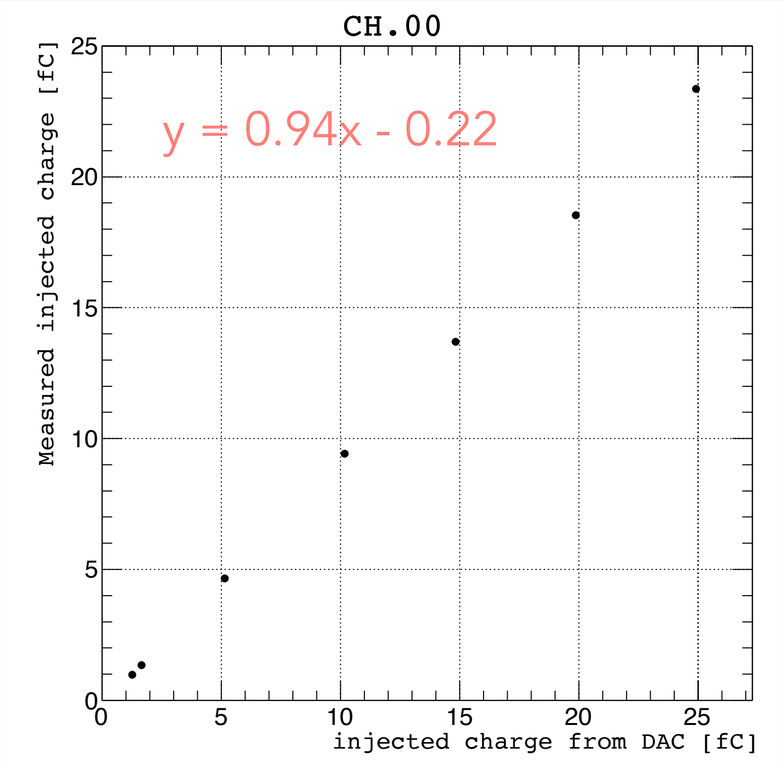
- Several charges are injected into pixel [0,0]
- Injected charge is measured from the J5 connector
- CMD signal is used as an event trigger

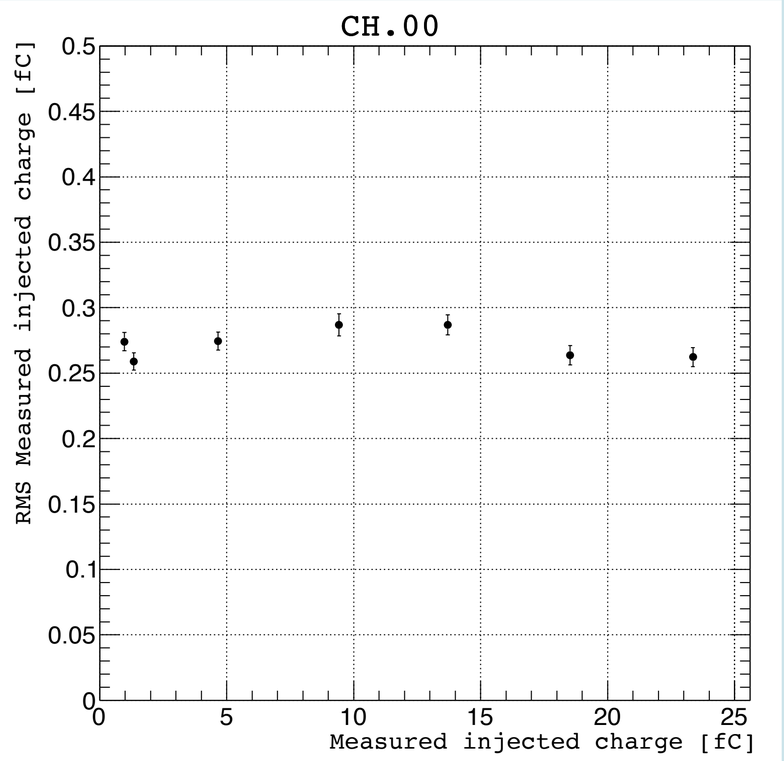
- Charge is injected 1000 times each
- Measured voltage [V] is converted into charge [fC] with C=100 [fF] assumption

- Pedestal has been measured in -20 ~ -10 ns
  - Event-by-event

Injected charge

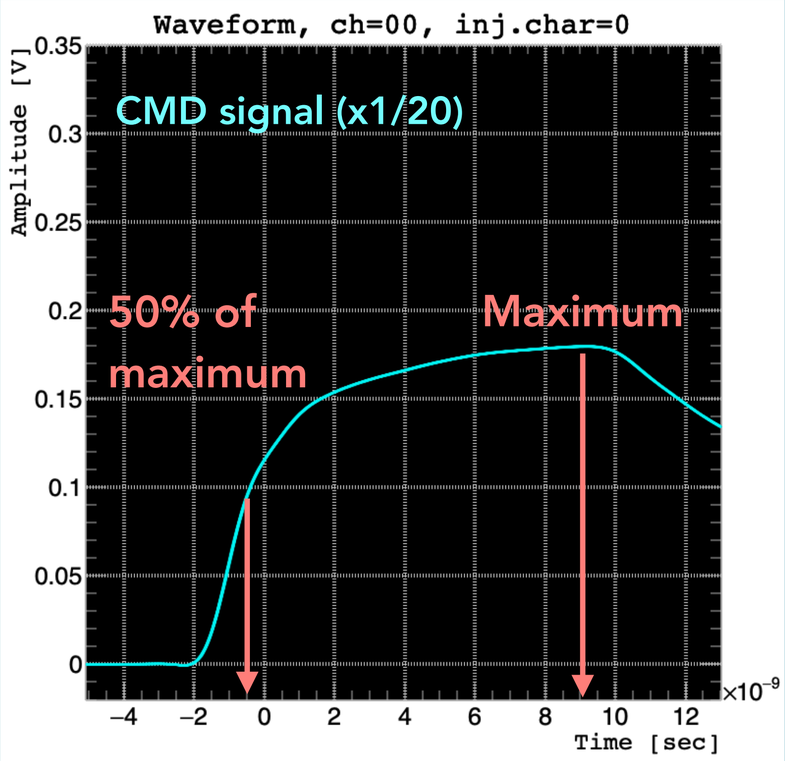


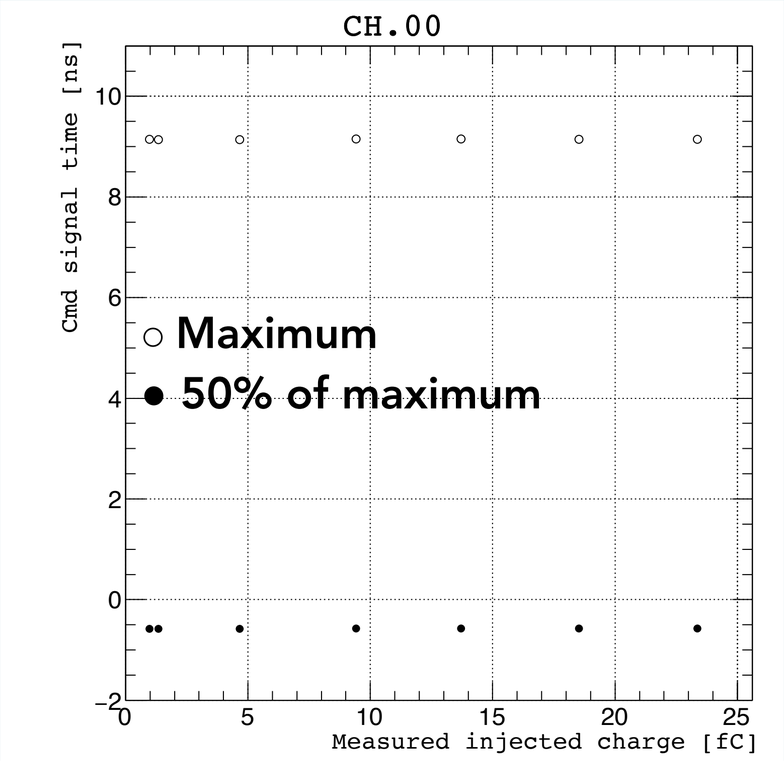


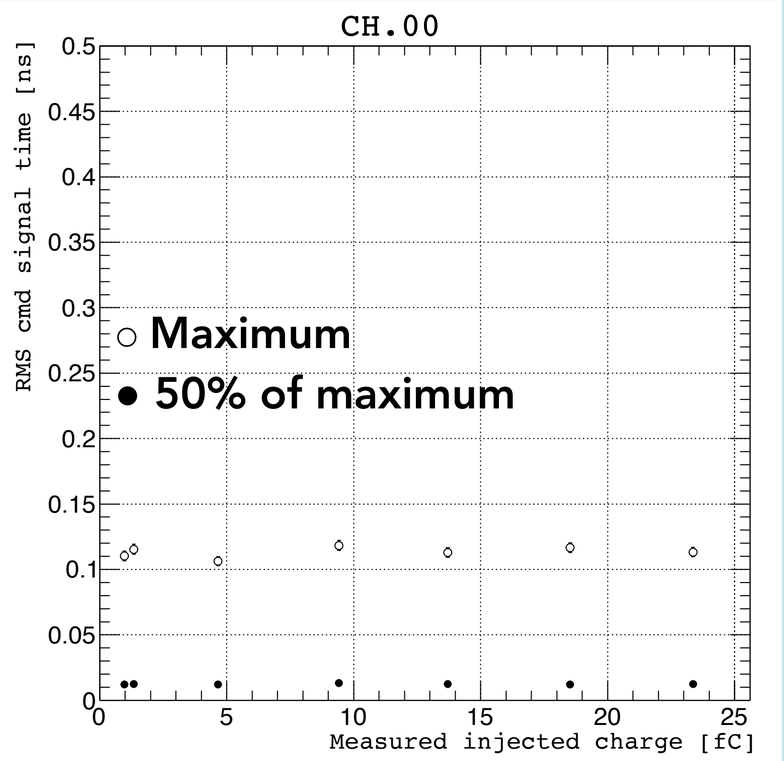


- Injected charge is measured from the J5 connector (K_in_ctest)
- The waveform is fitted by constant function (pol0) and the value is used as “measured injected charge”
- Clear linear correlation between measured and DAC values has been observed
- Measured injected charge has a fluctuation of 0.27 fC and no charge dependence has been observed

CMD signal as an event trigger

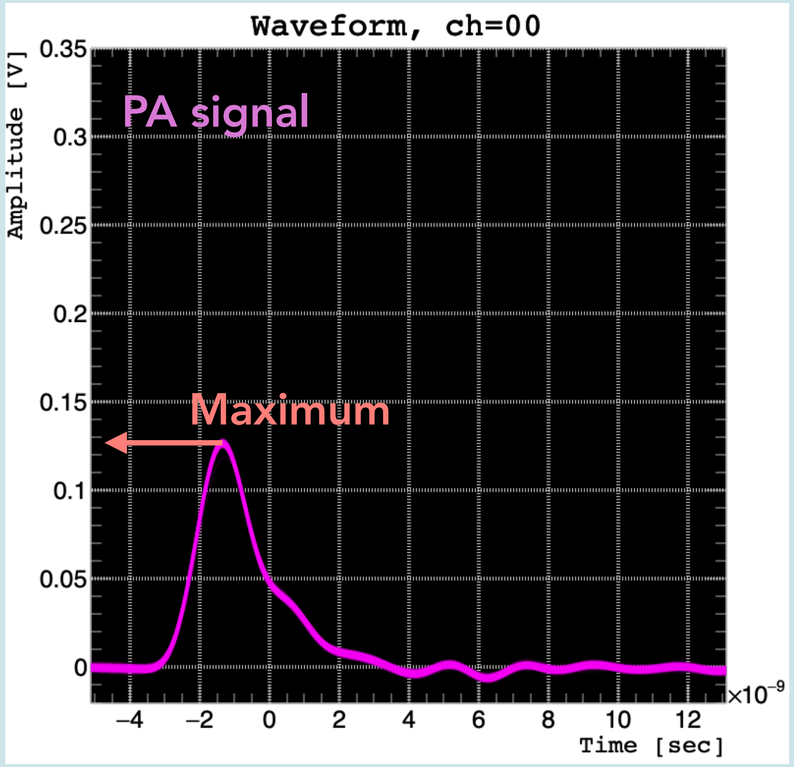


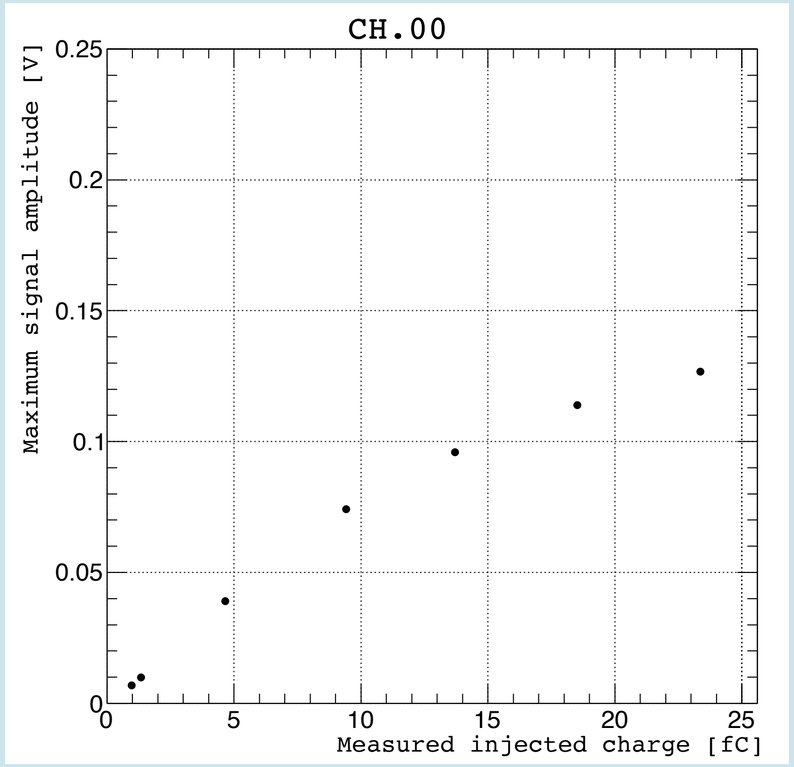


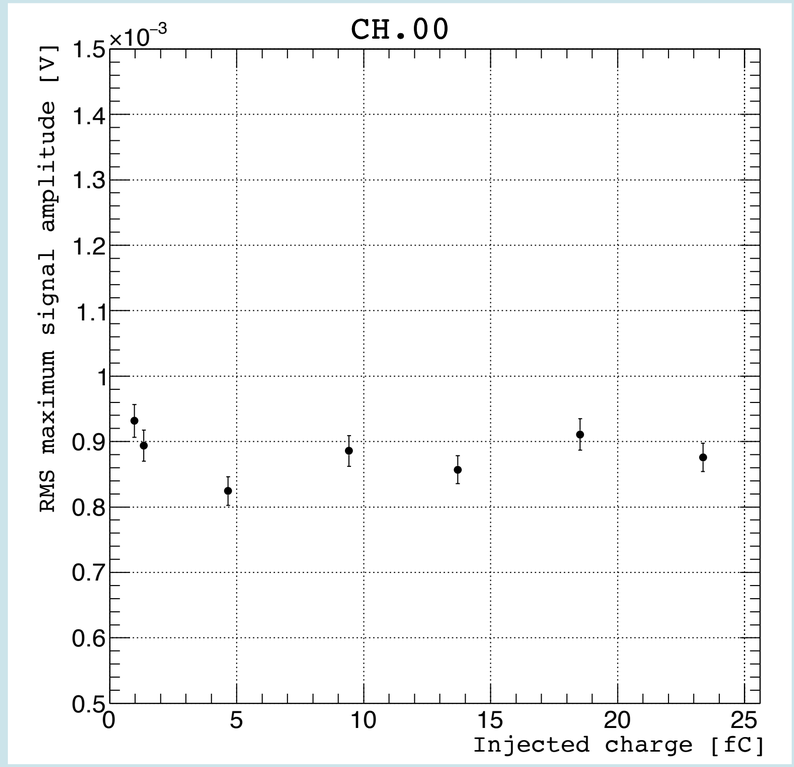


- CMD signal timing position and its RMS don't depend on the amount of injected charge
- RMS of maximum and 50% of the maximum are found to be σ~119 ps and 12 ps, respectively

Maximum PA signal amplitude

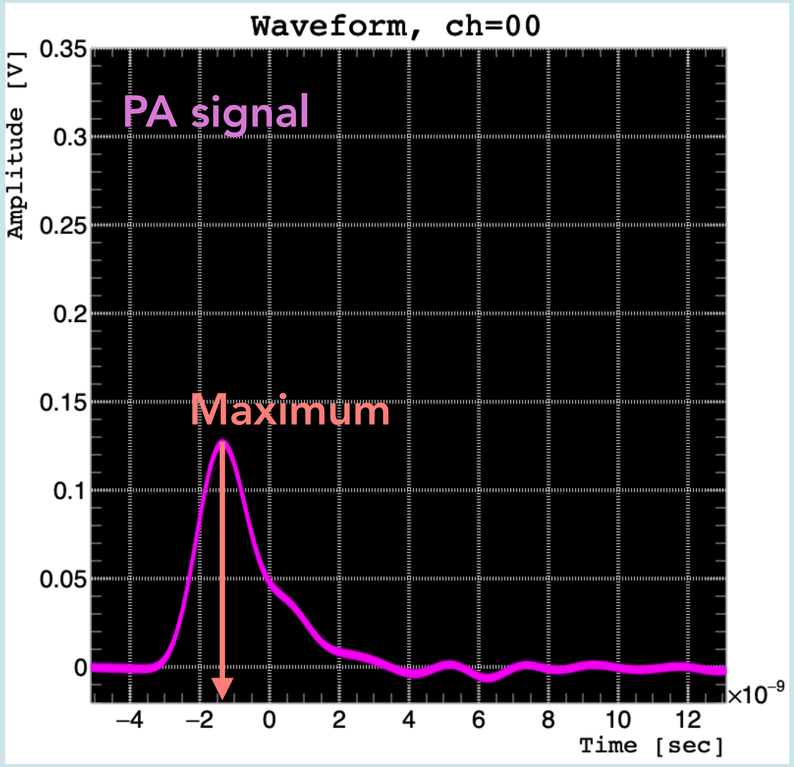


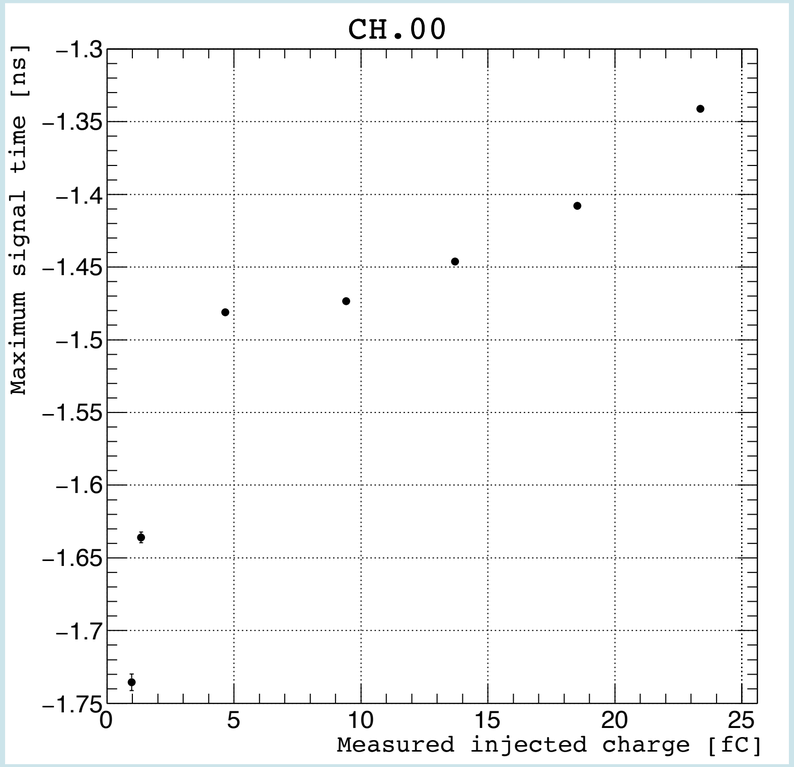


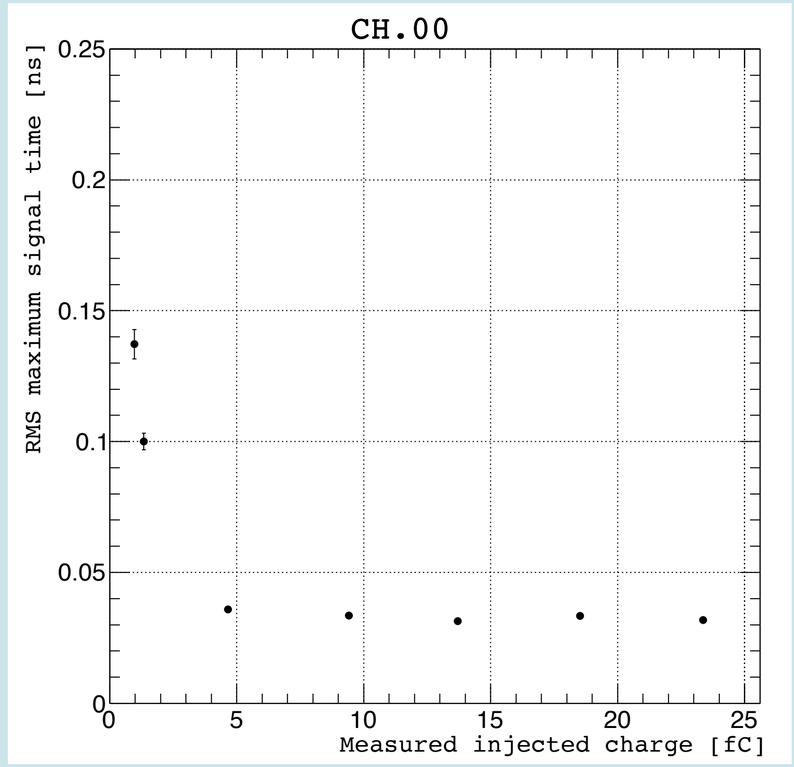


- Signal amplitude is proportional to the injected charge but it is not the perfect linear function
- The RMS is very stable and no dependence of the amount of charge has been observed

Maximum PA signal timing

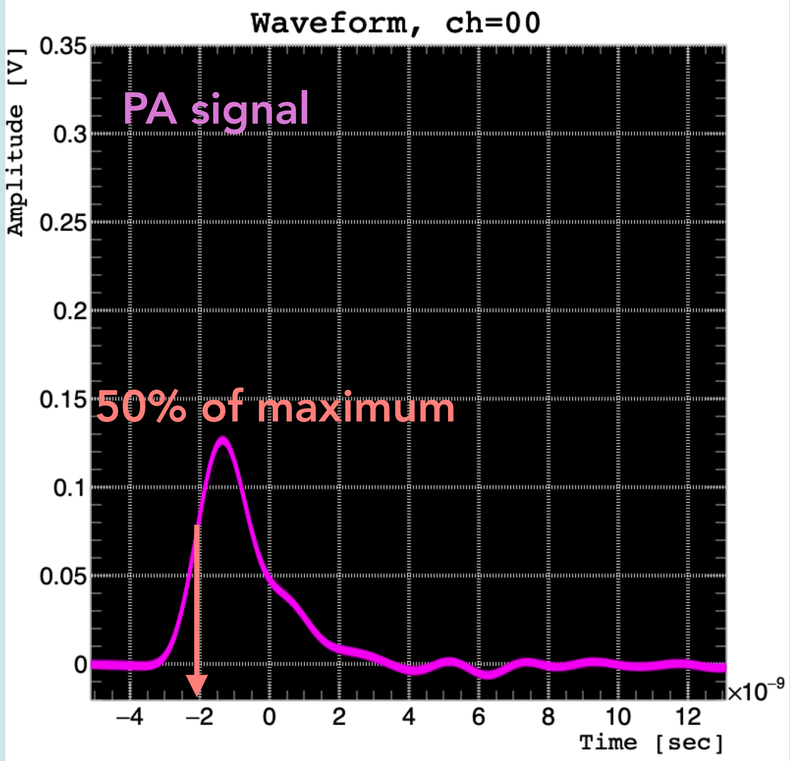


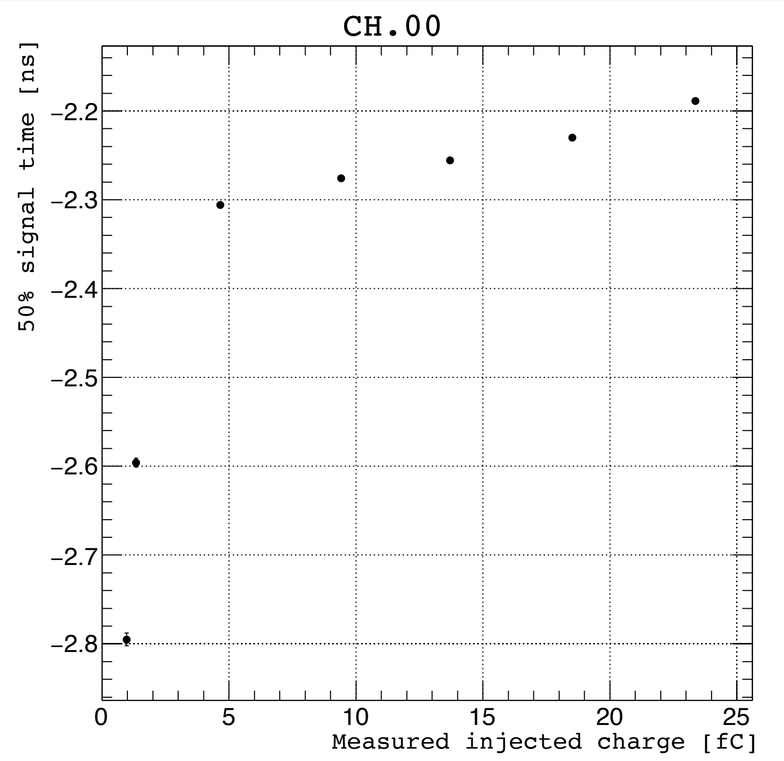


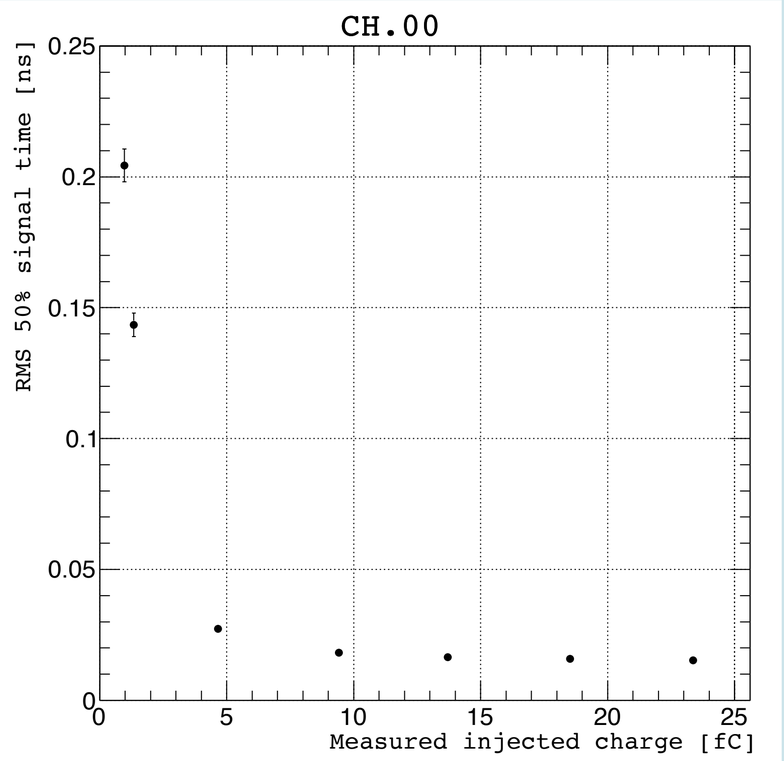


- Signal time of arrival increases rapidly for small charges and slowly for 5 fC and above
- The arrival time above 5 fC is stable and it is found to be σ~33ps (above 5 fC)
- This timing RMS is a quadratic sum of PA and charge injection timing

50% of maximum PA signal timing

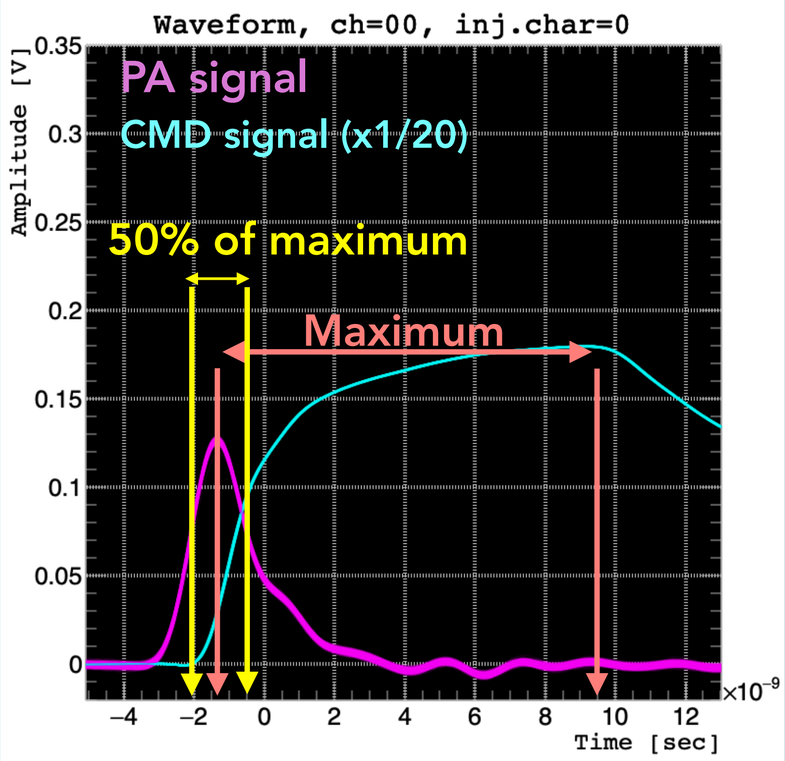


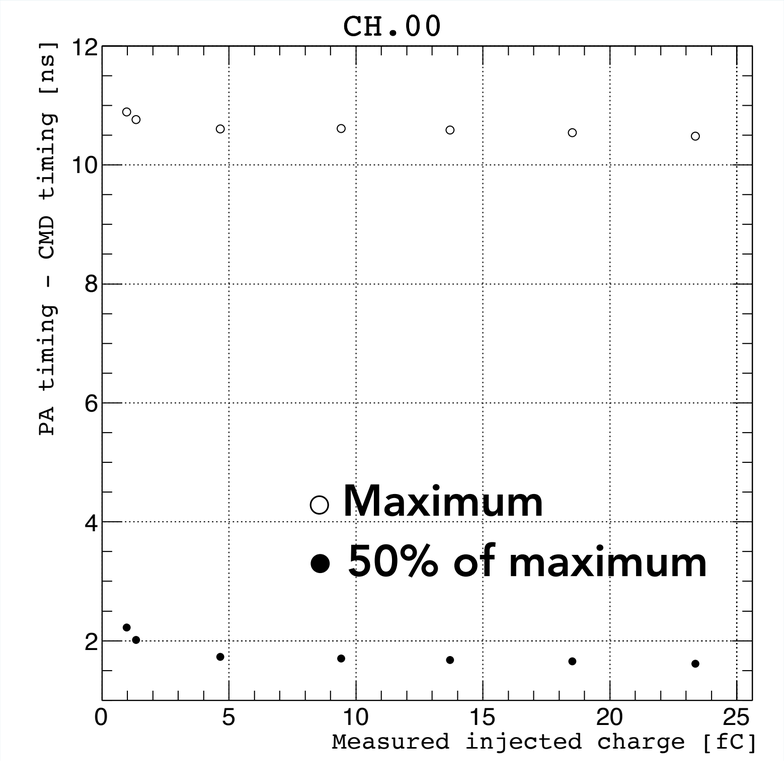


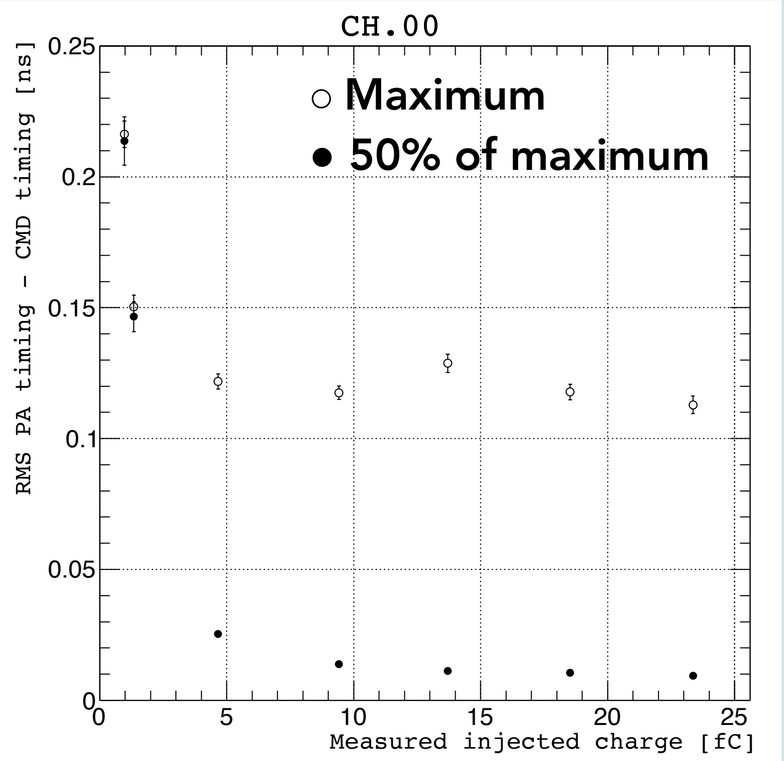


- Signal time of arrival increases rapidly for small charges and slowly for 5 fC and above
- The arrival time above 5 fC is stable and it is found to be σ~16ps (above 5 fC)

Timing difference between CMD and PA







- Time difference between CMD and PA signal increases at small amount of injected charges
- The RMS of maximum and 50% of the maximum are found to be σ~119 ps and 11 ps, respectively