

Pulse shape stability - Chip1

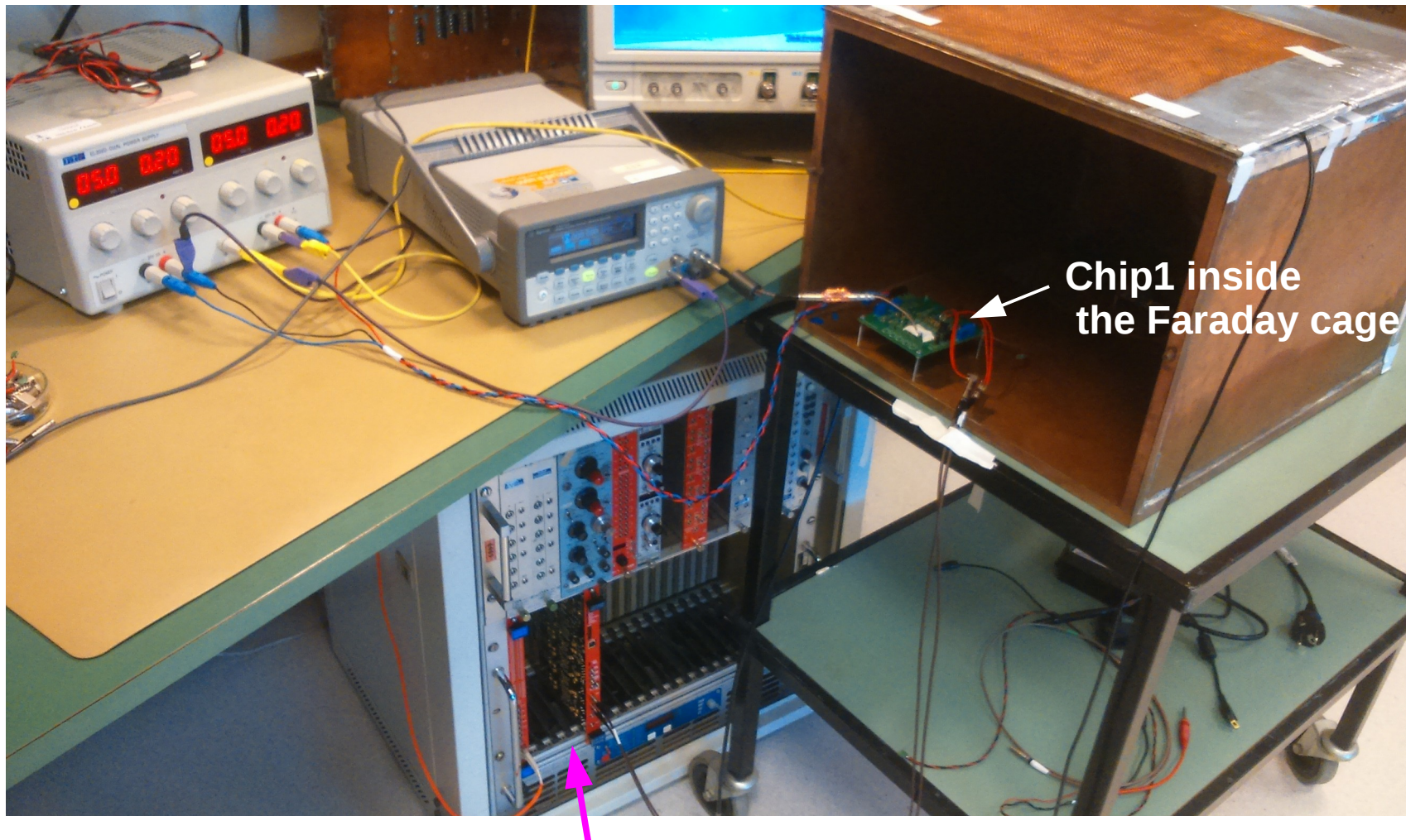
SAMPA test meeting - 6th May 2015

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On Behalf of Norwegian group

Test setup - Chip1



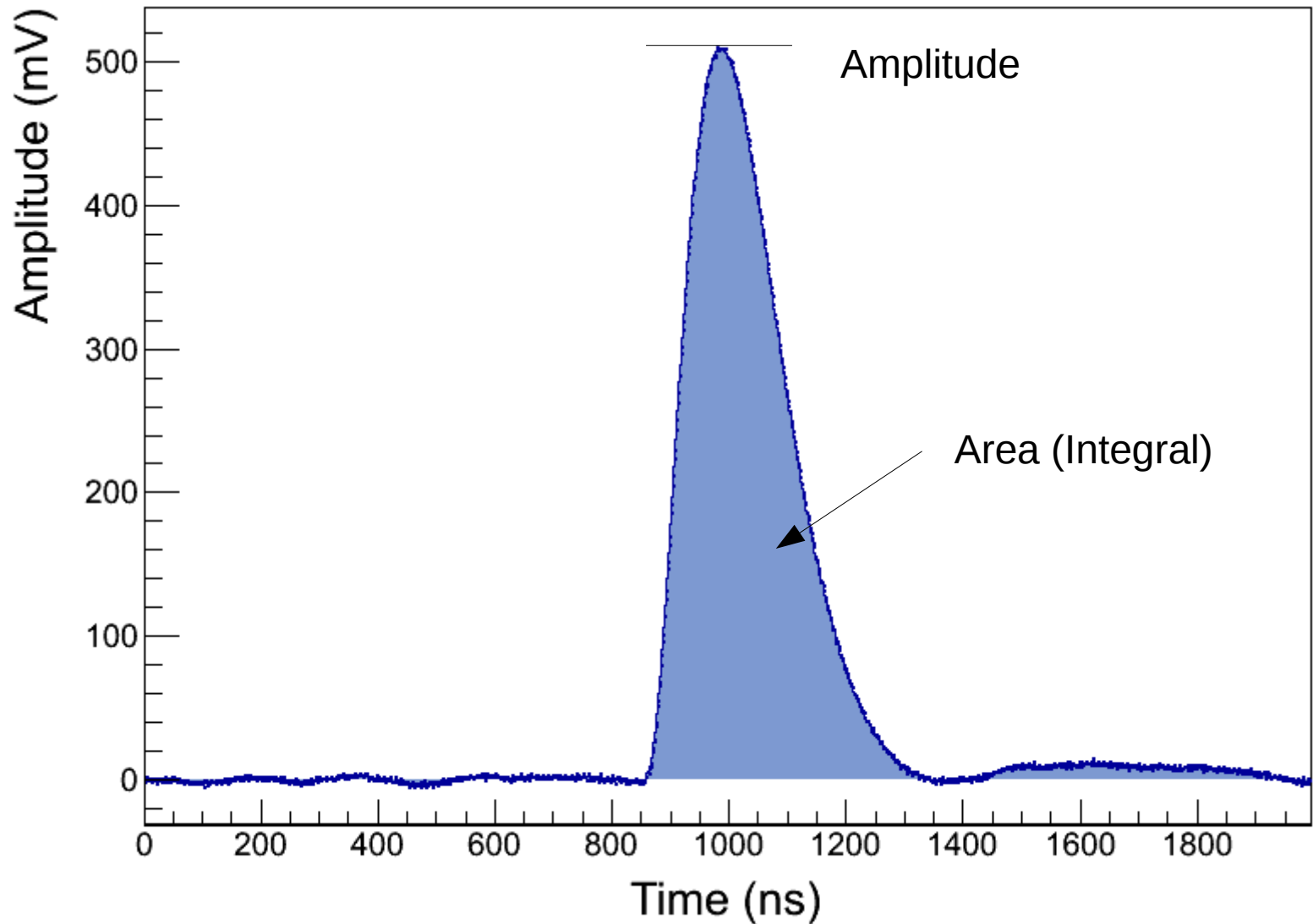
VEM based DAQ system – ADC 14 bit, 1 GS/s

- **Pulse generator settings:**
 - Ramp shaped waveforms with 10 kHz frequency
 - Amplitude varied from 2 mV to 120 mV (2 fC to 120 fC)
- **Chip1-ch#5:** gain 20 mV & 30 mV/fC @160 mV and negative polarity

Procedure

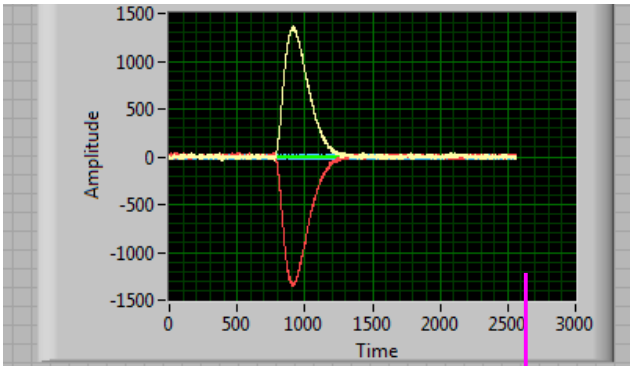
For stable pulse shape

the ratio of Area/Amplitude should be constant

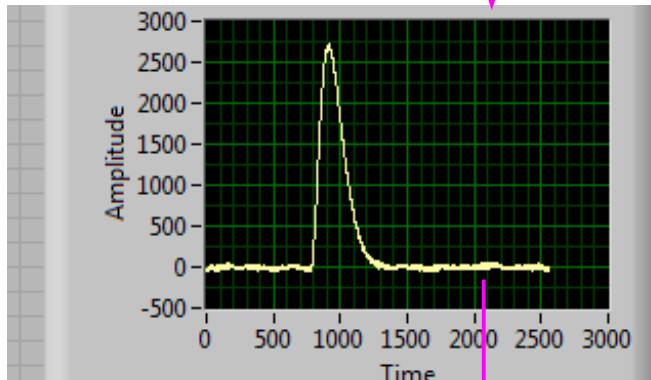


Procedure

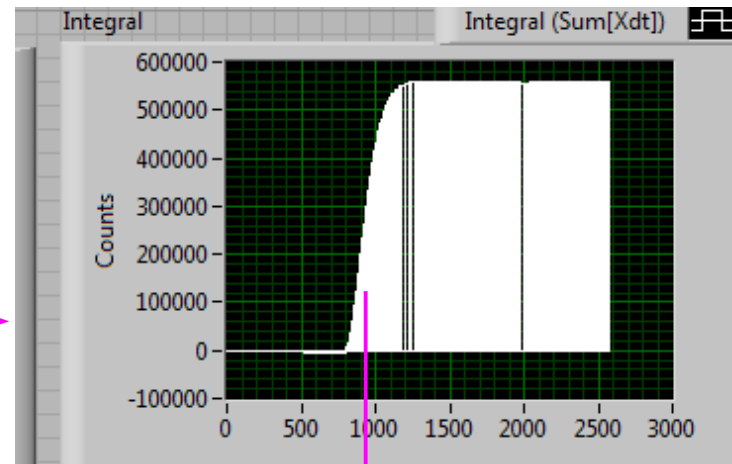
Single ended output



Differential output

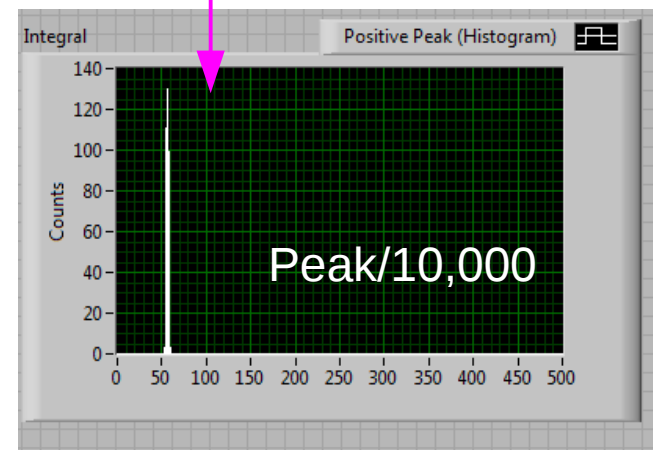
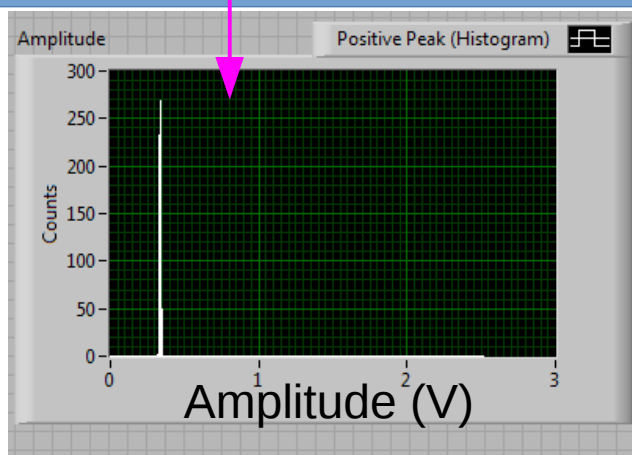


Integral of
diff. signal

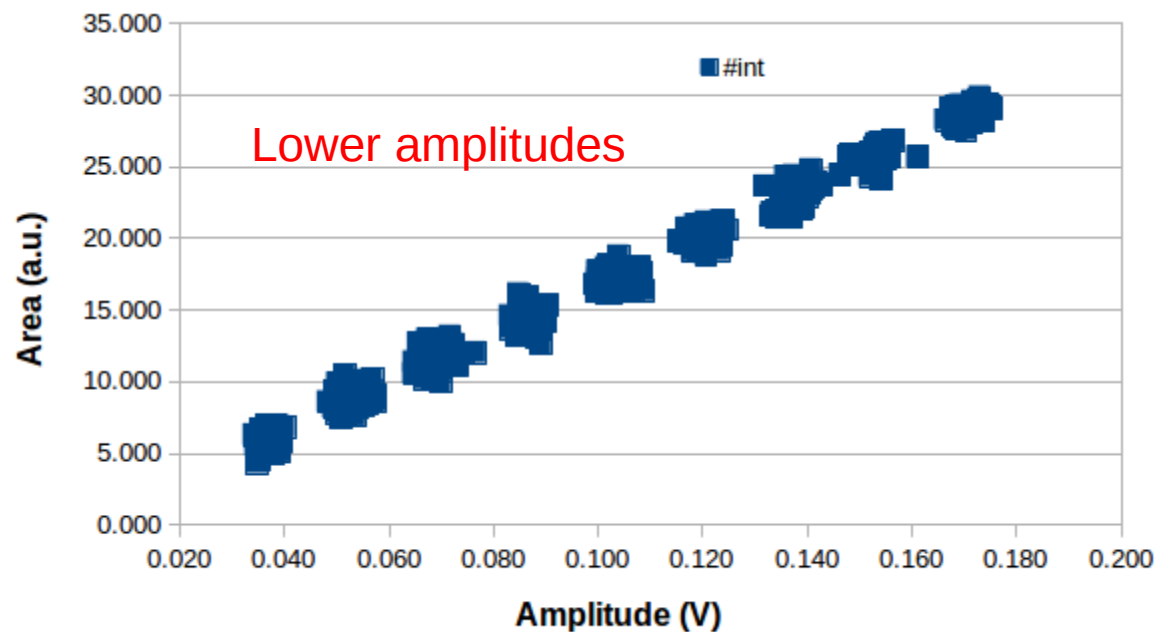


Peak values filled in histogram and
used as area of differential signal

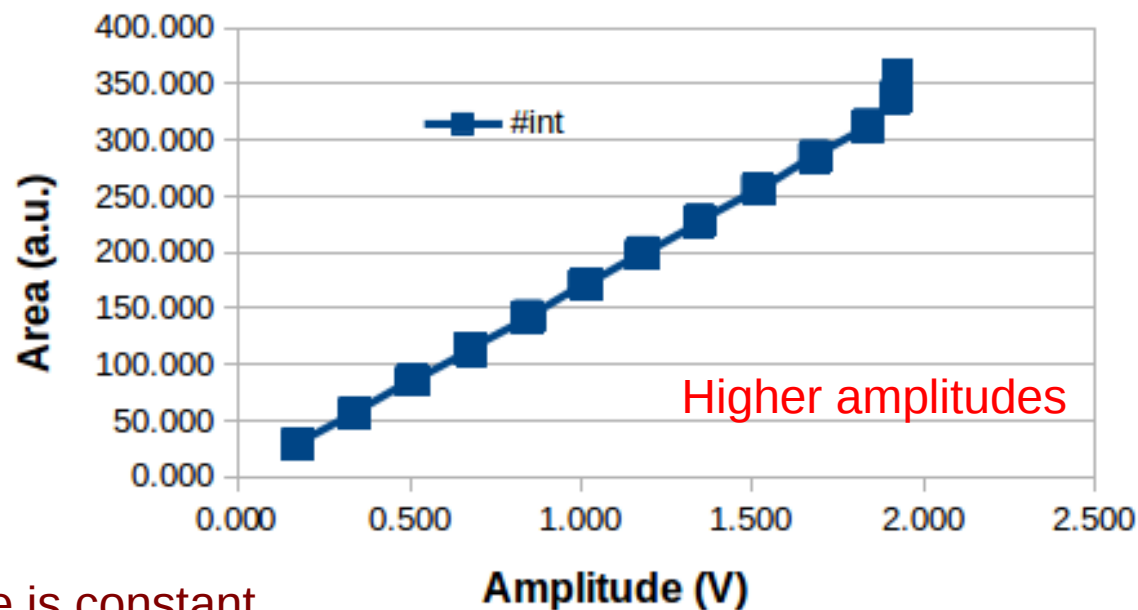
Amplitude of differential signal



Results – Area /amp vs Amp.

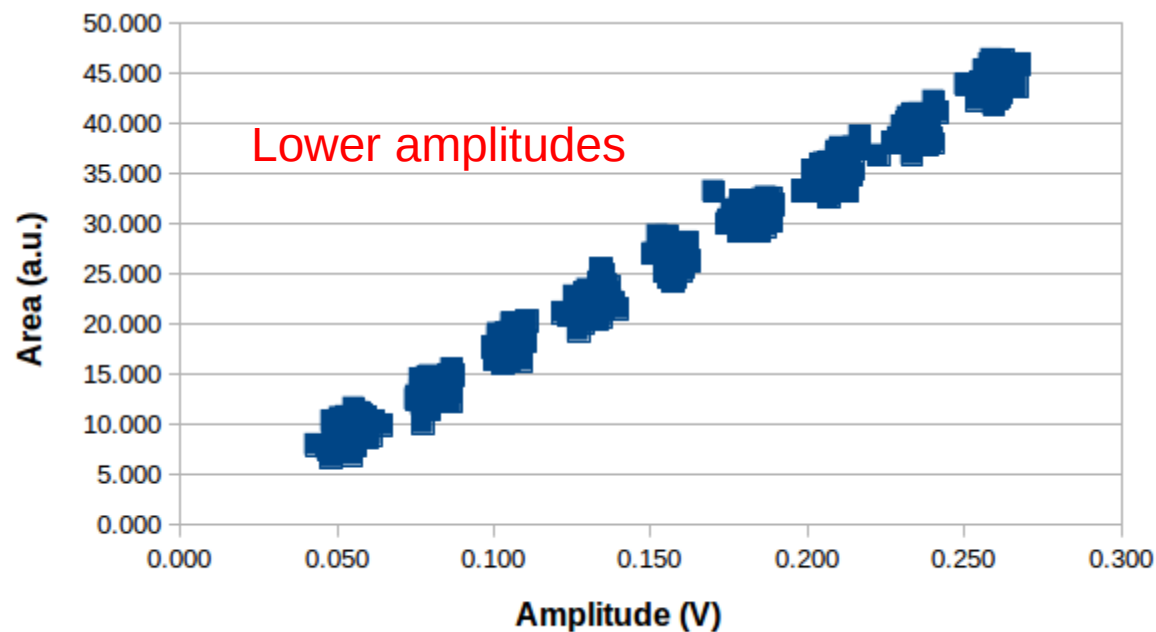


Chip1 gain setting:
20 mV/fC @ 160 ns

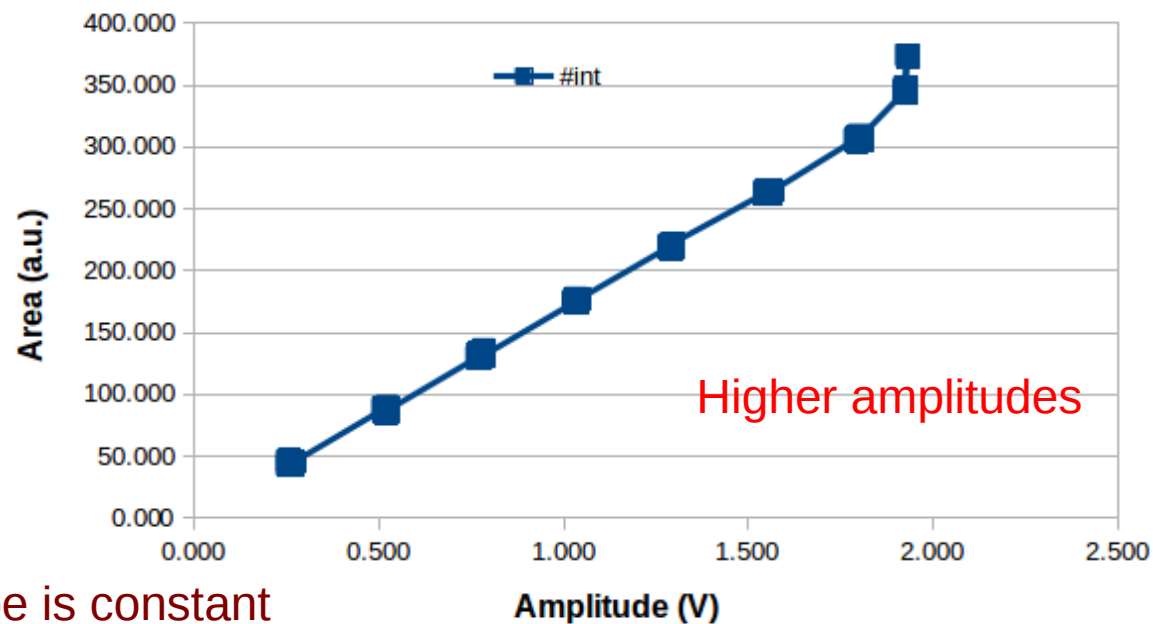


Amp. Vs Area → linear → Pulse shape is constant

Results – Area /amp vs Amp.

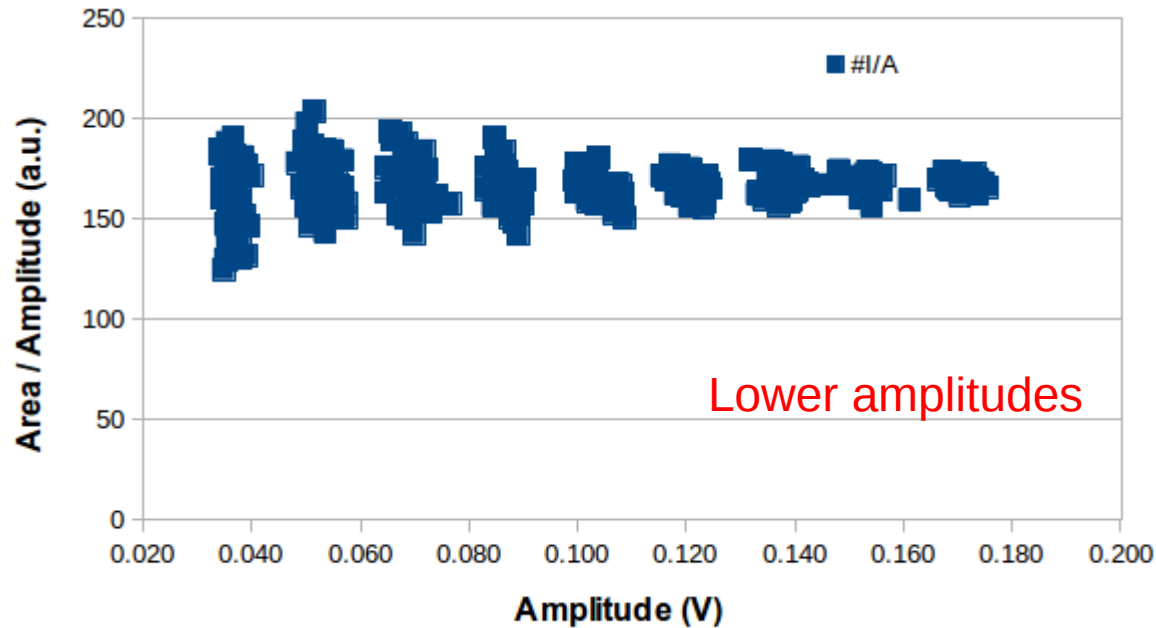


Chip1 gain setting:
30 mV/fC @ 160 ns

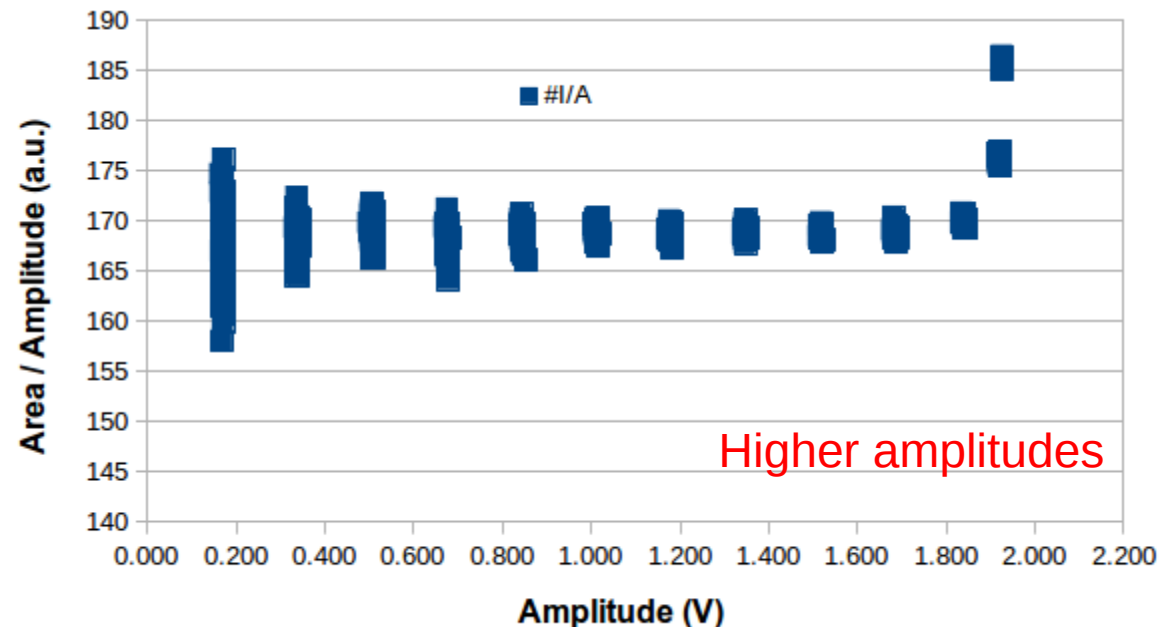


Amp. Vs Area → linear → Pulse shape is constant

Results – Area /amp vs Amp.

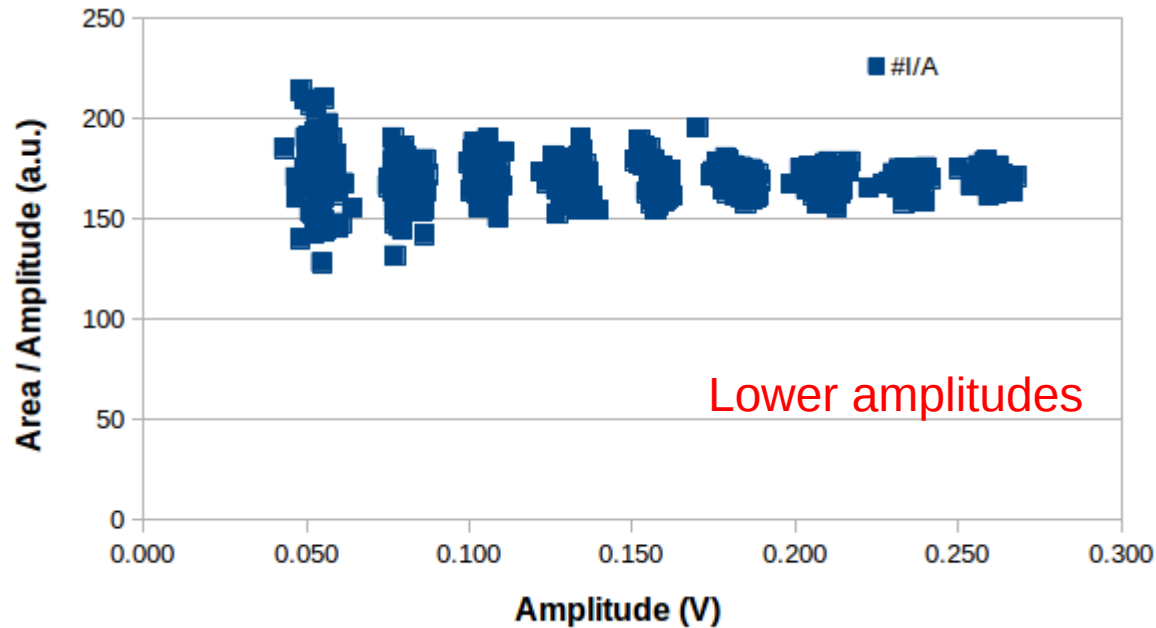


Chip1 gain setting:
20 mV/fC @ 160 ns

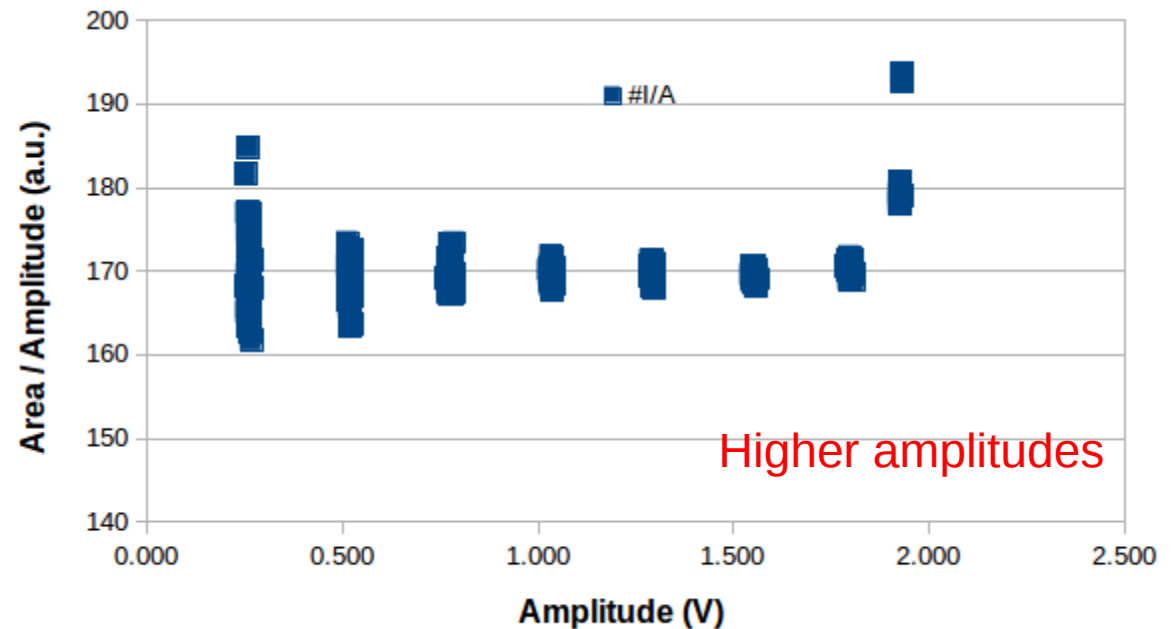


- Pulse shape is stable
- The fluctuations are more for low pulse amplitudes
- SNR is poor for low pulse amplitudes

Results – Area /amp vs Amp.



Chip1 gain setting:
30 mV/fC @ 160 ns



- Pulse shape is constant
- The fluctuations are more for low pulse amplitudes
- SNR is poor for low pulse amplitudes