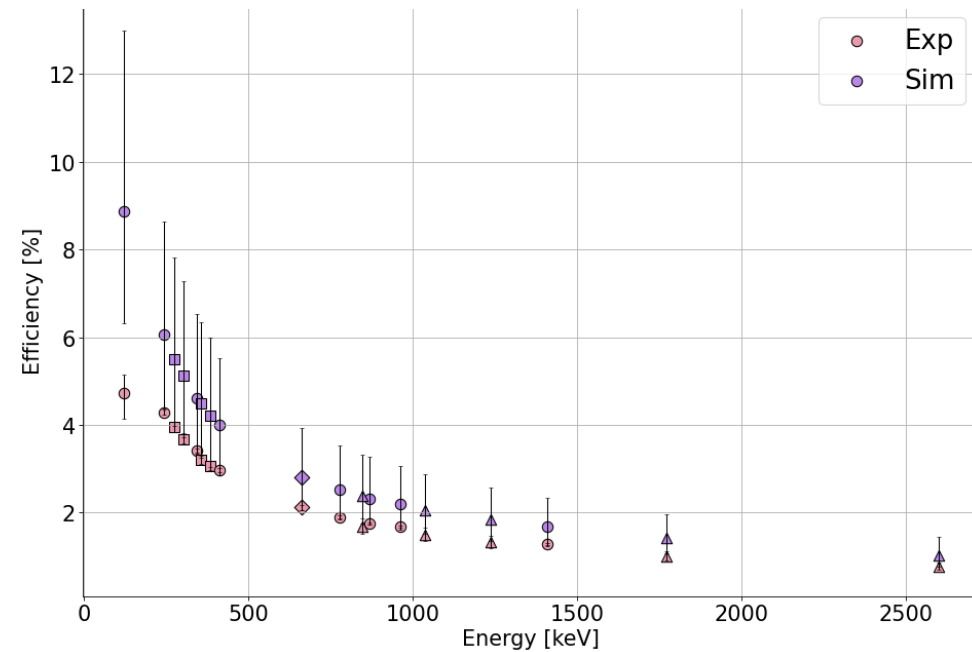


muX meeting 17/01/2024

Marie Deseyn

G4 simulations

G4 simulation

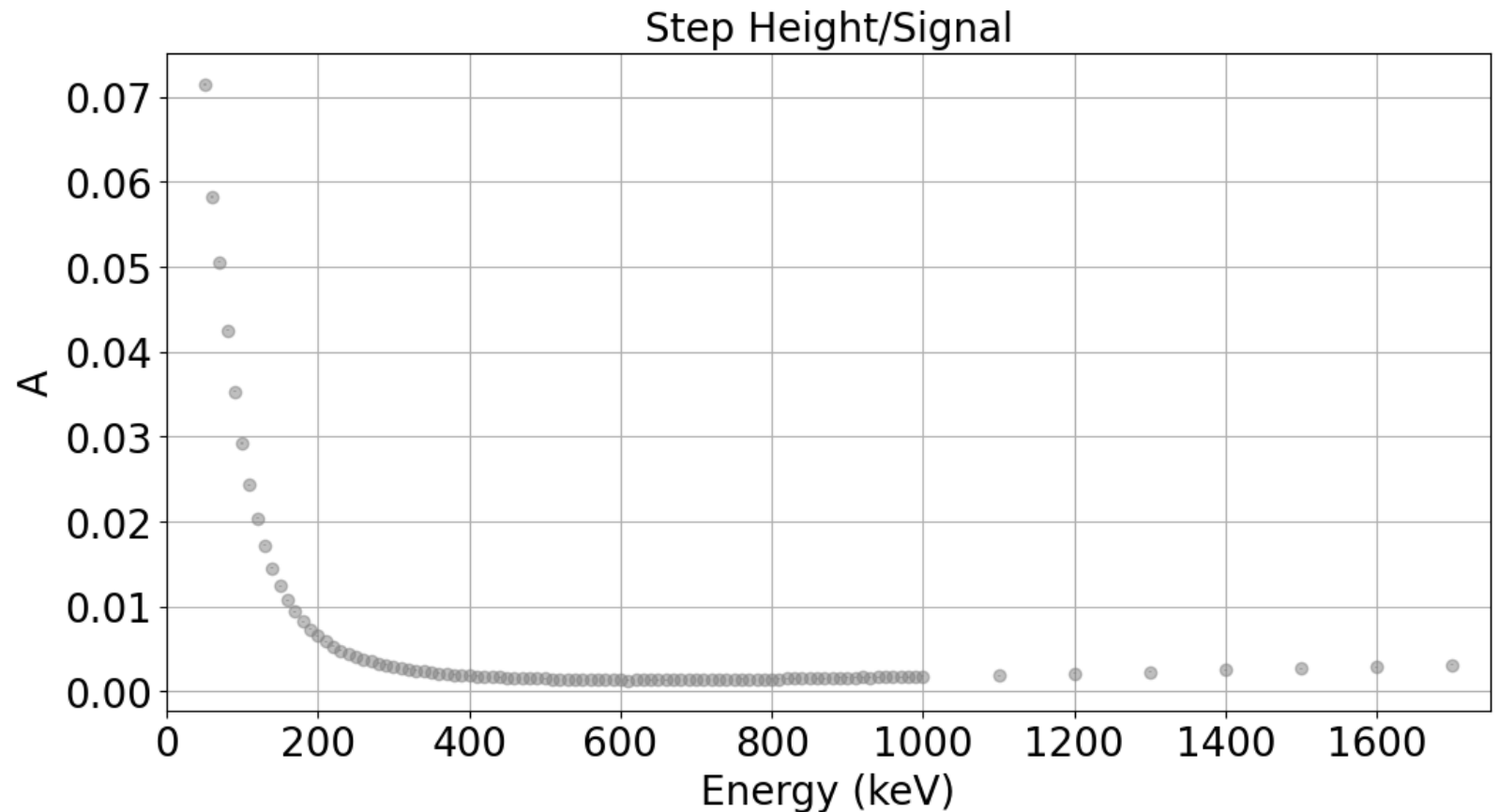


- Simulations mostly agree within 1 sigma with experiment for the efficiency
- Redesign of the scintillator: plan to have weekly meetings with Narongrit + implementing stepping action to see more of the history

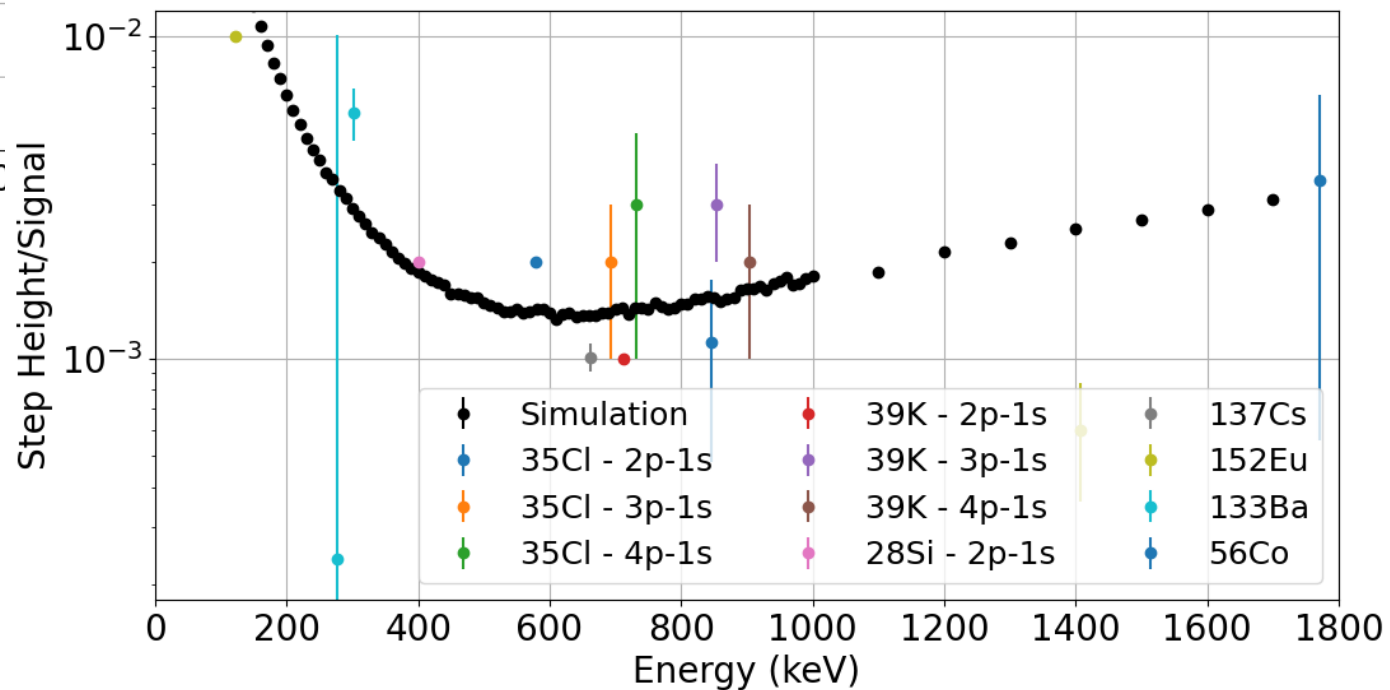
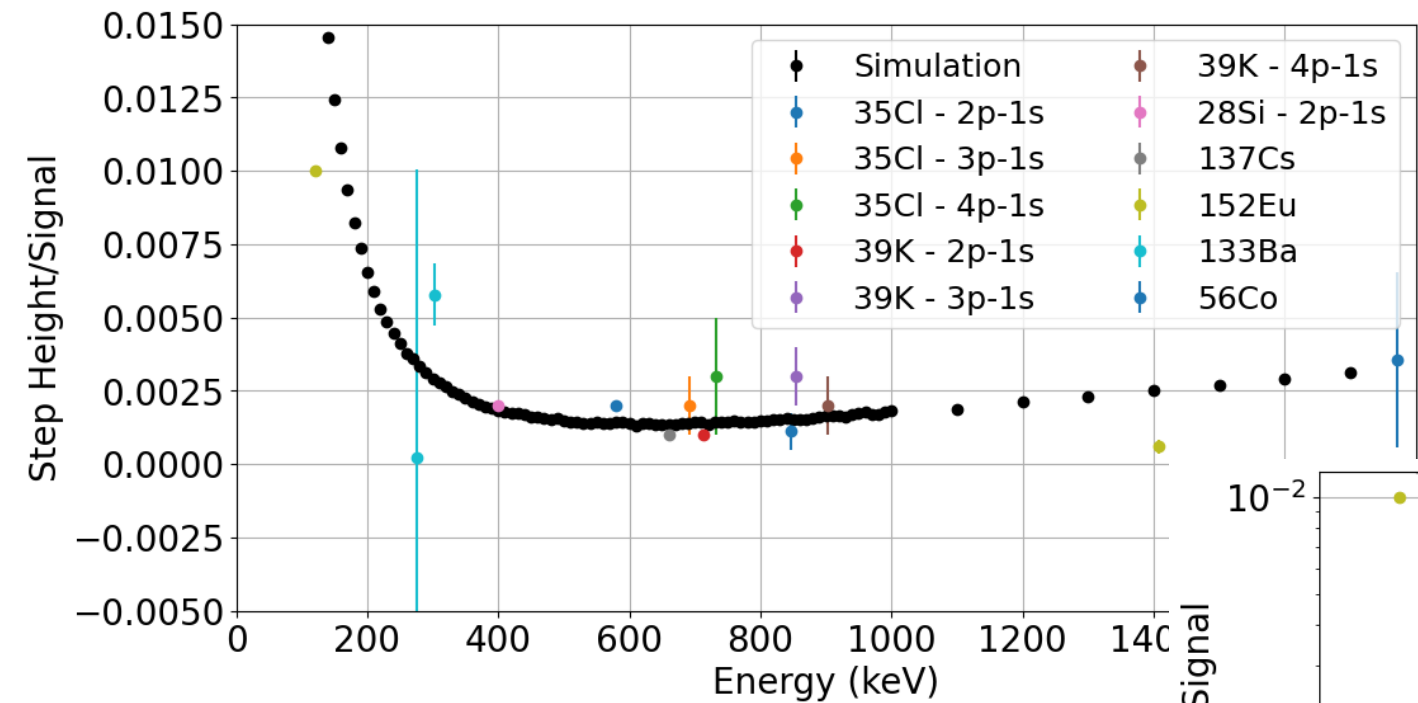
Step size

Step height

- Simulate single energy photons for Leuven75 geometry
- Infinite resolution
- Step/signal
- Trend???



Step height

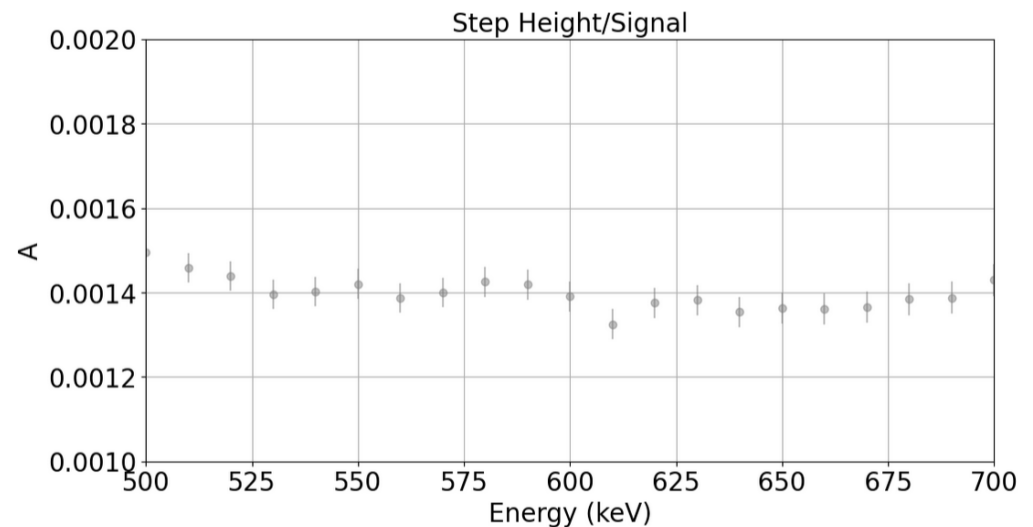


Note: Si 2p-1s E is not yet calibrated fully

Step height – Si data fitting idea

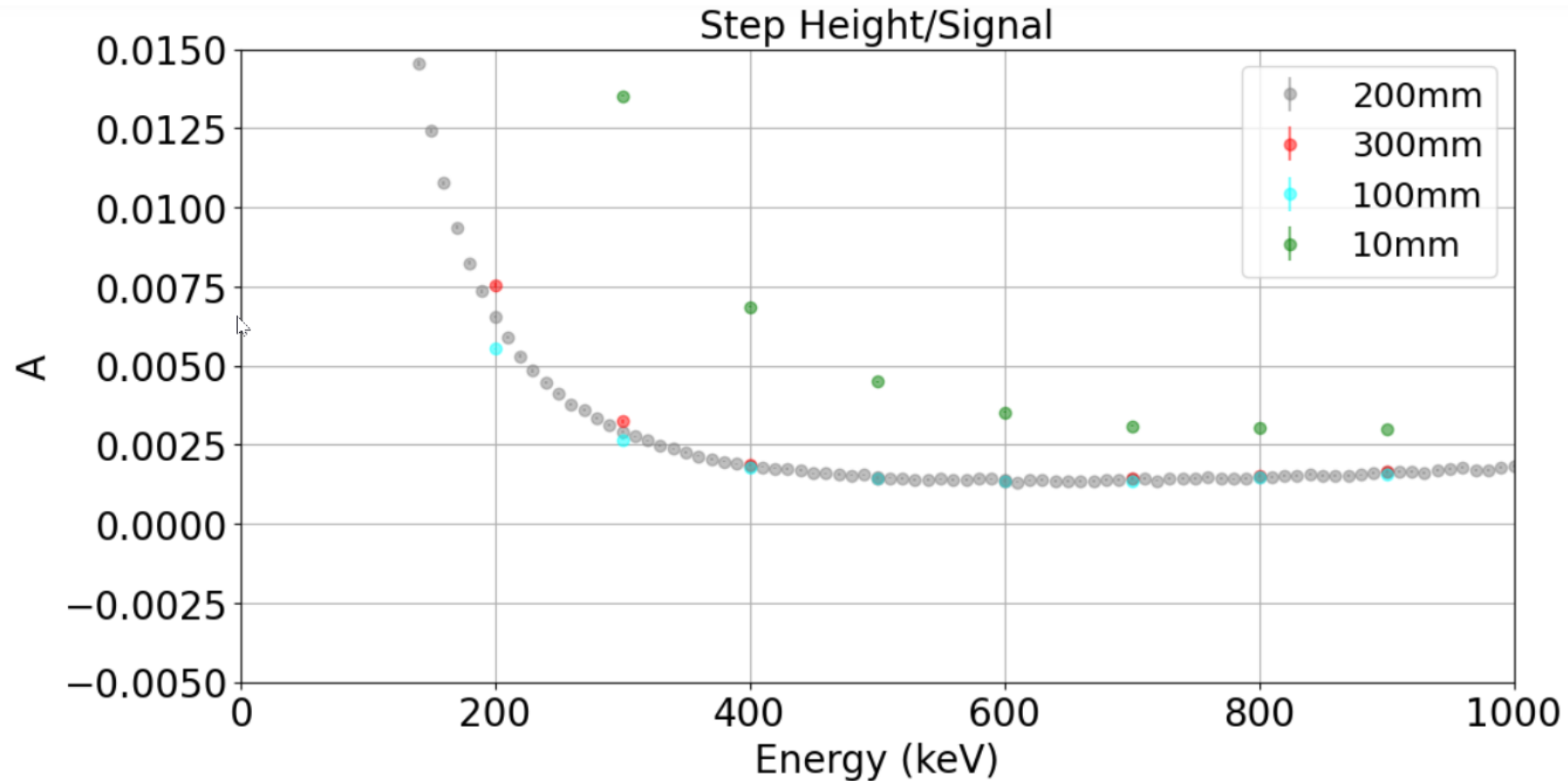
$$S(E) = A \exp(-B \cdot E) + C \rightarrow S(E)/S(E_0) = (\exp(-B \cdot E) + C') / (\exp(-B \cdot E_0) + C')$$

- fit (rescaled data) from 200 to 600 keV and then allow a general shift of this curve (B and C' fixed; $E_0 = 600$ keV; $S(E_0) = \text{fitparameter}$)
- Did the hypermet fitting for Si data, for **Leuven75** only
- Converged nicely + stepheight at 600keV (fitparam):
 - Run3: 0.001403(46)
 - Run4: 0.001295(38)
 - Run5: 0.001424(45)



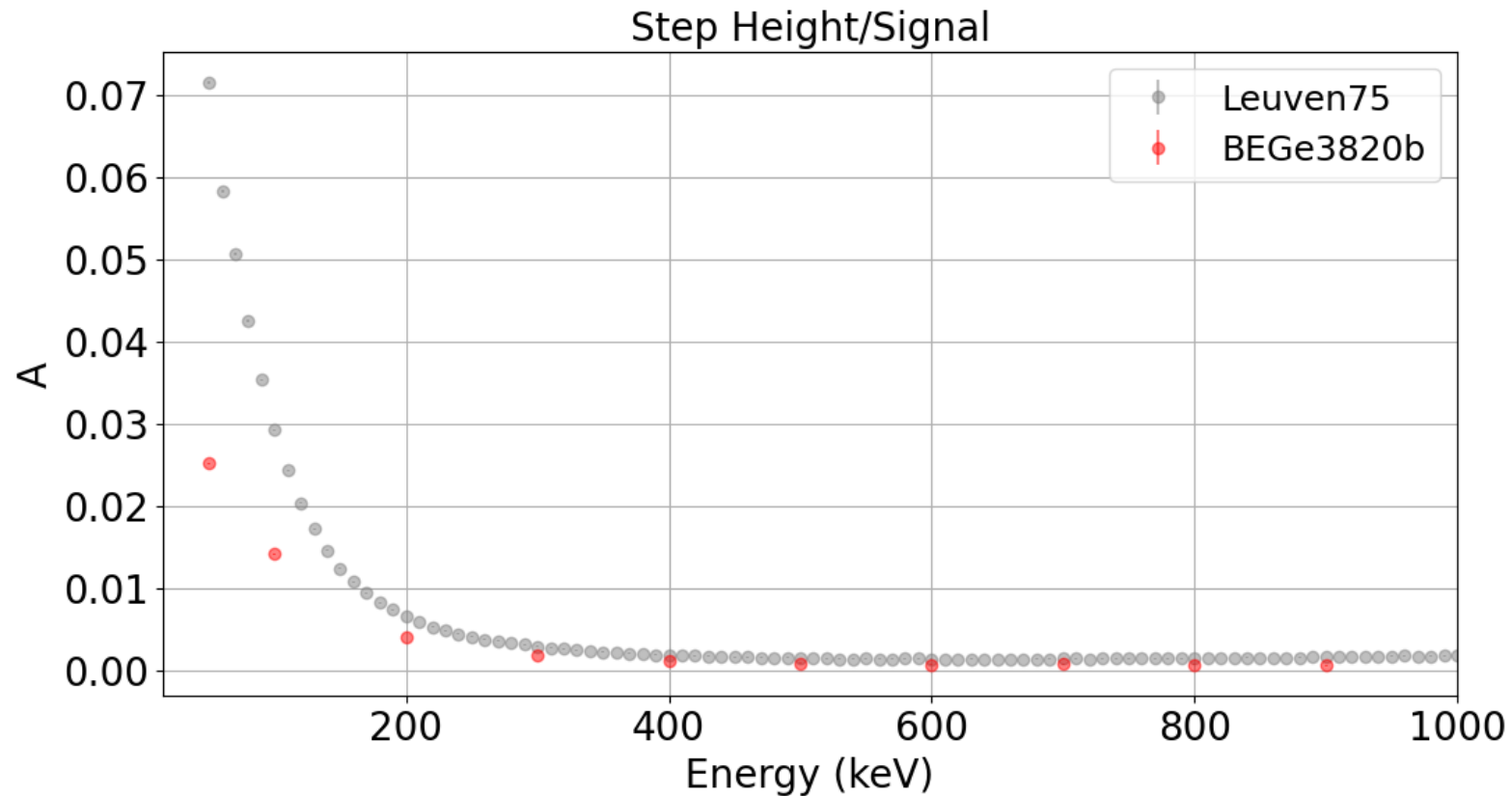
Step height

- Distance dependence:



Step height

- Distance dependence
- Detector dependence:



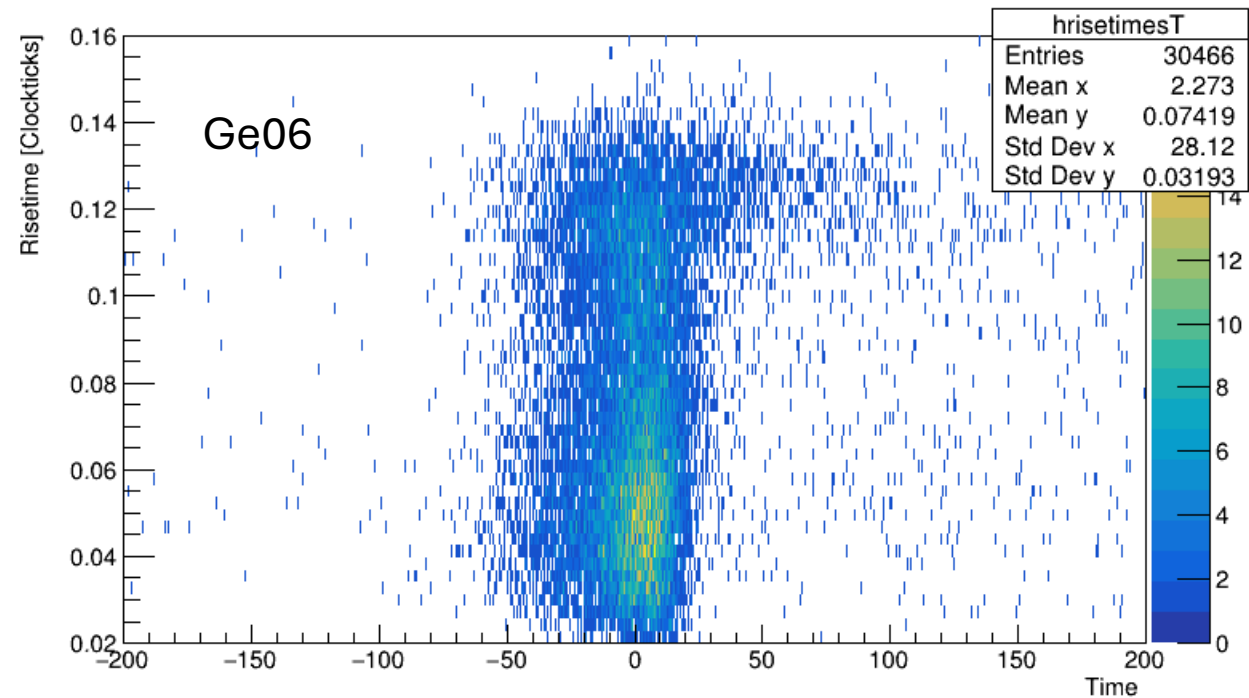
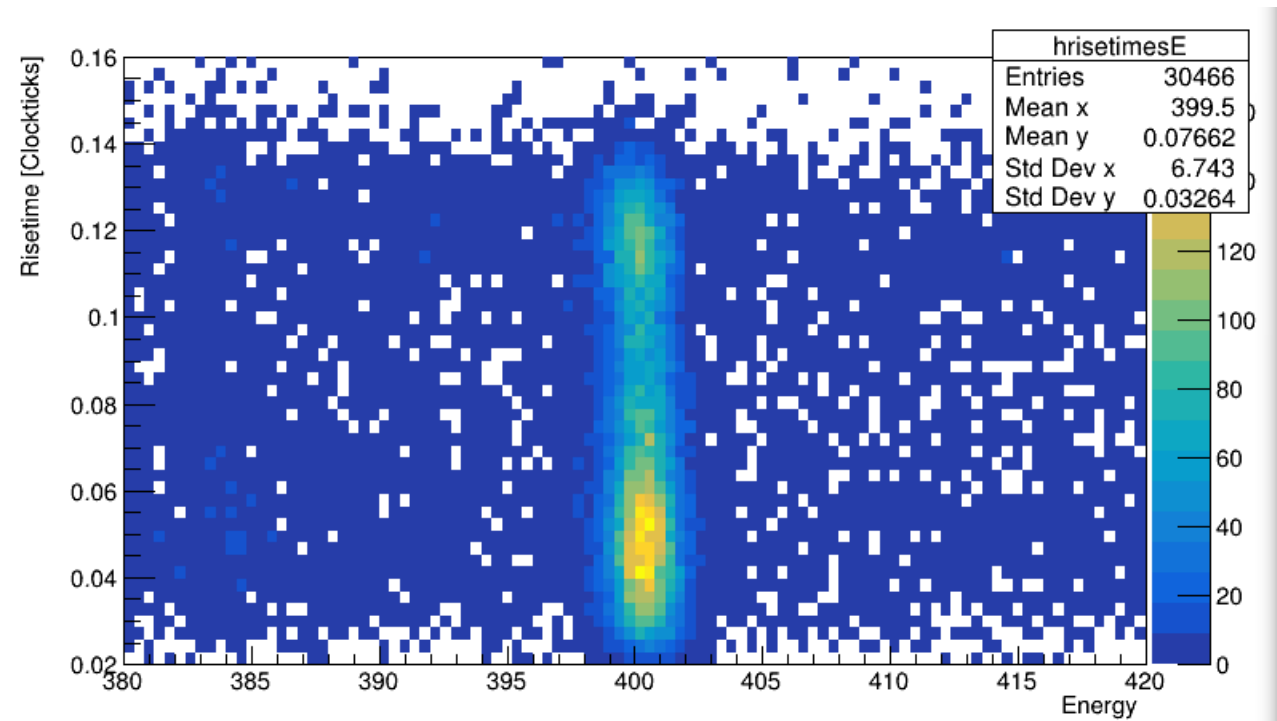
Step height

- Do simulation for full array → for right positions
- Step height increases all of a sudden ???

Rise time

Rise time

- Currently investigating how we can correct for the different risetimes by adding risetime as a branch in the output tree of the analyzer



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