Compton Streuung
Elektronen außer Rand und Band

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Foto des Aufbaus
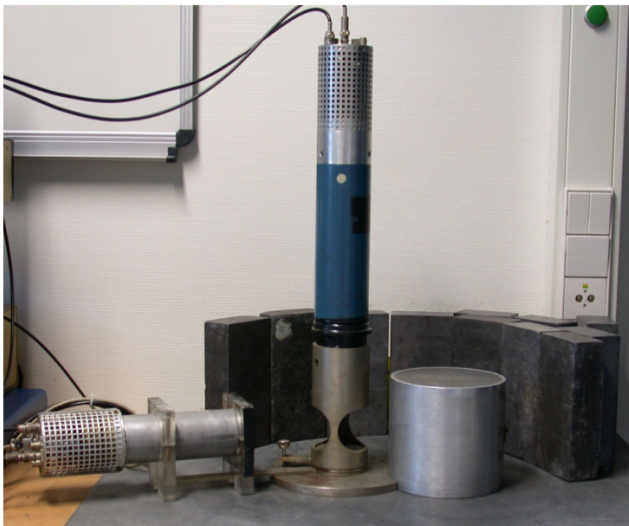
Aufbau ohne Elektronik
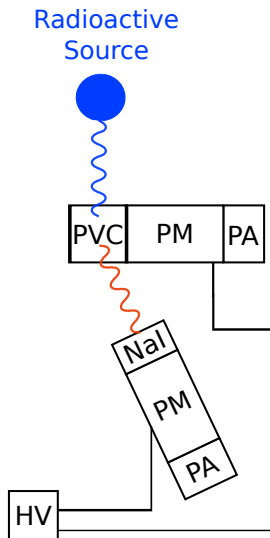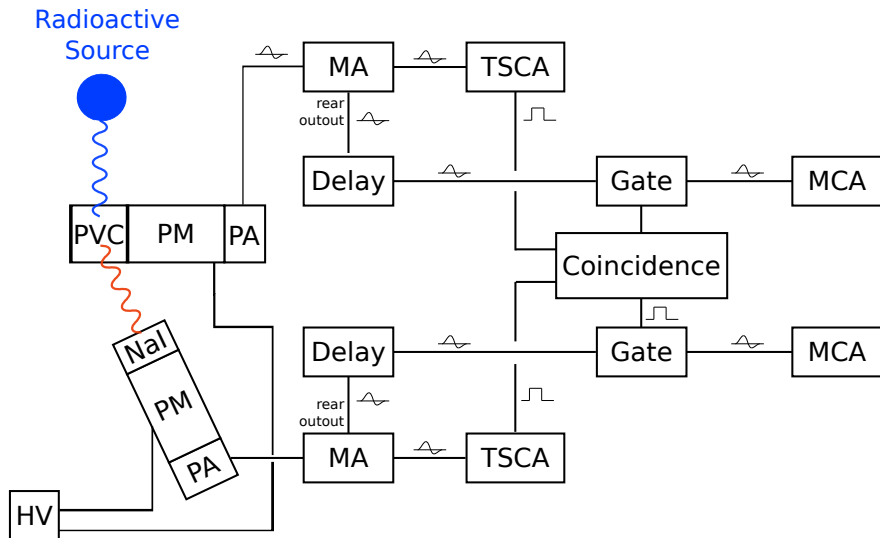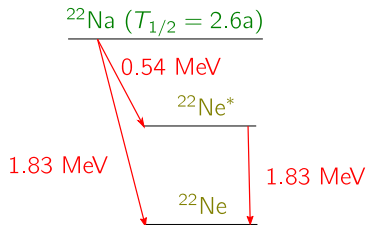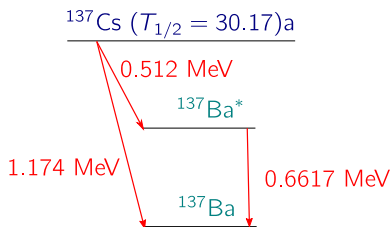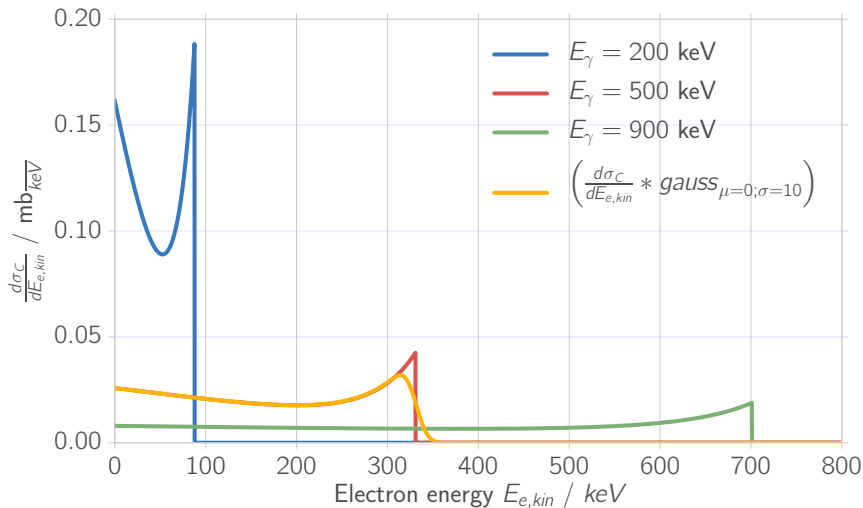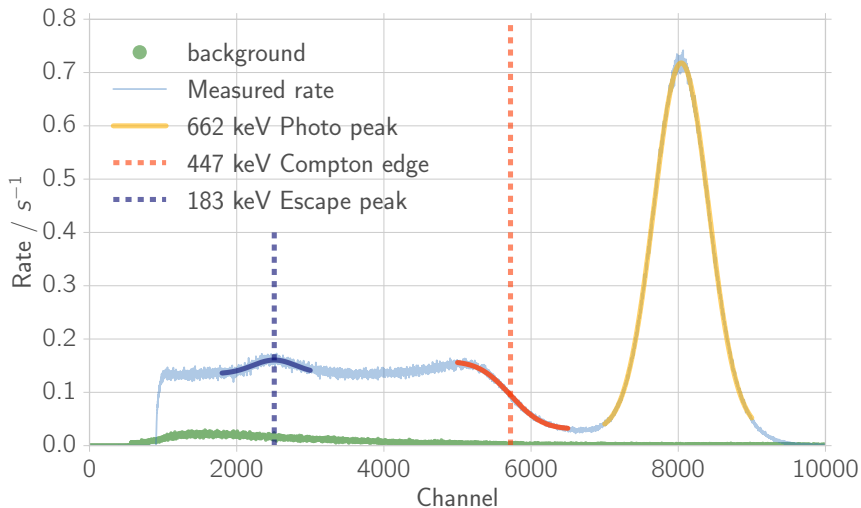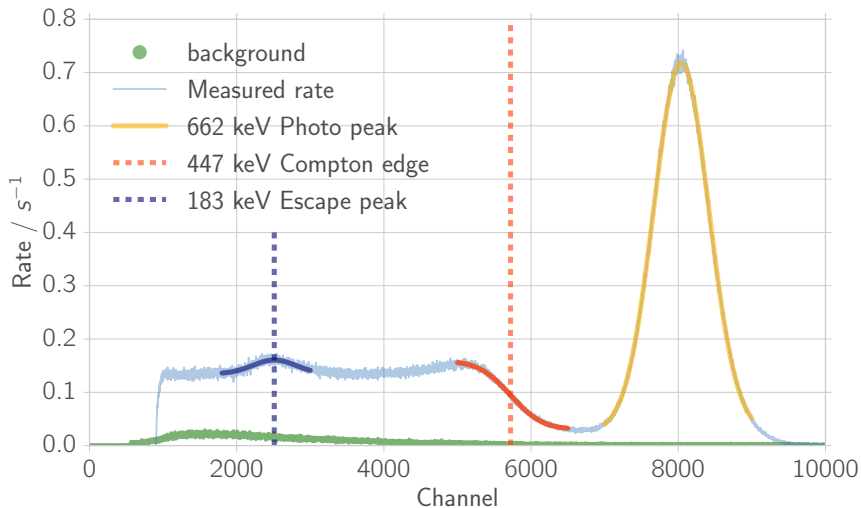
Aufbau mit Elektronik

Zerfallsschemata von ^{137}Cs und ^{22}Na

# Wie sieht ein Compton Peak aus? Klein-Nishina Formel!

NaI Szintillator, ^{137}Cs Probe, mit PVC

NaI Szintillator, ^{137}Cs Probe, mit PVC

Sichtbare Peaks und Kanten für beide Szintillisatoren

Probe	Peak/Kante	E / keV	NaI / Channel	PVC / Channel
^{137}Cs	Photo	662	8040.59 ± 0.03	
	Compton	477	5720 ± 4	178.9 ± 0.3
	Rückstreu	183	2510 ± 12	
^{22}Na	Photo	511	6347 ± 3	
	Compton	341	4000 ± 2000	108 ± 2
	Photo	1277	14180 ± 20	
	Compton	1064	12000 ± 4000	414 ± 4

^{22}Na sample (measurement time 16.5h)
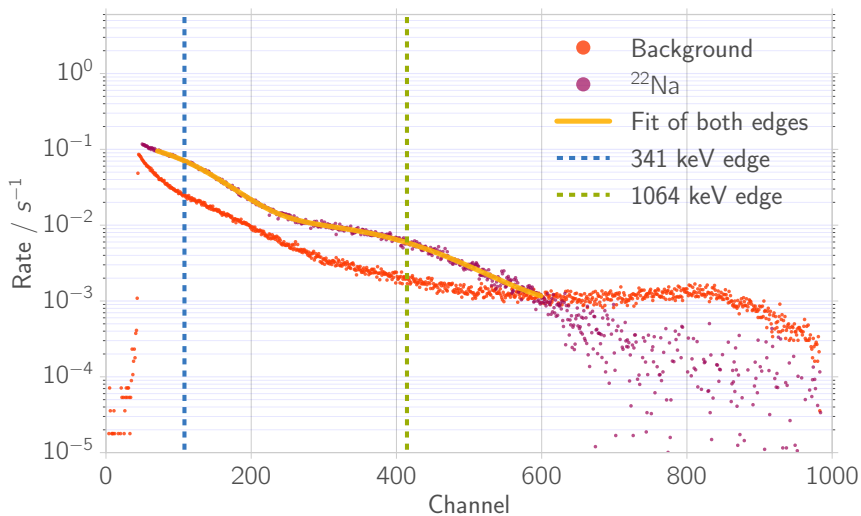
^{137}Cs sample (measurement time 6h)

Linear fit

$$Ch.(E) = aE + b$$
$$a = [0.413 \pm 0.003] \; Ch./keV$$
$$b = [-20 \pm 2] Ch.$$
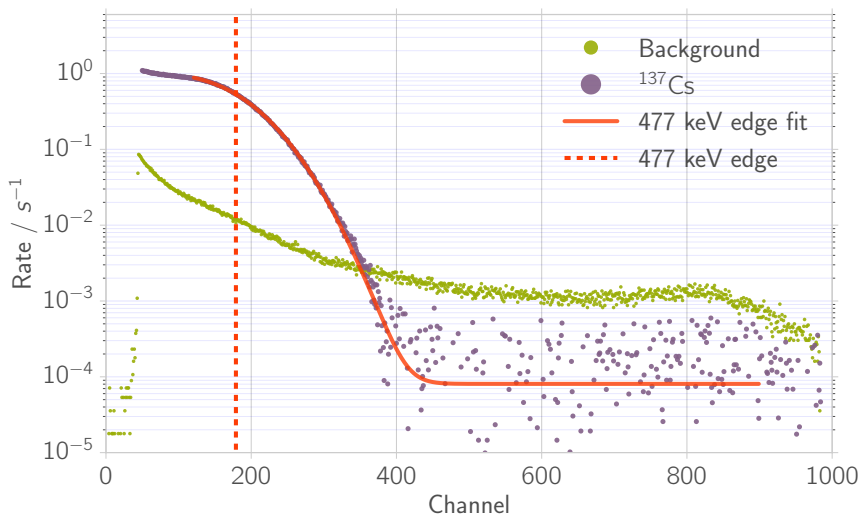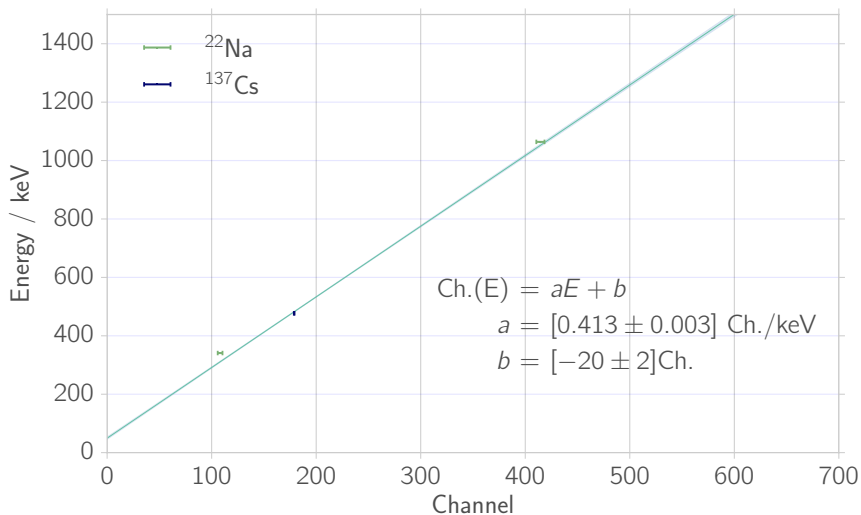
Peaks and fitting results of ^{137}Cs

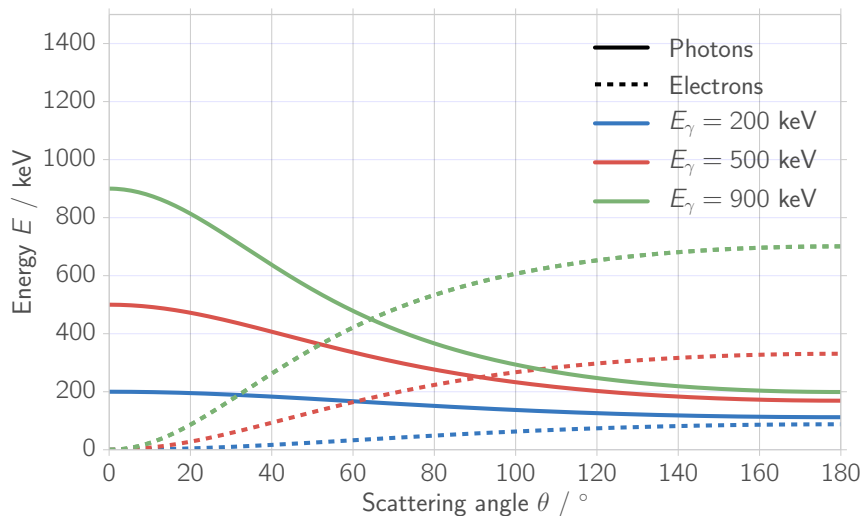| Name	Energy	Channel
Photo peak	662 keV	8040.59 ± 0.03
Compton edge	477 keV	5720 ± 4
Escape peak	183 keV	2510 ± 12

^{137}Cs sample (measurement time 2.7h)
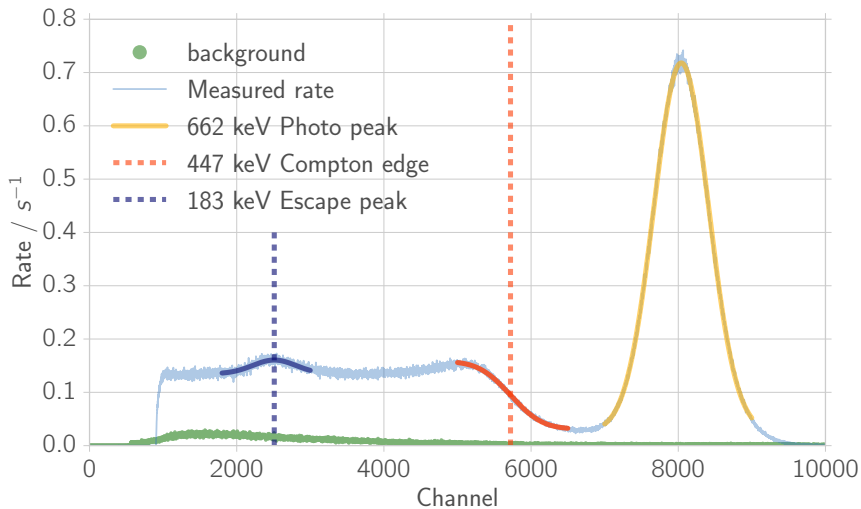
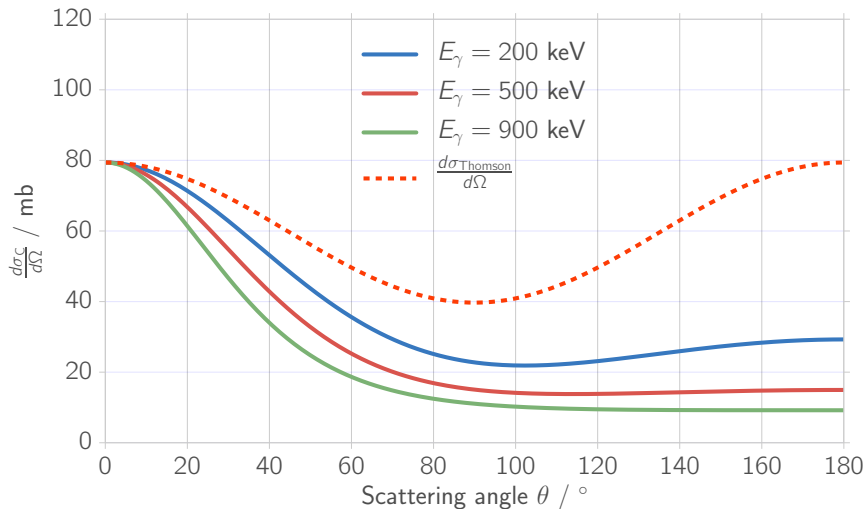# ^{22}Na sample (measurement time about 1h)
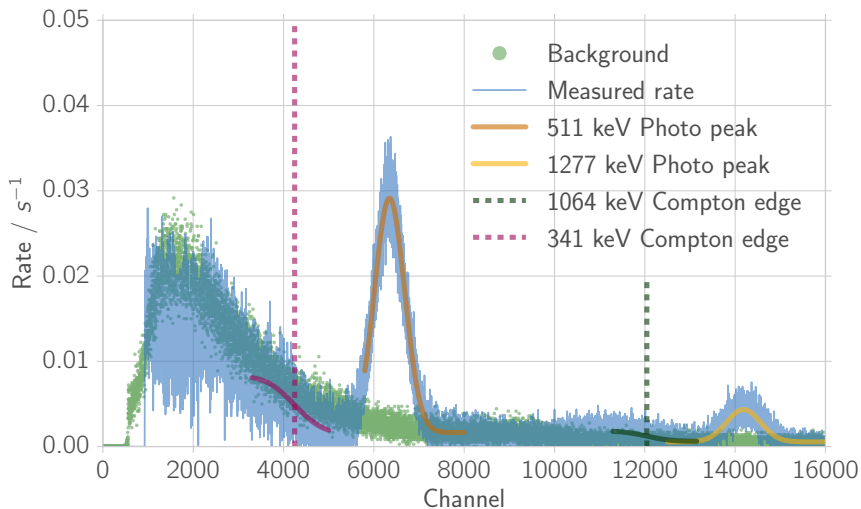
Linear fit
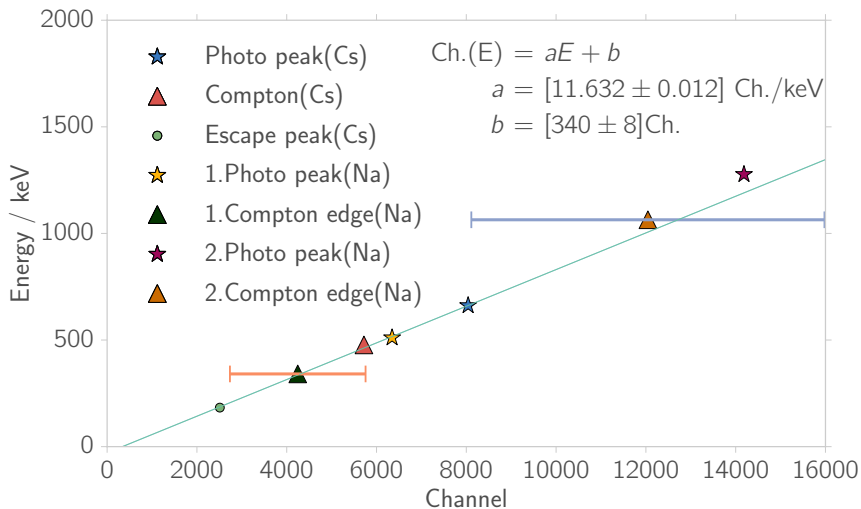
Energieerhaltung
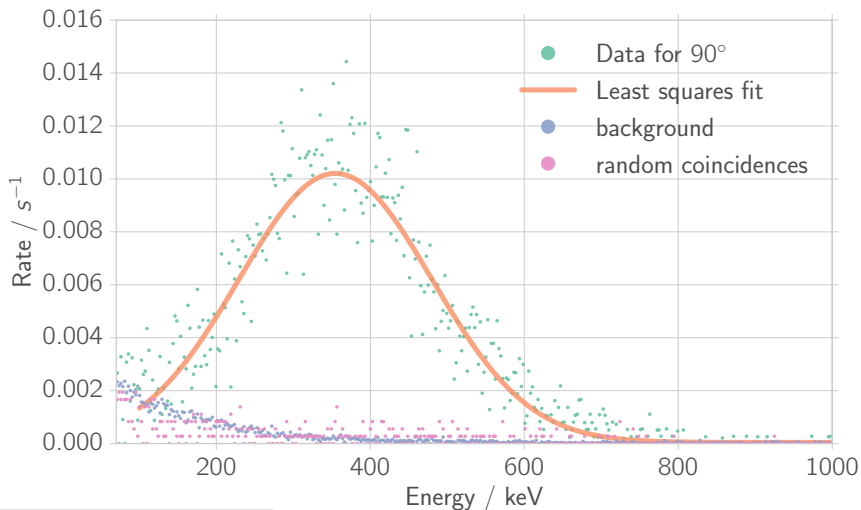
Differentieller Wirkungsquerschnitt

Energy Conservationation

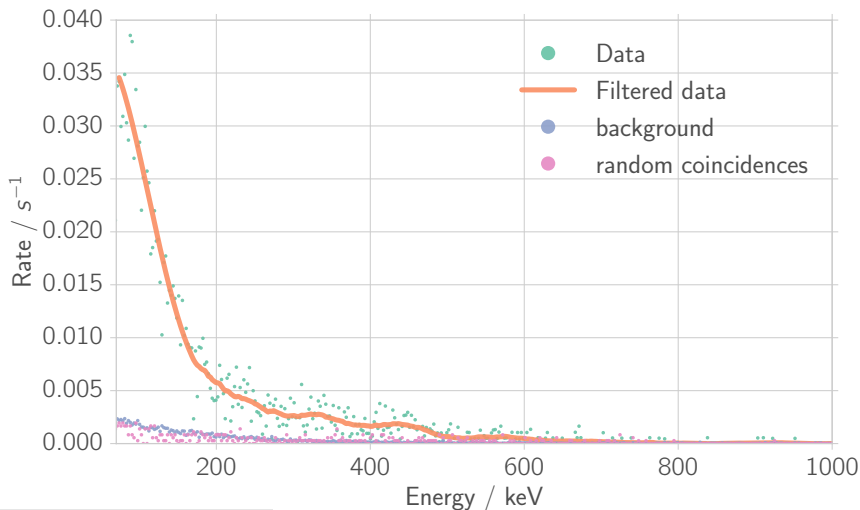- ▶ Comparison of peak energies for different angles

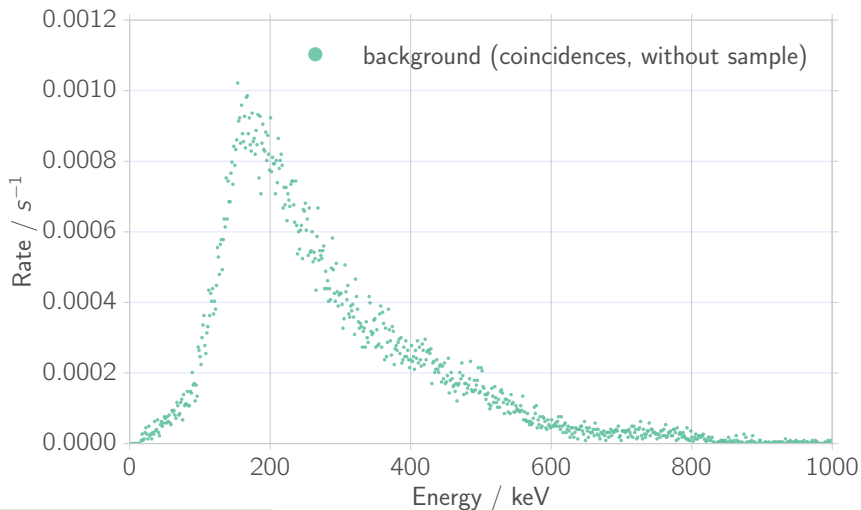# Background of the PS scintillator with coincidence and random coincidences (measurem. time 13.4h and 1h)

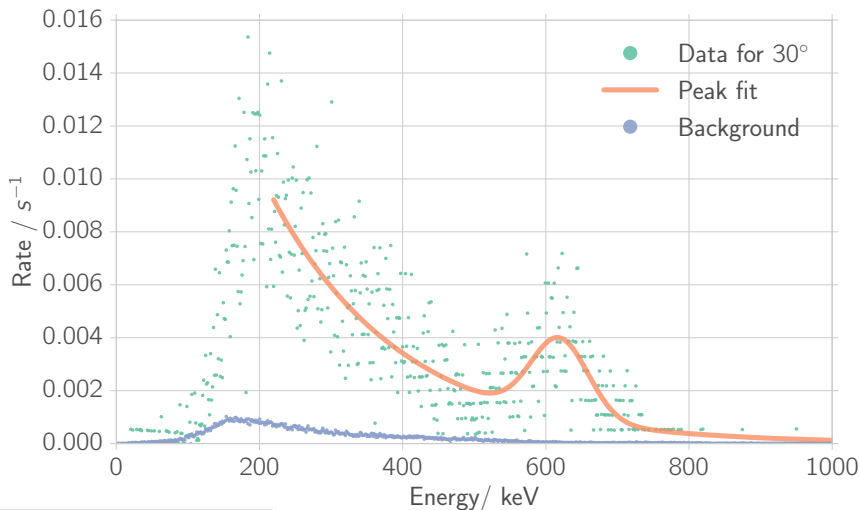# Energy of electrons: Rate of coincident events of PS scintillator at angle of $\theta = 90°$

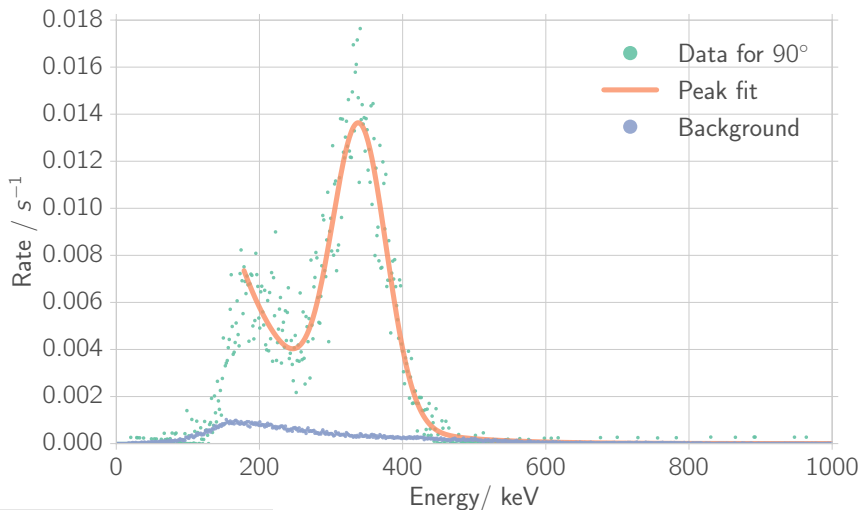Energy of electrons: Rate of coincident events of PS scintillator at angle of $\theta = 15°$

Background of NaI scintillator with coincidences (measurem. time 62h)

Energy of photons: Rate of coincident events of NaI scintillator at angle $\theta = 30°$

Energy of photons: Rate of coincident events of NaI scintillator at angle $\theta = 90°$

Now to the result: combining all those peaks...

NaI szintillator, ^{137}Cs Probe, ohne PVC