

Compton Streuung

Elektronen außer Rand und Band

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^{137}Cs und ^{22}Na

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Calibration of PS scintillator

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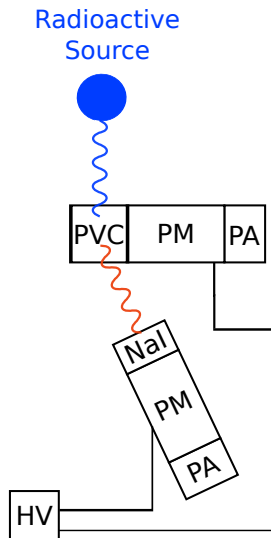
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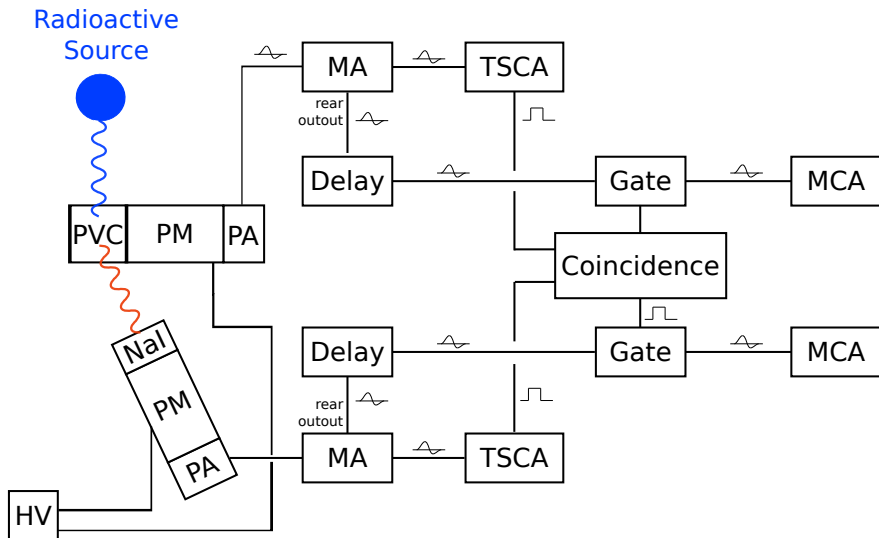
Foto des Aufbaus

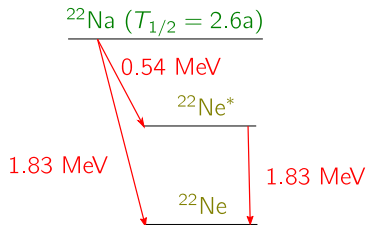
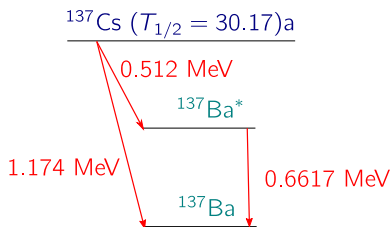


Aufbau ohne Elektronik



Aufbau mit Elektronik



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

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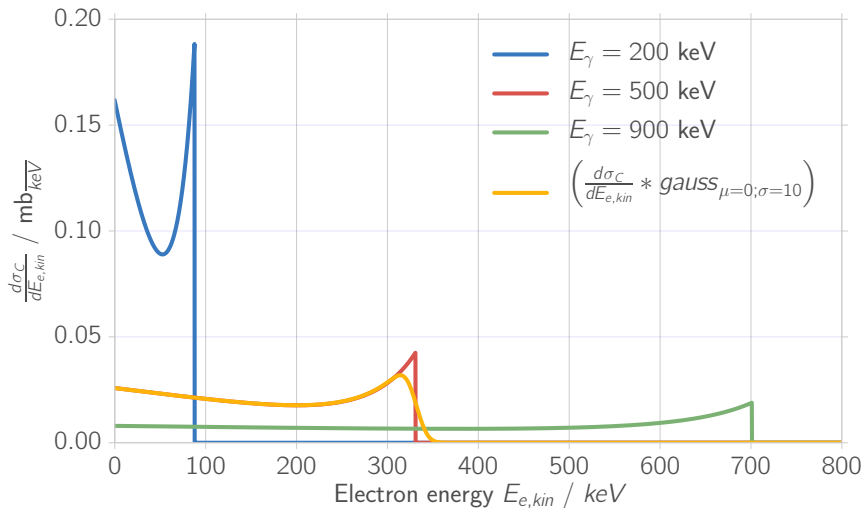
Calibration of Na scintillator

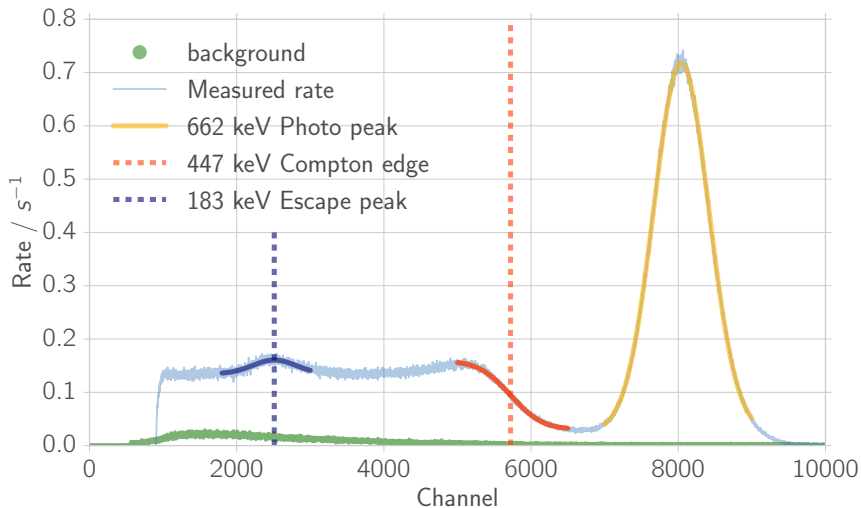
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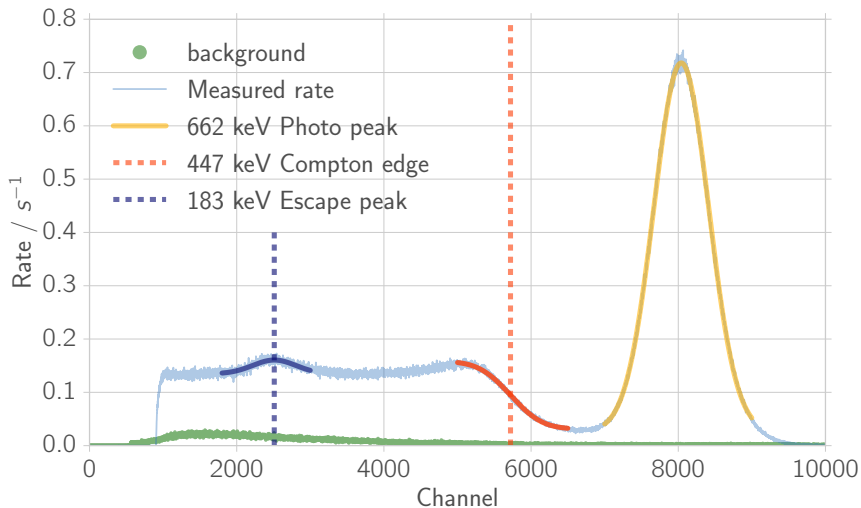
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Wie sieht ein Compton Peak aus? Klein-Nishina Formel!



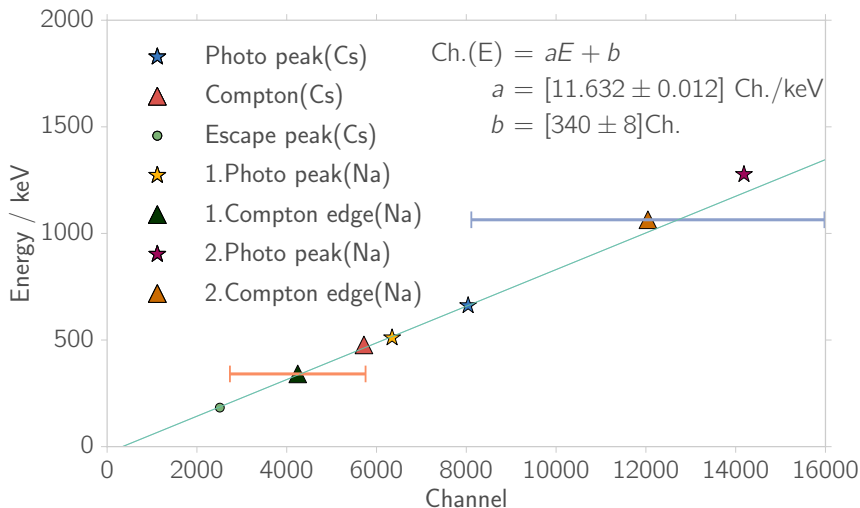
NaI Szintillator, ^{137}Cs Probe, mit PVC

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

Linearer fit für NaI Szintillator



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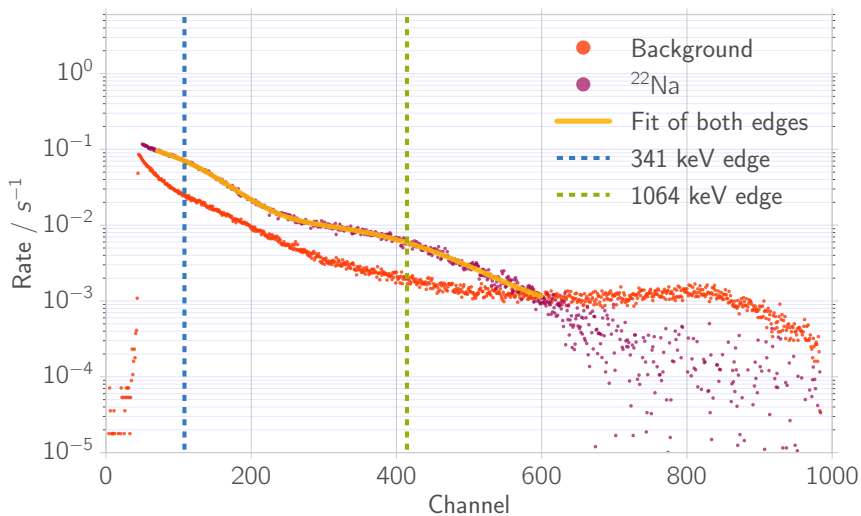
Calibration of PS scintillator

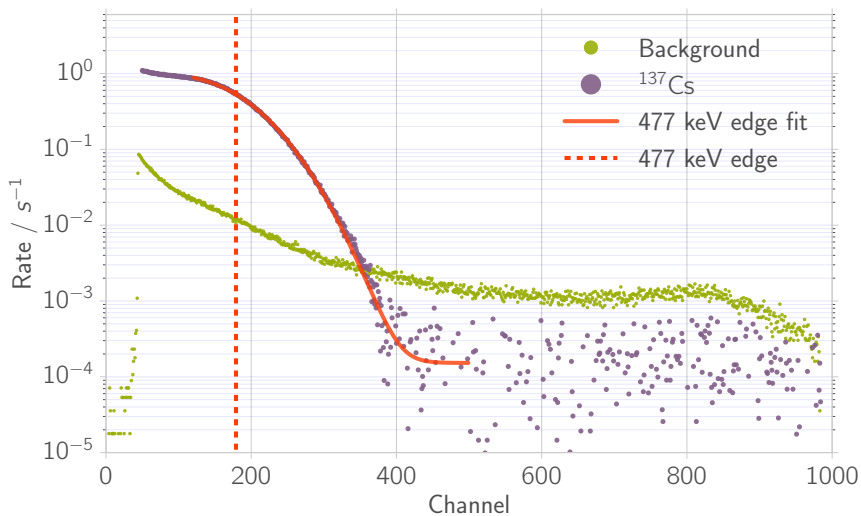
Calibration of Na scintillator

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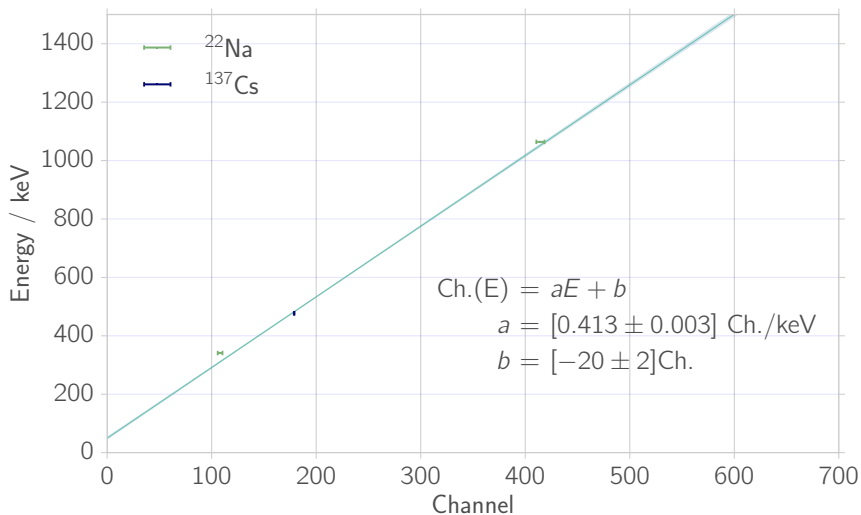
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^{22}Na sample (measurement time 16.5h)

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

Linear fit



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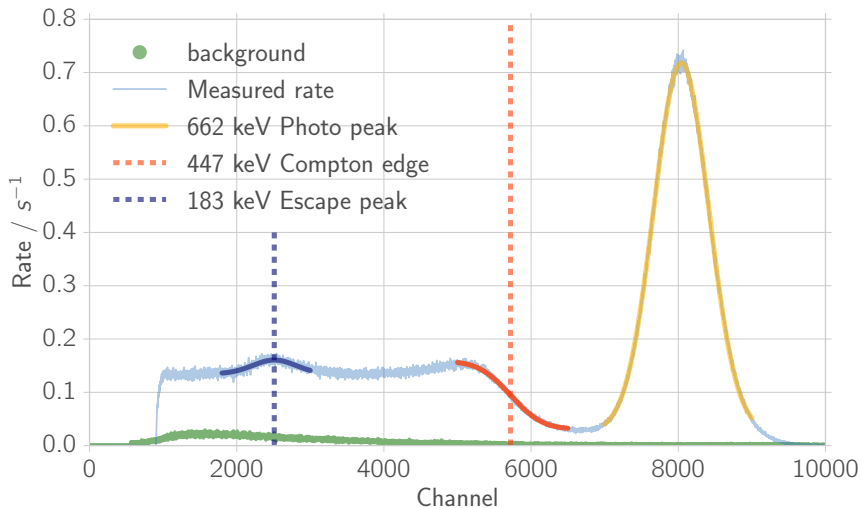
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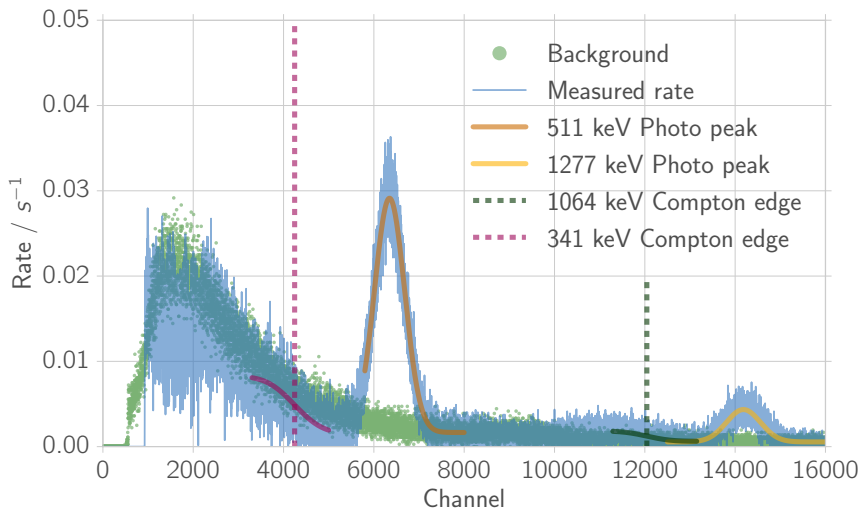
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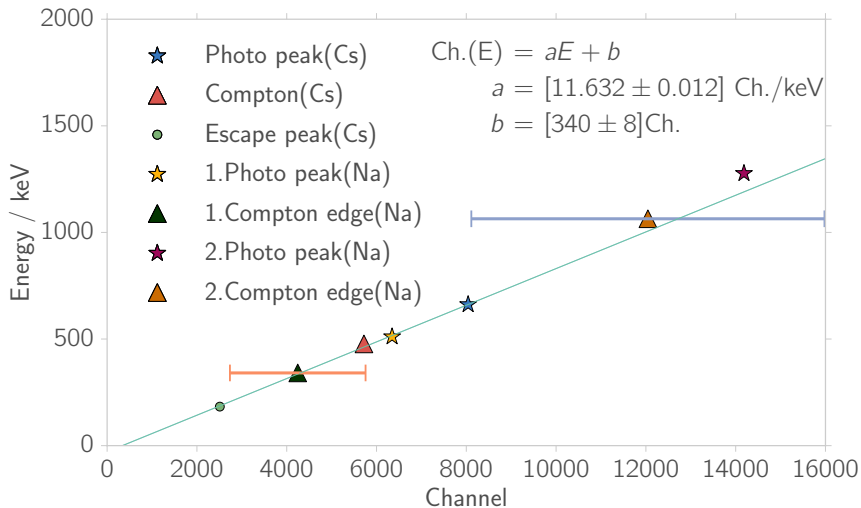
Peaks and fitting results of ^{137}Cs

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



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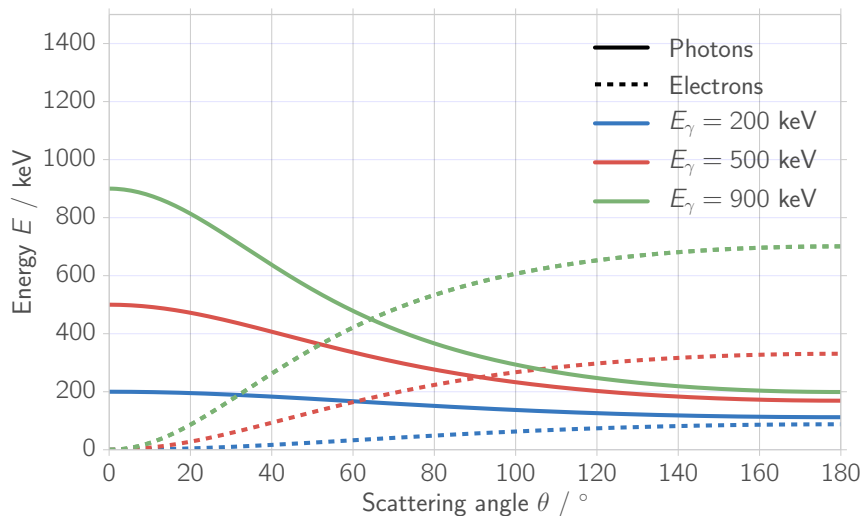
Calibration of Na scintillator

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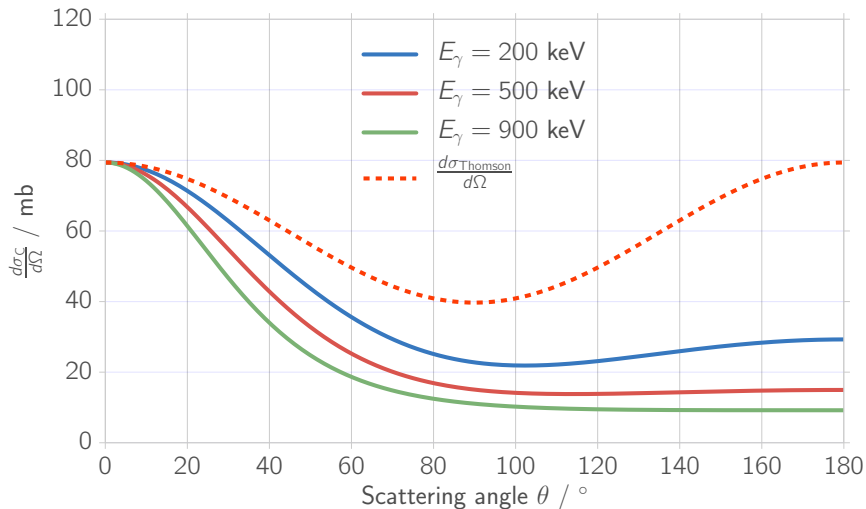
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Differentieller Wirkungsquerschnitt



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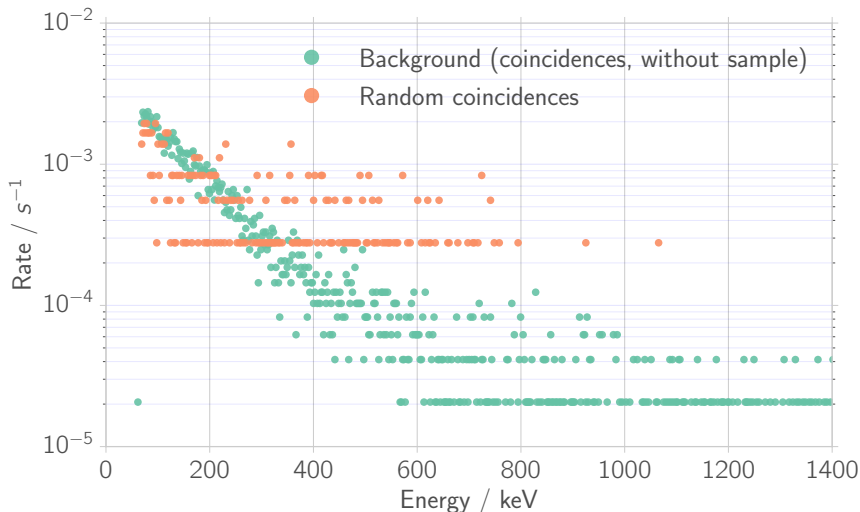
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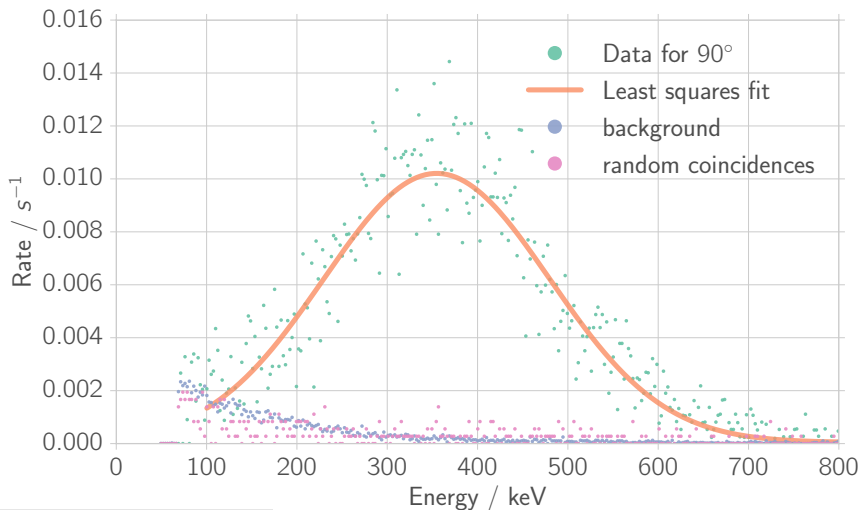
Energy Conservation

- ▶ Comparison of peak energies for different angles

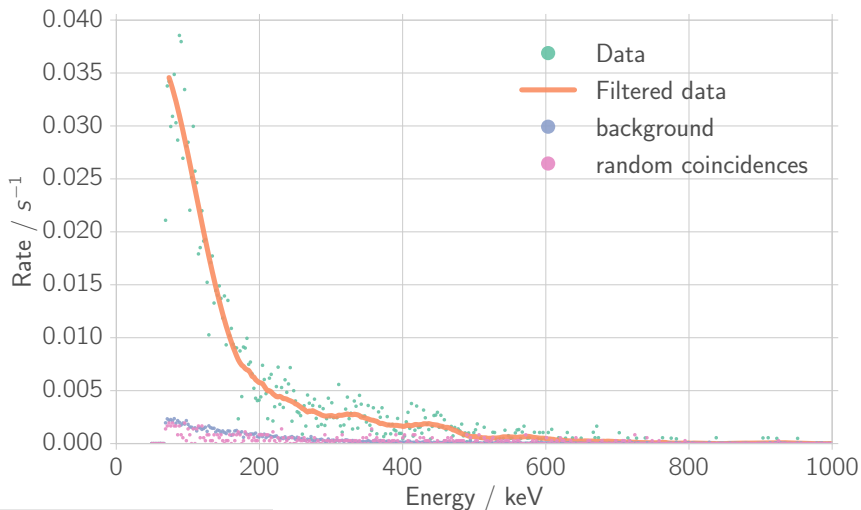
Background of the PS scintillator with coincidence and random coincidences (measur. time 13.4h and 1h)



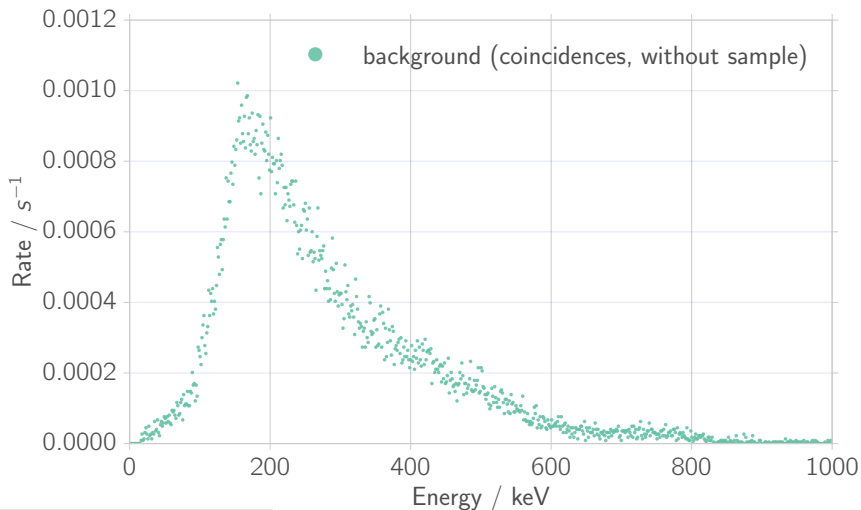
Energy of electrons: Rate of coincident events of PS scintillator at angle of $\theta = 90^\circ$



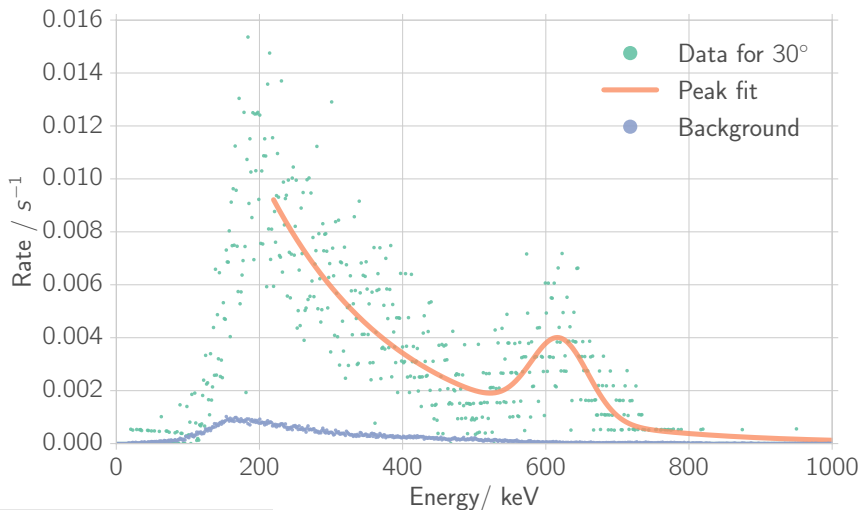
Energy of electrons: Rate of coincident events of PS scintillator at angle of $\theta = 15^\circ$



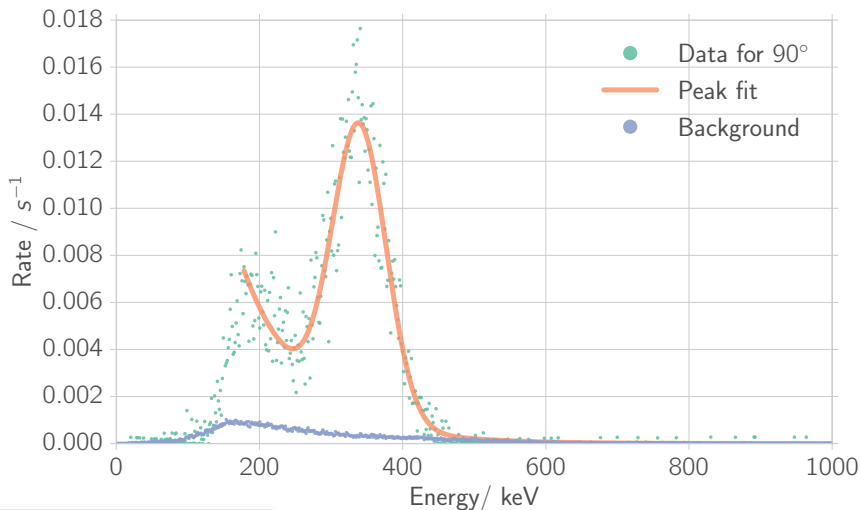
Background of NaI scintillator with coincidences (measur. time 62h)



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



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



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

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Nal szintillátor, ^{137}Cs Probe, ohne PVC

