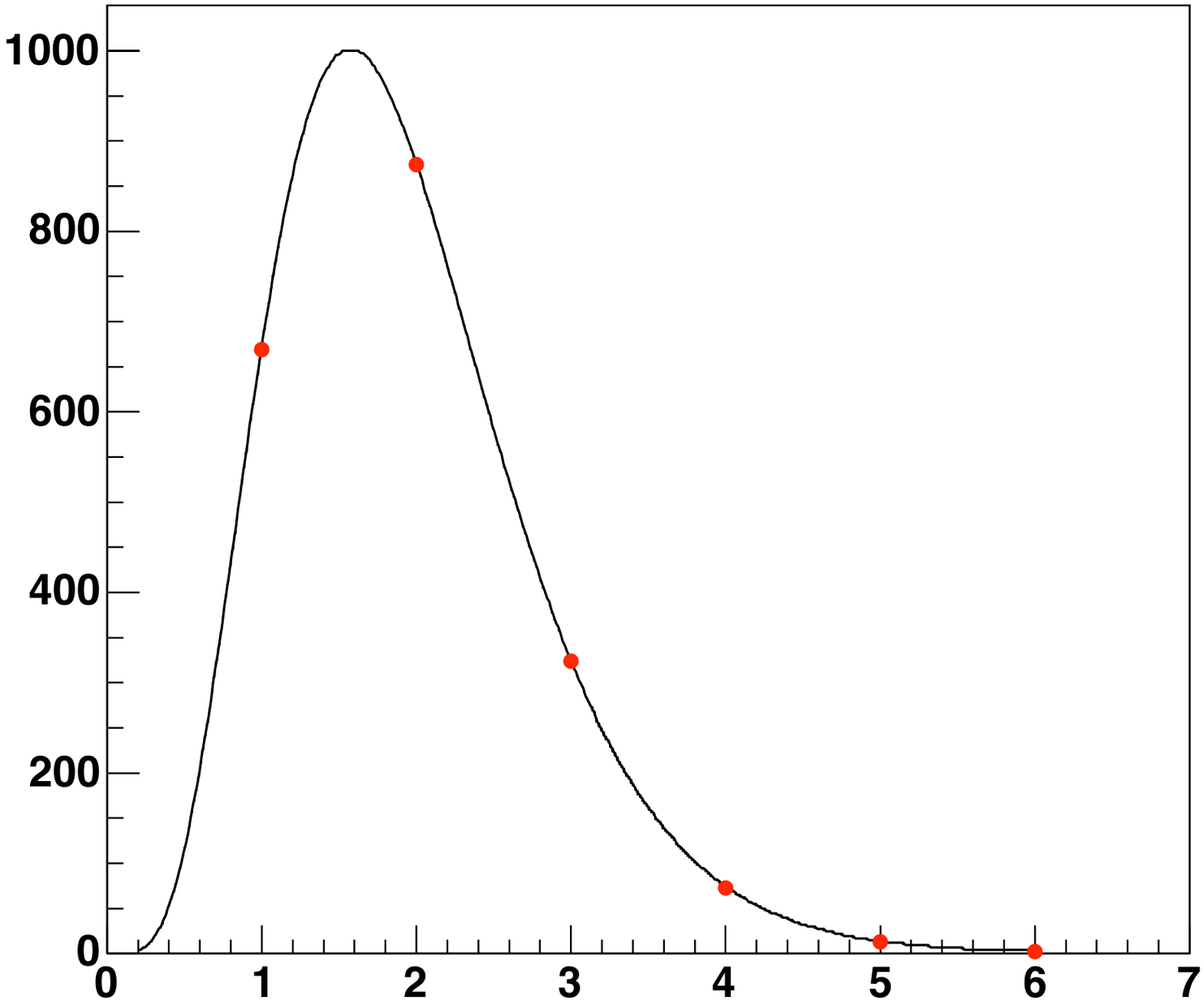
FEE
Characterisation

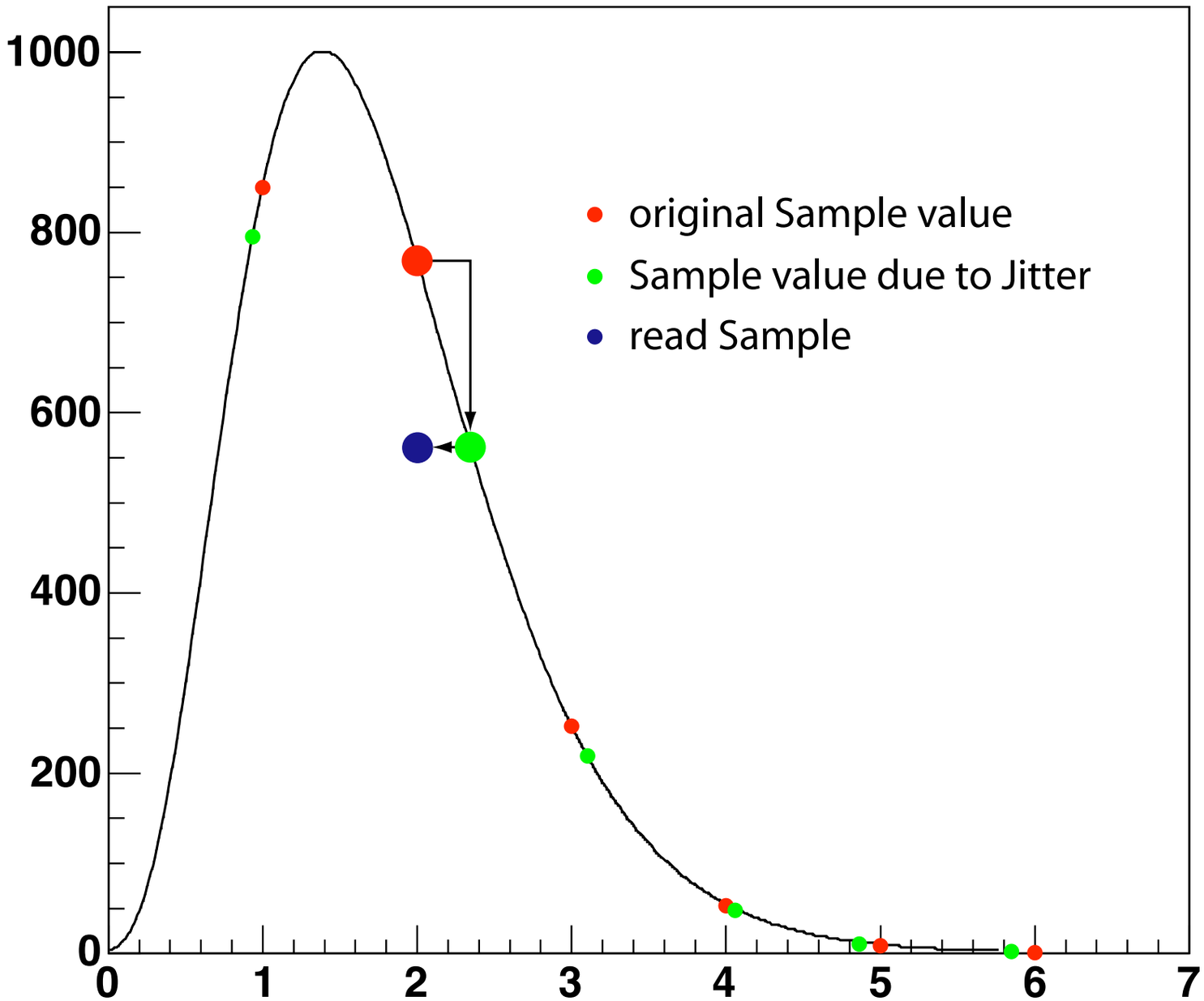
Jitter
Altro Parameters Characterisation

Jitter - Simulation



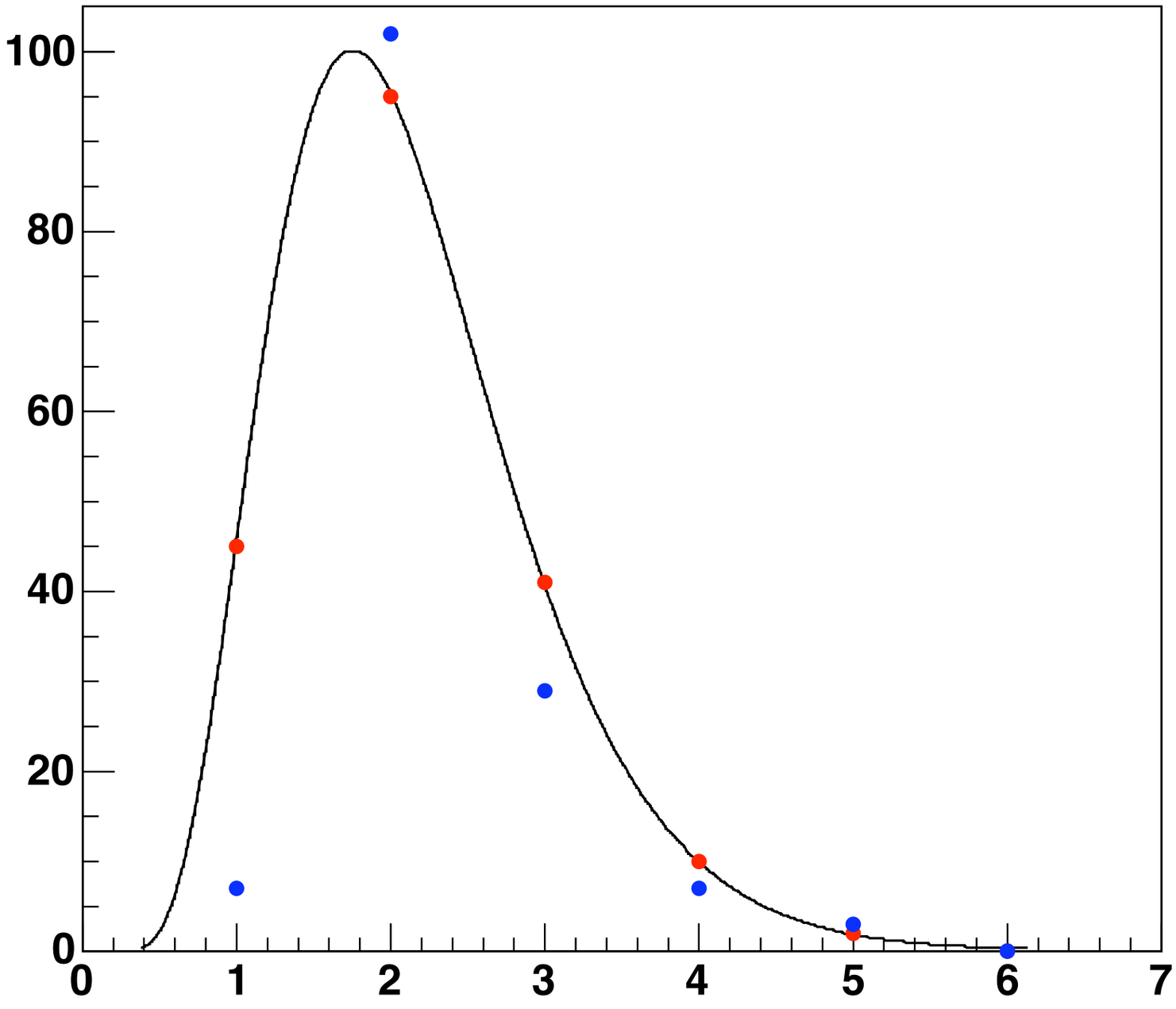
- semi Gauss function
- $25 \leq \text{Amplitude} \leq 1000$
- $-0.5 \leq t0 \leq 0.5$
- $\tau = 1.5$

Jitter - Simulation



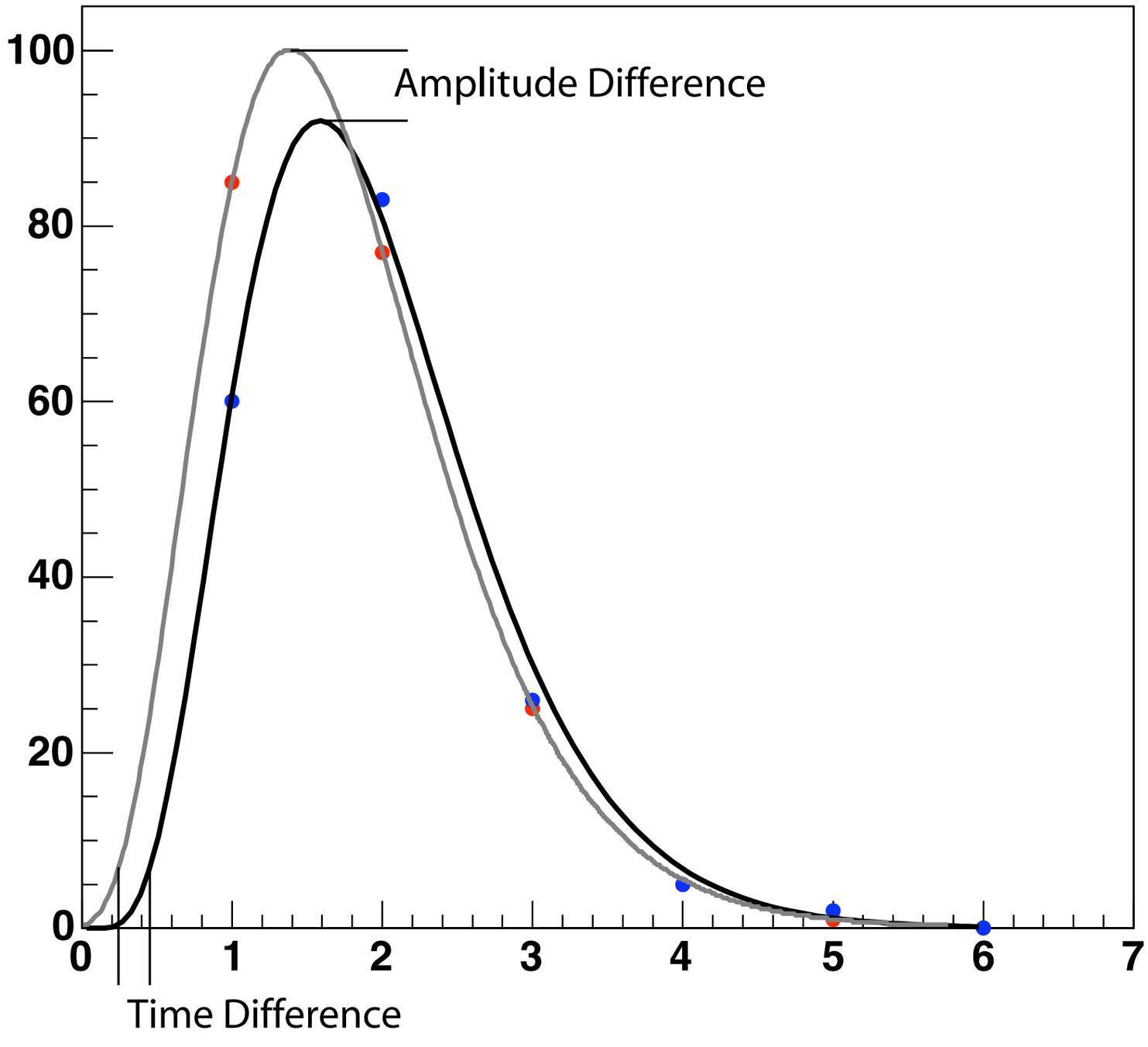
- apply random jitter
  - use gaussian random function
  - take sample at jittered Position
- scan: $0 < \sigma < 2\text{ns}$

Jitter - Simulation



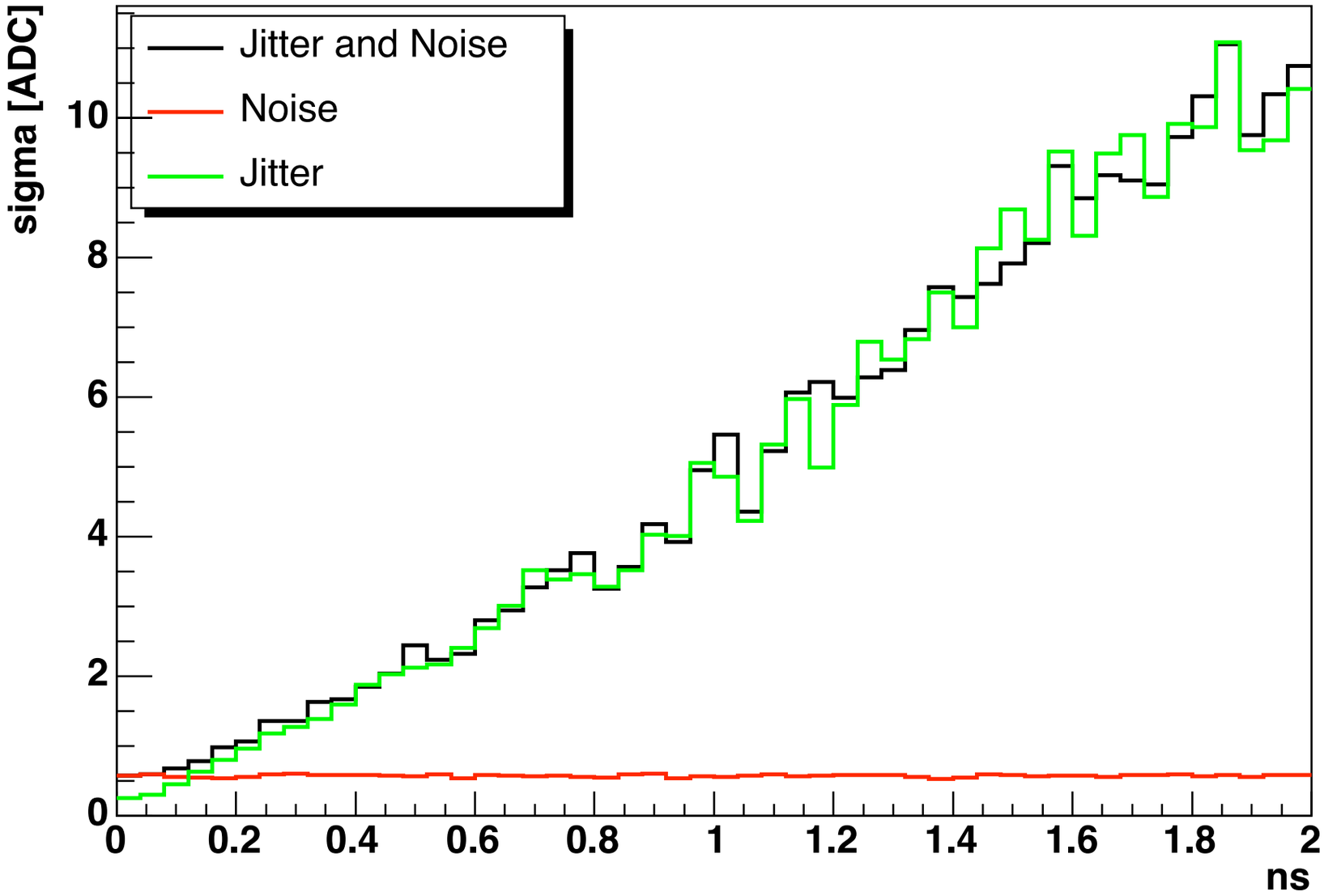
- apply noise to samples
  - gaussian shape
    - $\sigma = 0.6$
    - $\mu = 0$
- add quantisation noise (float -> int)

Jitter - Simulation



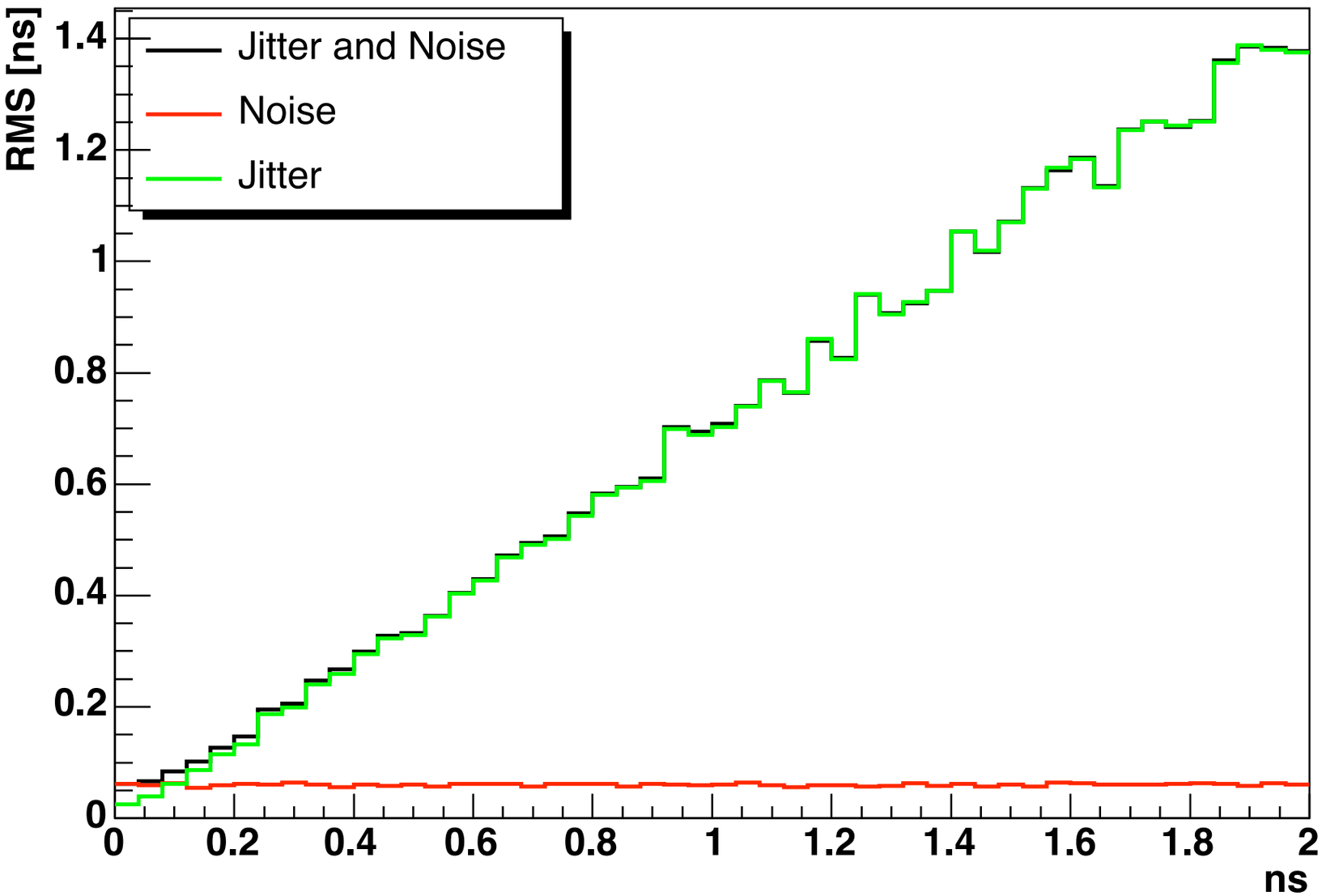
- fit "noised + jittered + quantisised" samples
  - τ fixed
- build difference:
  - Amplitude
  - t0

Jitter - Amplitude



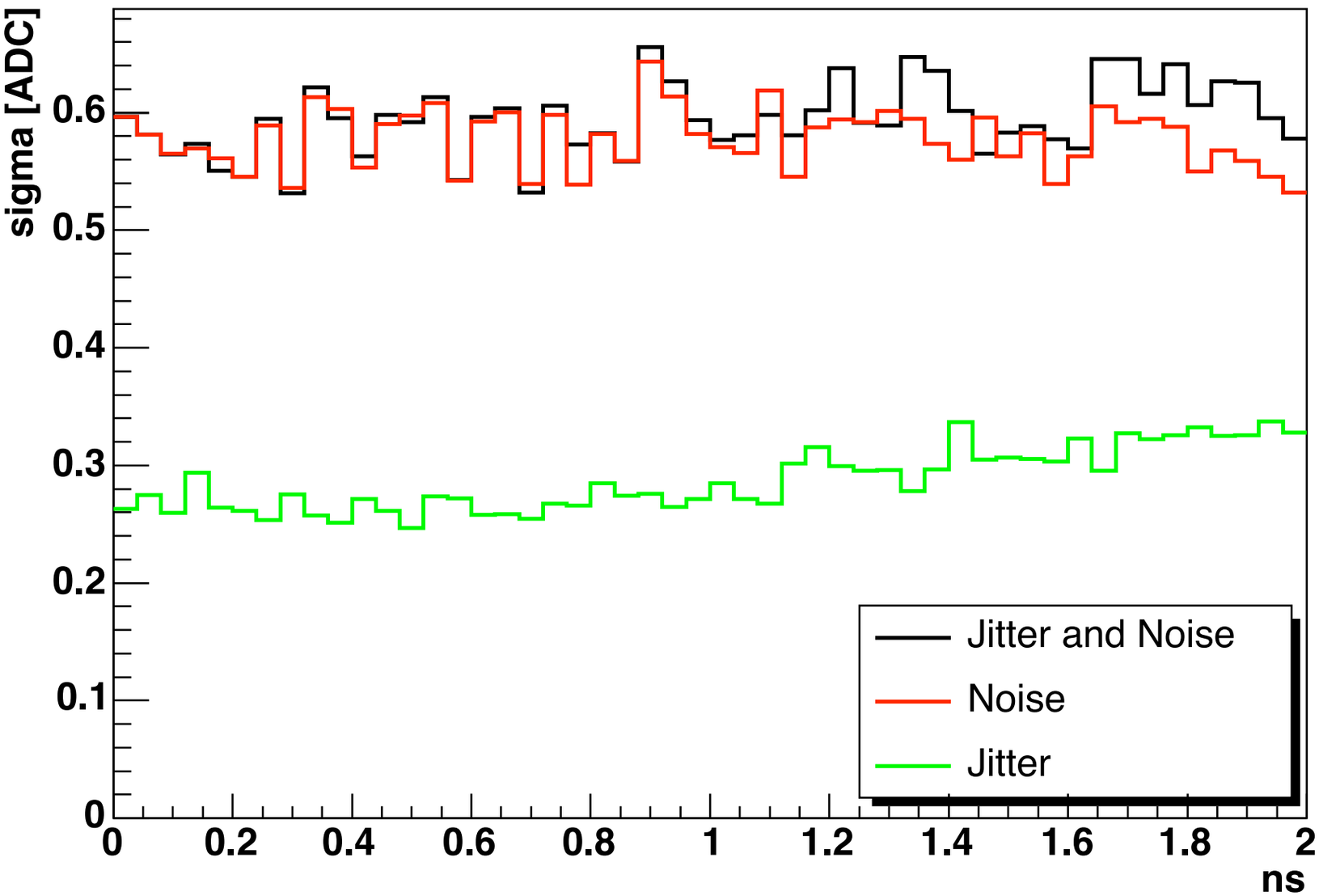
- Amplitude of "input Pulse" = 1000
- -0.5 < t0 < 0.5
- $\tau = 1.5$

Jitter - t0



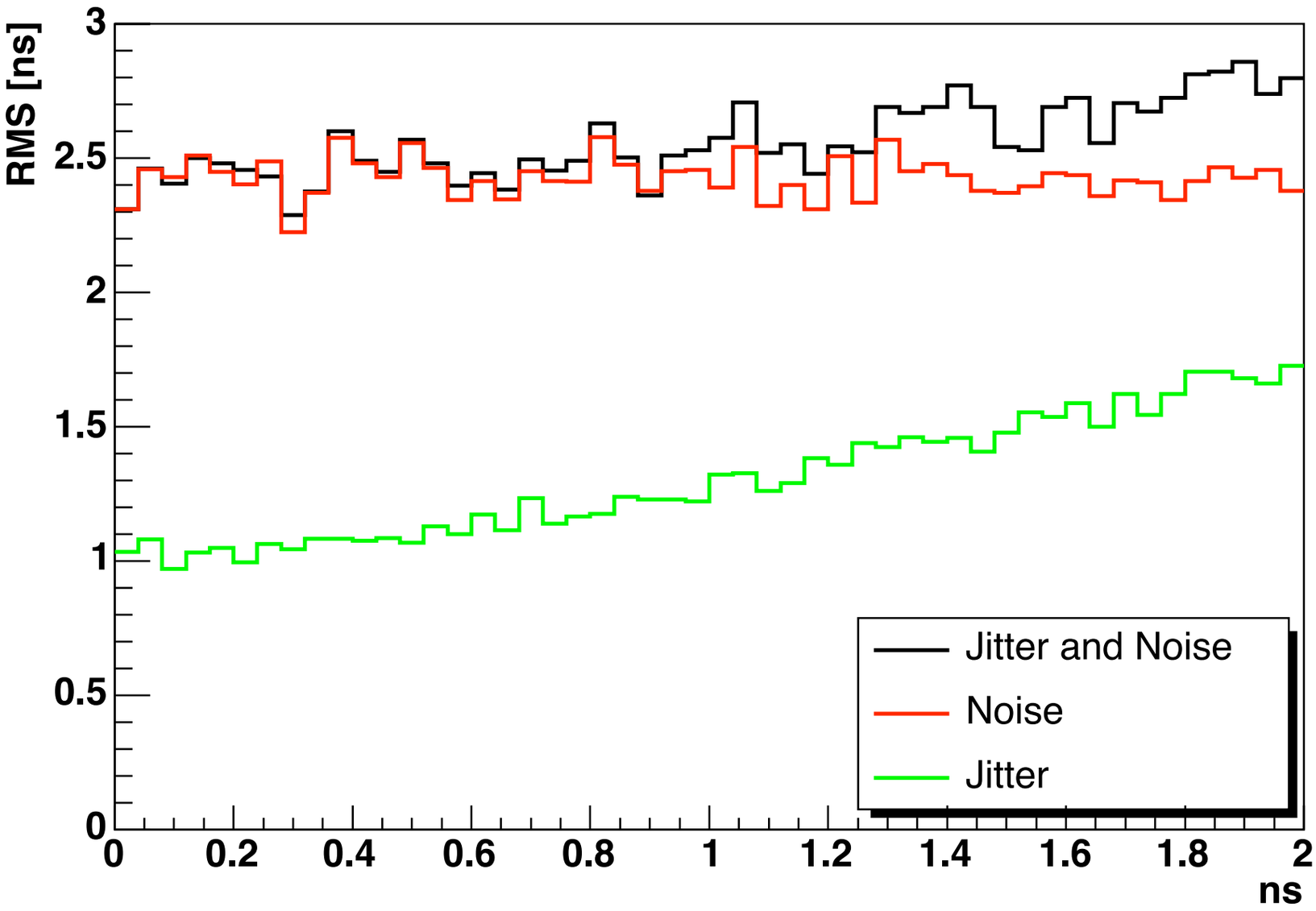
- Amplitude of "input Pulse" = 1000
- -0.5 < t0 < 0.5
- $\tau = 1.5$

Jitter - Amplitude



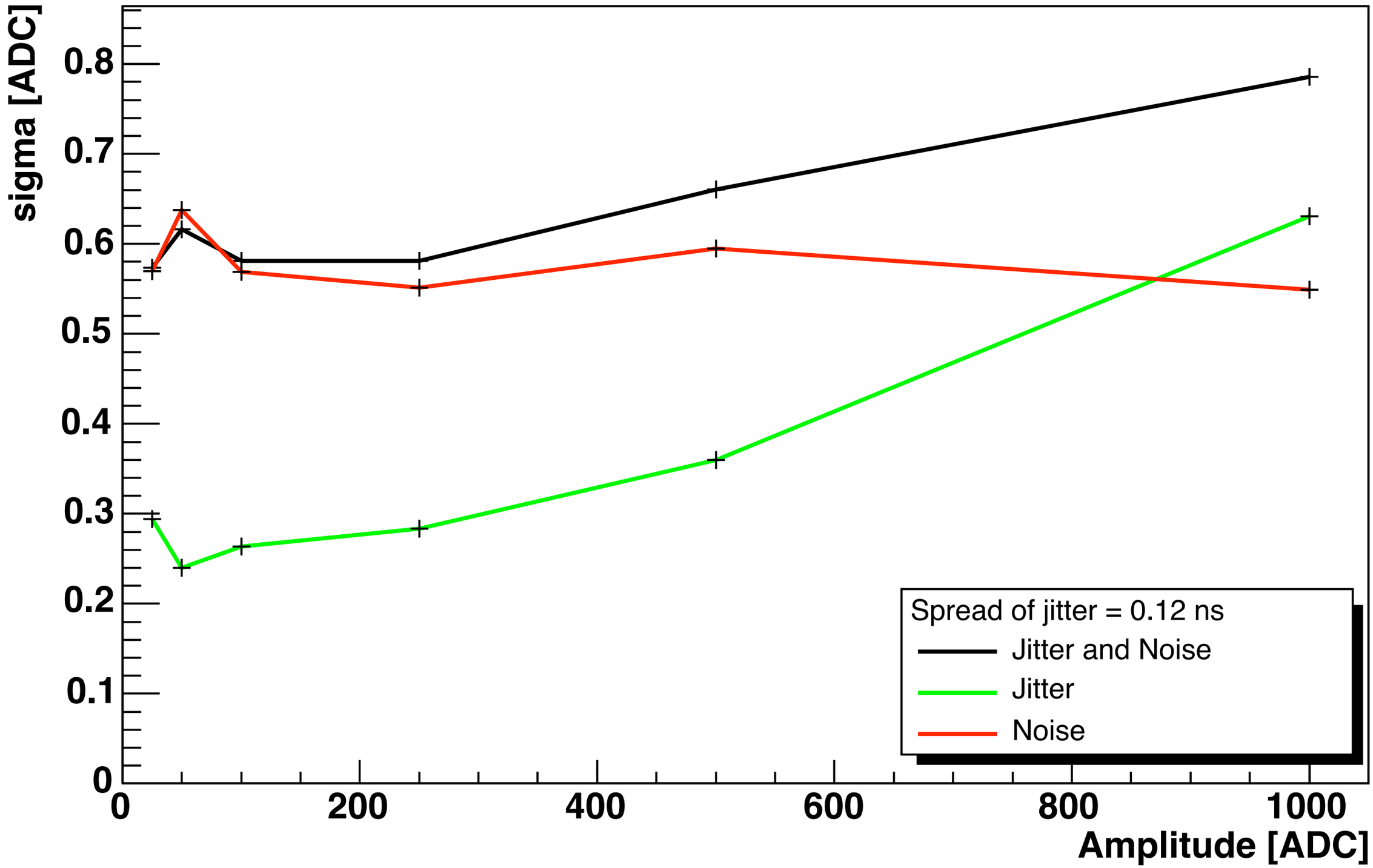
- Amplitude of "input Pulse" = 25
- -0.5 < t0 < 0.5
- $\tau = 1.5$

Jitter - t0

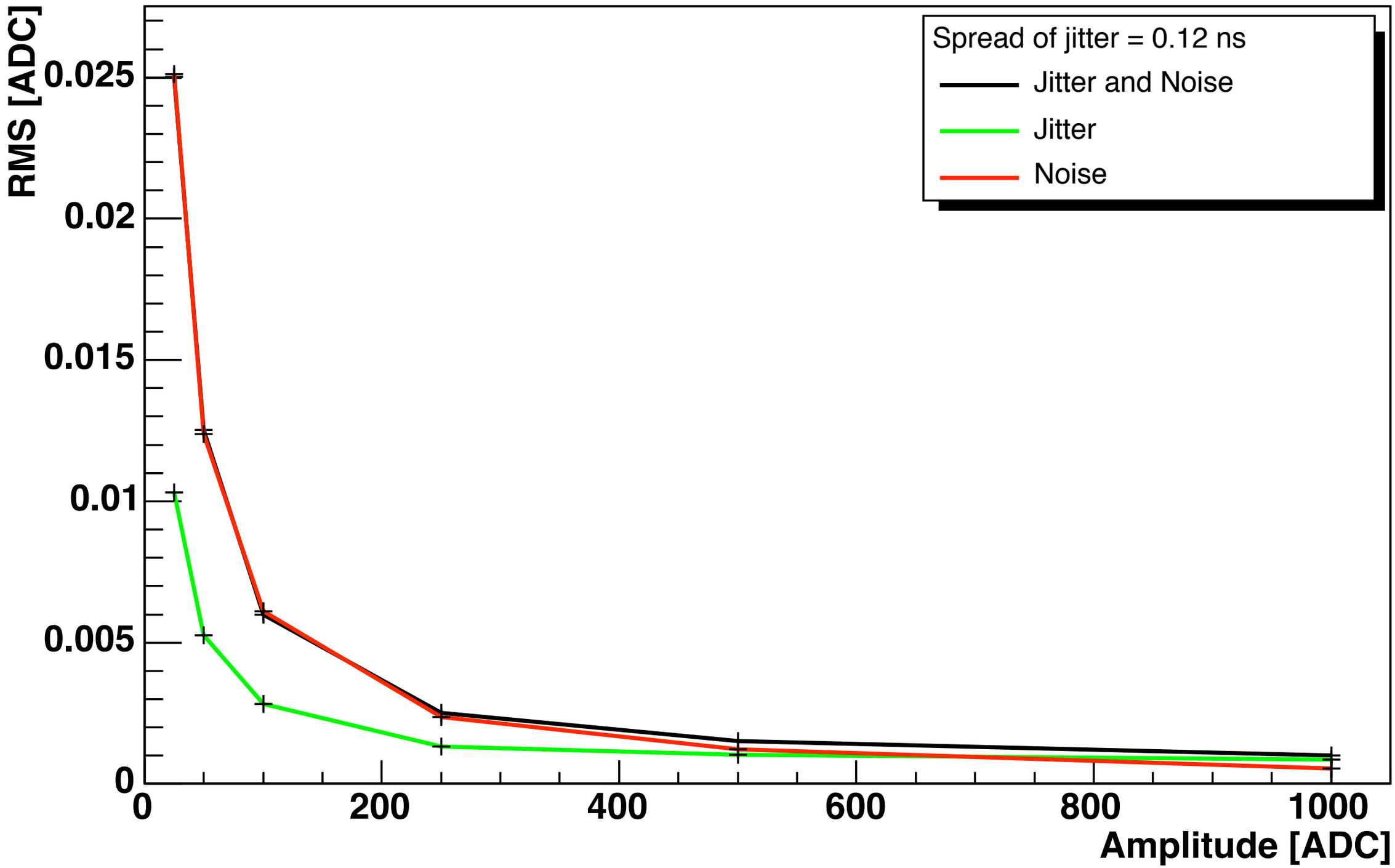


- Amplitude of "input Pulse" = 25
- -0.5 < t0 < 0.5
- $\tau = 1.5$

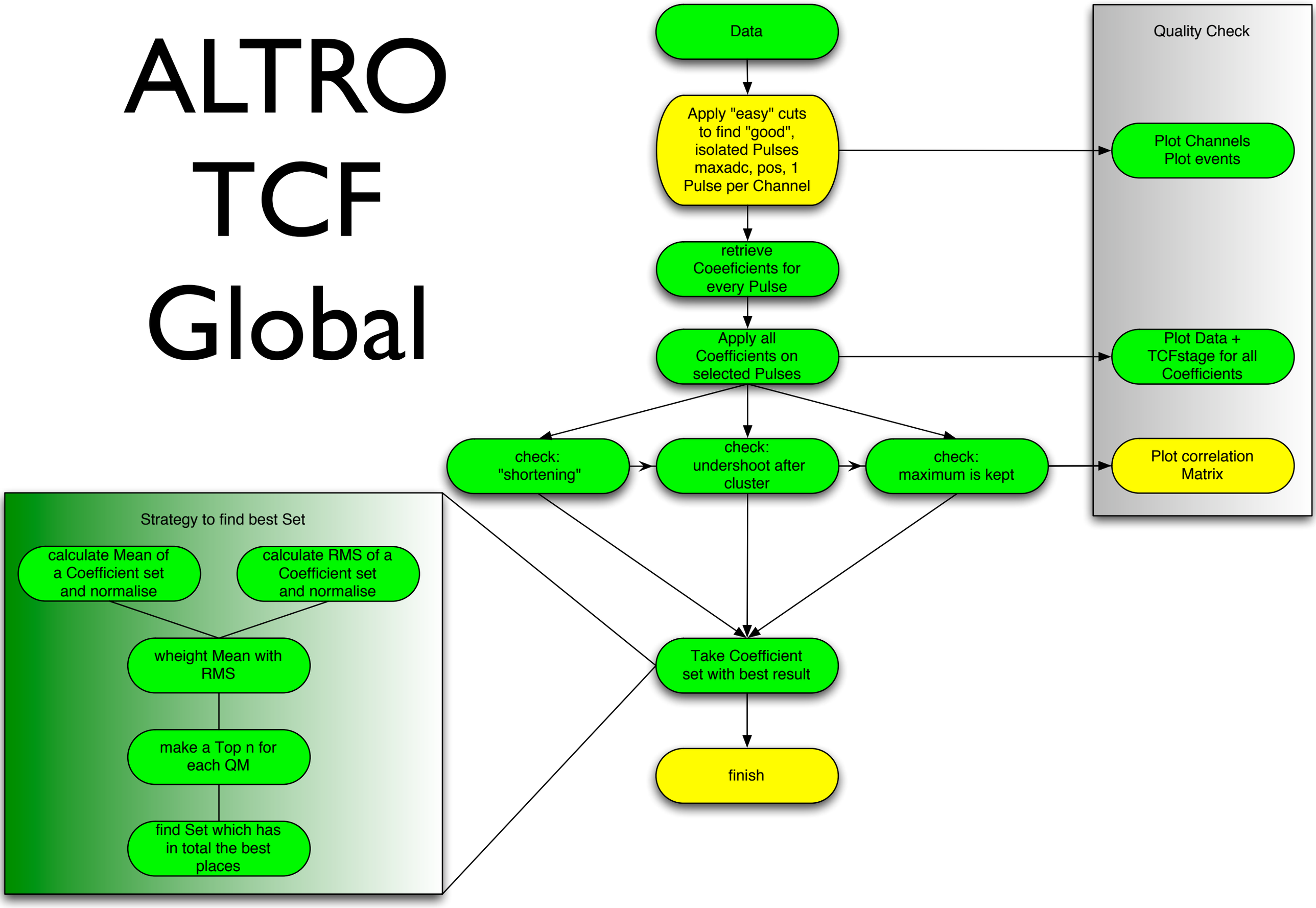
Jitter - Amplitude



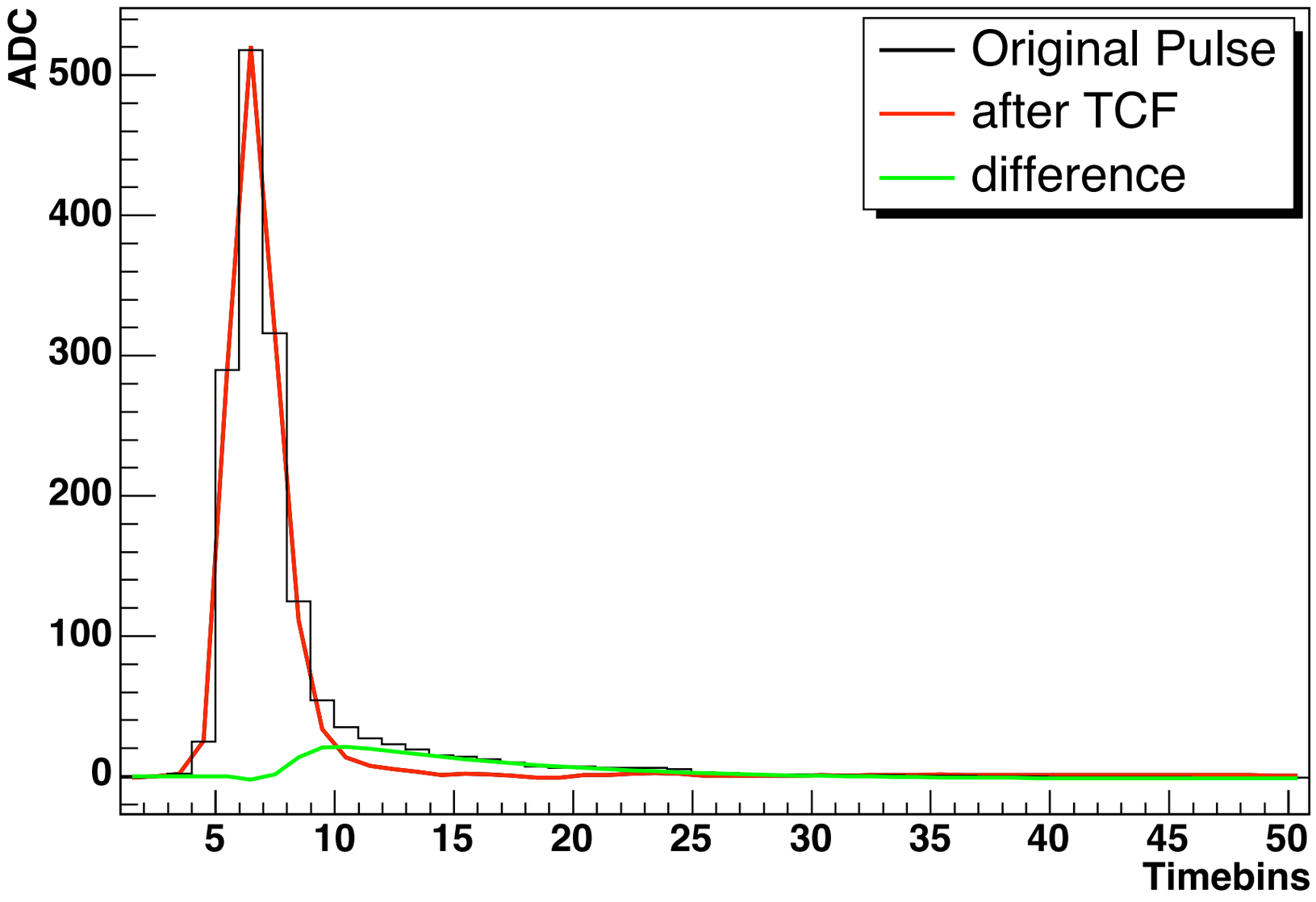
Jitter - t0


RMS [ADC]
0.025
0.02
0.015
0.01
0.005
0
0
200
400
600
800
1000
Amplitude [ADC]
Spread of jitter = 0.12 ns
Jitter and Noise
Jitter
Noise

ALTRO TCF Global



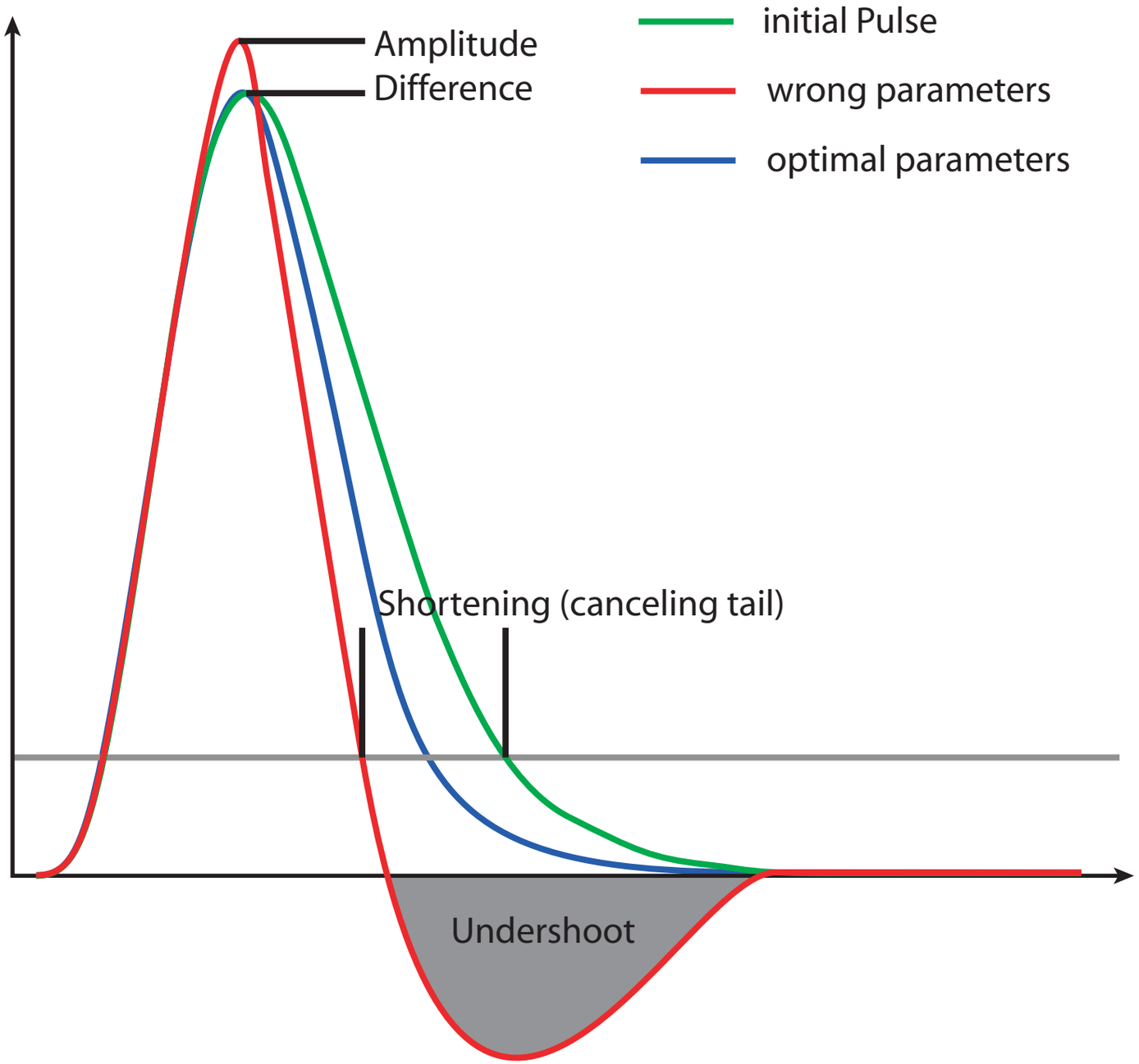
Altro - TCF



- Searched for big Clusters
- applied algorithm to extract Parameters *

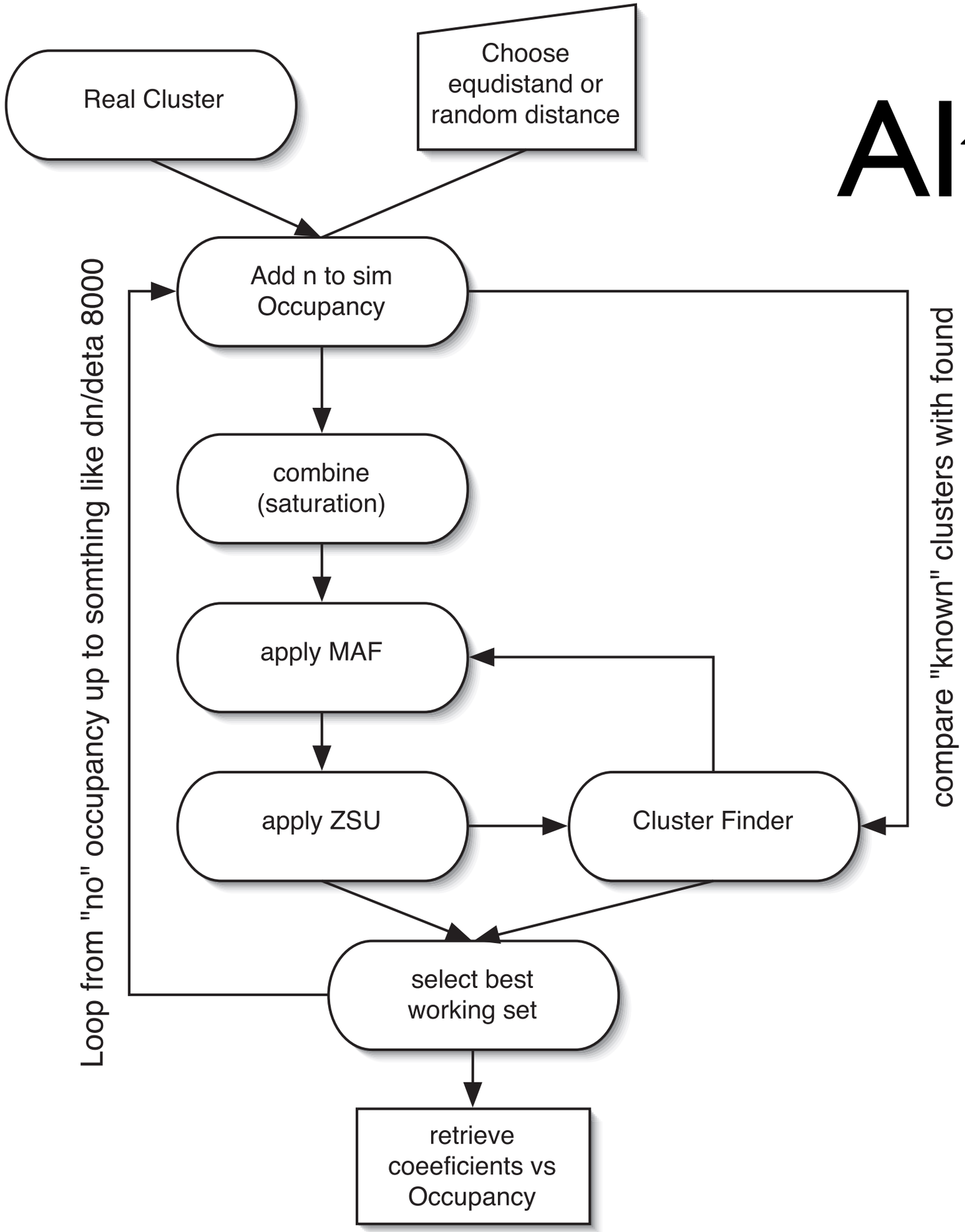
* see Thesis of Bernado Mota

Altro - TCF - QM



- Quality measures:
  - keep amplitude
  - shorten Pulse
  - no undershoot after Pulse
- select “best Set”

Altro - MAF



- first draft of strategy to get the parameters for:
  - MAF
  - ZSU
- keep all Clusters
- optimise compression