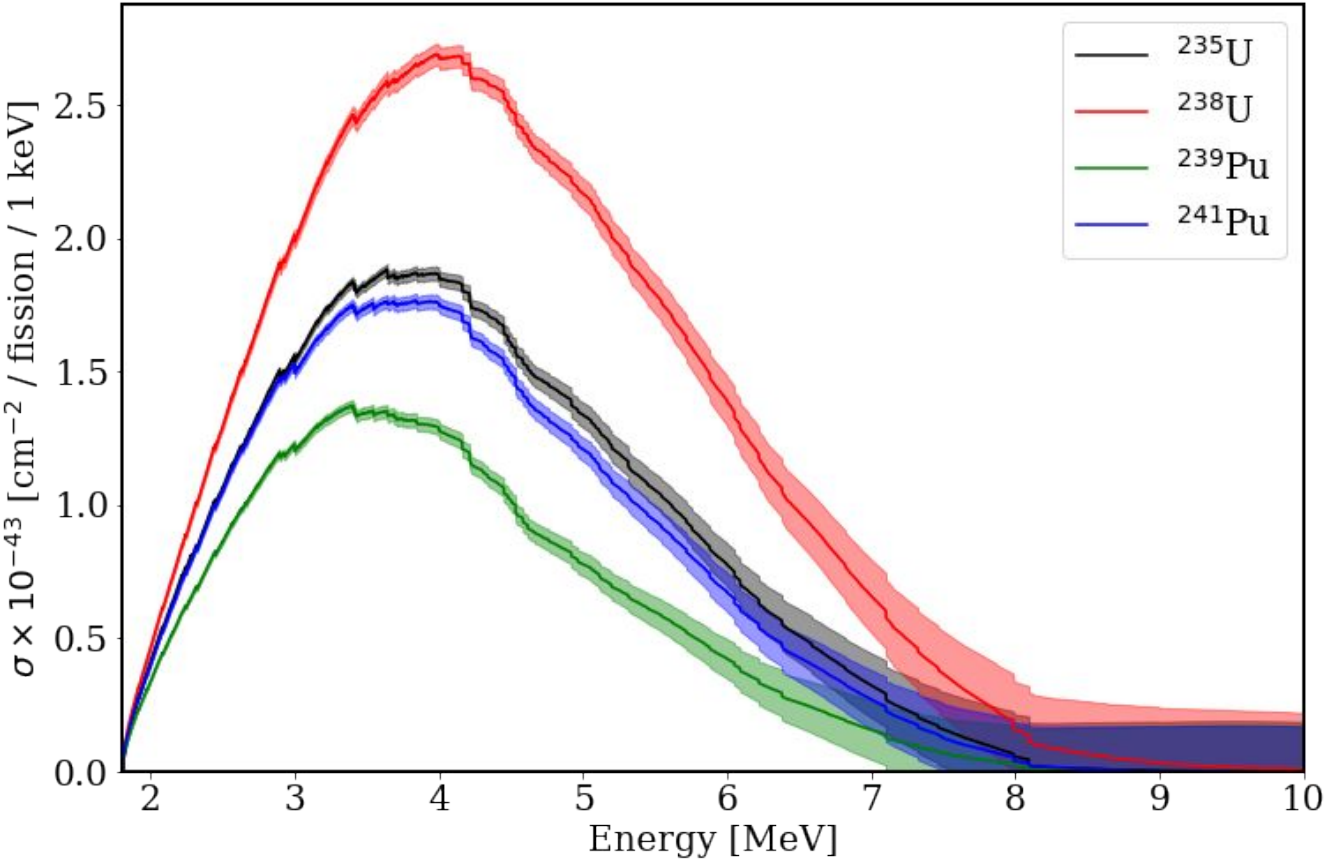
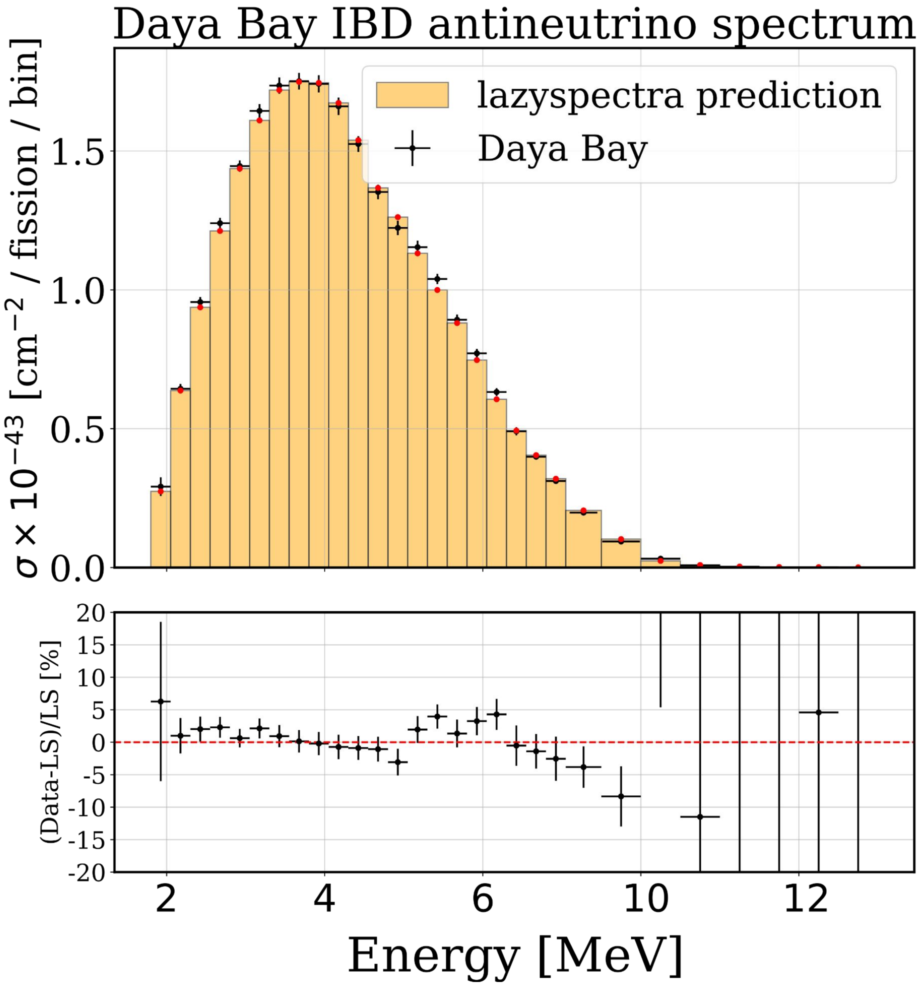
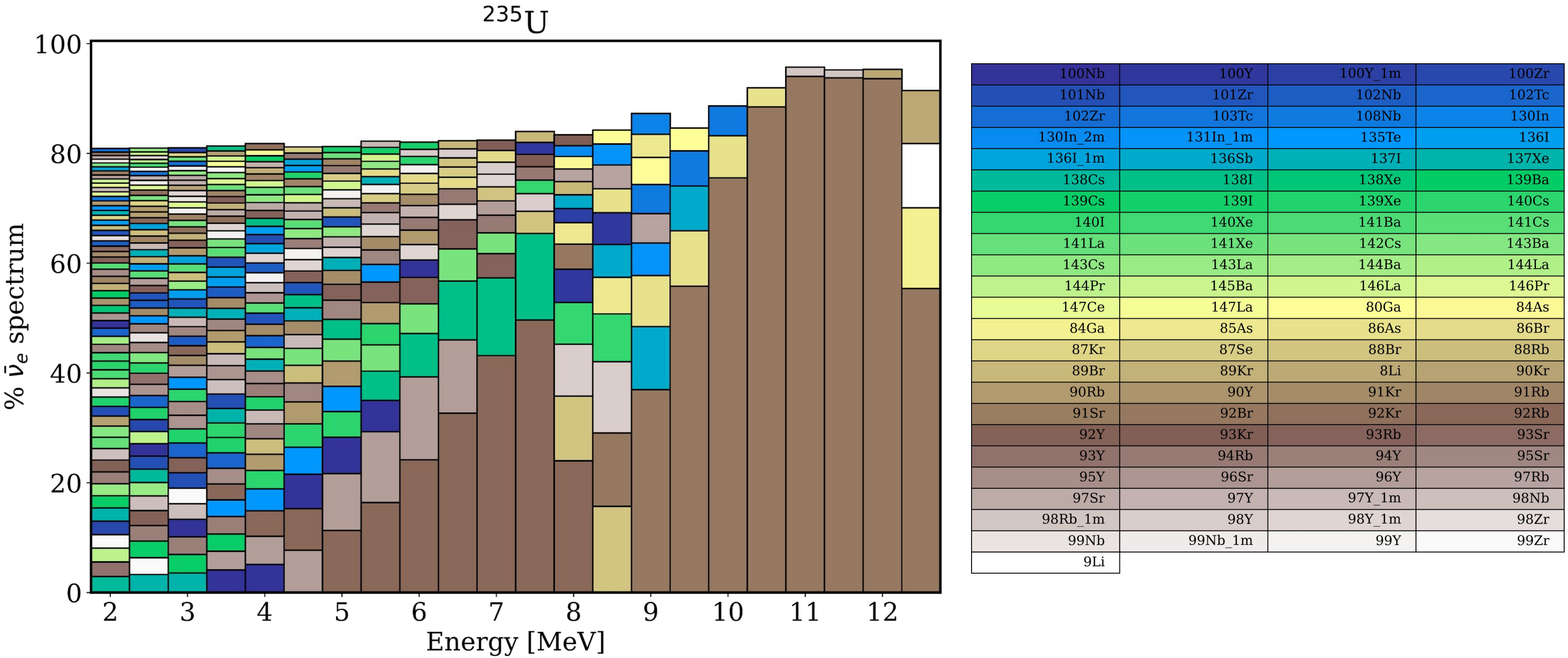
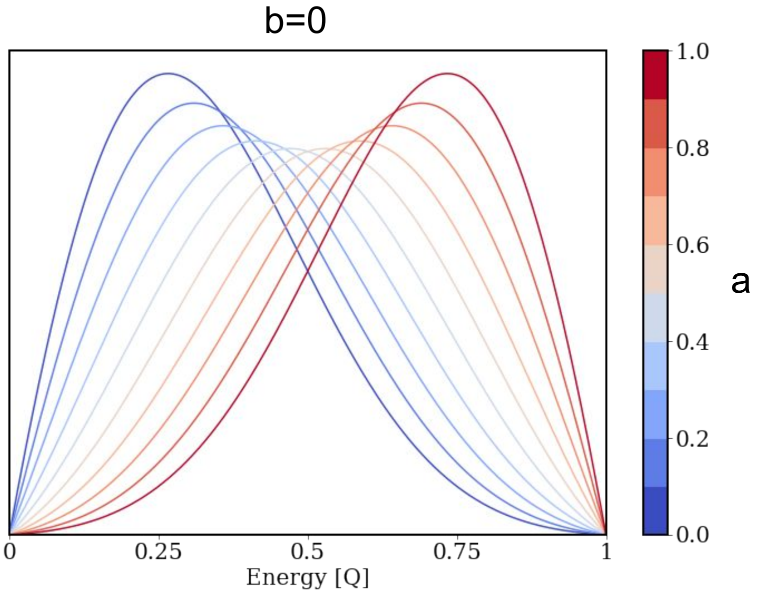


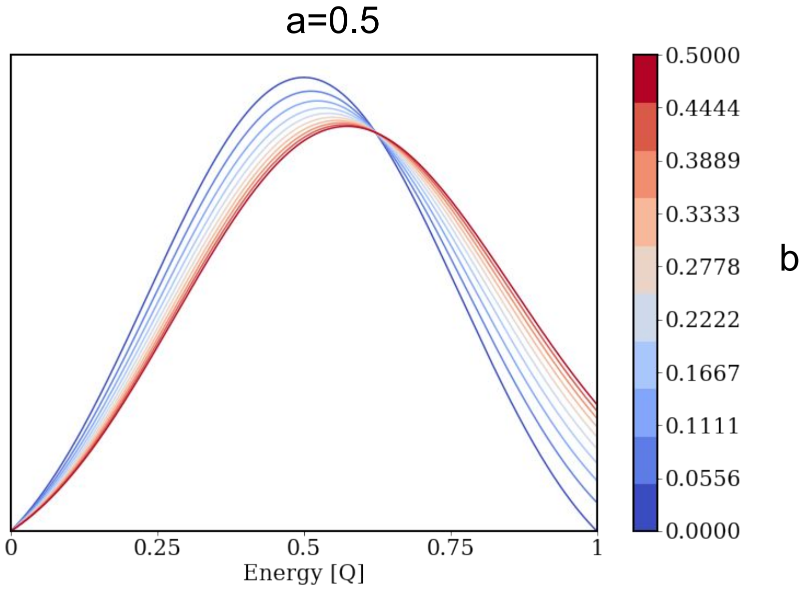
$\sigma \times 10^{-43}$ [cm^{-2} / fission / 1 keV]
0.0
0.5
1.0
1.5
2.0
2.5
2
3
4
5
6
7
8
9
10
Energy [MeV]
^{235}U
^{238}U
^{239}Pu
^{241}Pu

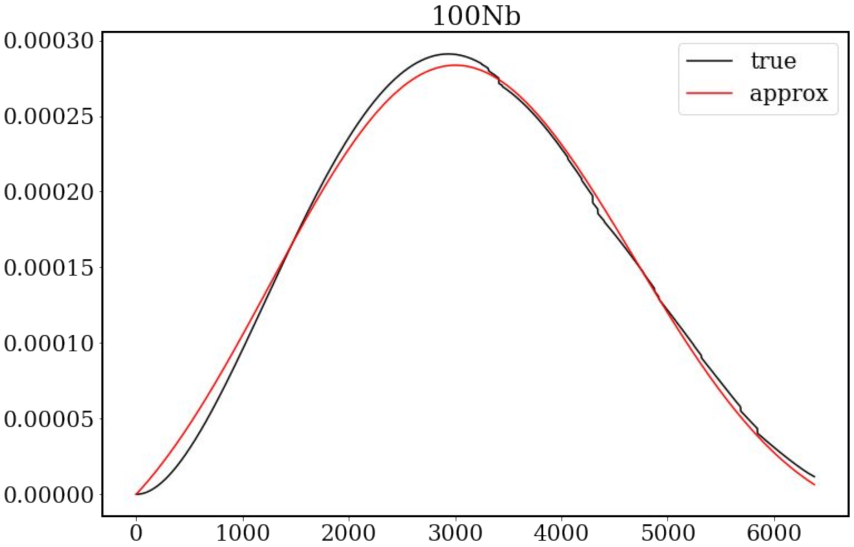

Daya Bay IBD antineutrino spectrum
lazyspectra prediction
Daya Bay
$\sigma \times 10^{-43}$ [cm^{-2} / fission / bin]
0.0
0.5
1.0
1.5
(Data-LS)/LS [%]
20
15
10
5
0
-5
-10
-15
-20
2
4
6
10
12
Energy [MeV]

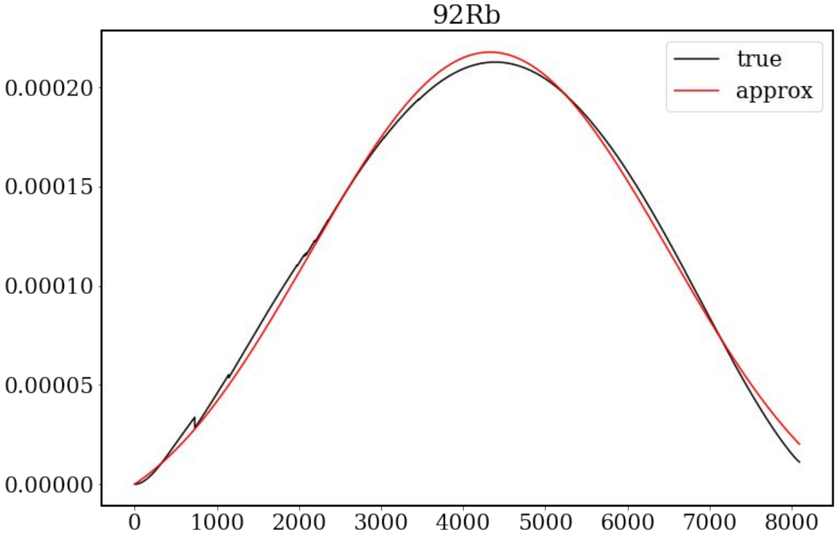

^{235}U
100
80
60
40
20
0
% $\bar{\nu}_e$ spectrum
2
3
4
5
6
7
8
9
10
11
12
Energy [MeV]
100Nb
100Y
100Y_1m
100Zr
101Nb
101Zr
102Nb
102Tc
102Zr
103Tc
108Nb
130In
130In_2m
131In_1m
135Te
136I
136I_1m
136Sb
137I
137Xe
138Cs
138I
138Xe
139Ba
139Cs
139I
139Xe
140Cs
140I
140Xe
141Ba
141Cs
141La
141Xe
142Cs
143Ba
143Cs
143La
144Ba
144La
144Pr
145Ba
146La
146Pr
147Ce
147La
80Ga
84As
84Ga
85As
86As
86Br
87Kr
87Se
88Br
88Rb
89Br
89Kr
8Li
90Kr
90Rb
90Y
91Kr
91Rb
91Sr
92Br
92Kr
92Rb
92Y
93Kr
93Rb
93Sr
93Y
94Rb
94Y
95Sr
95Y
96Sr
96Y
97Rb
97Sr
97Y
97Y_1m
98Nb
98Rb_1m
98Y
98Y_1m
98Zr
99Nb
99Nb_1m
99Y
99Zr
9Li

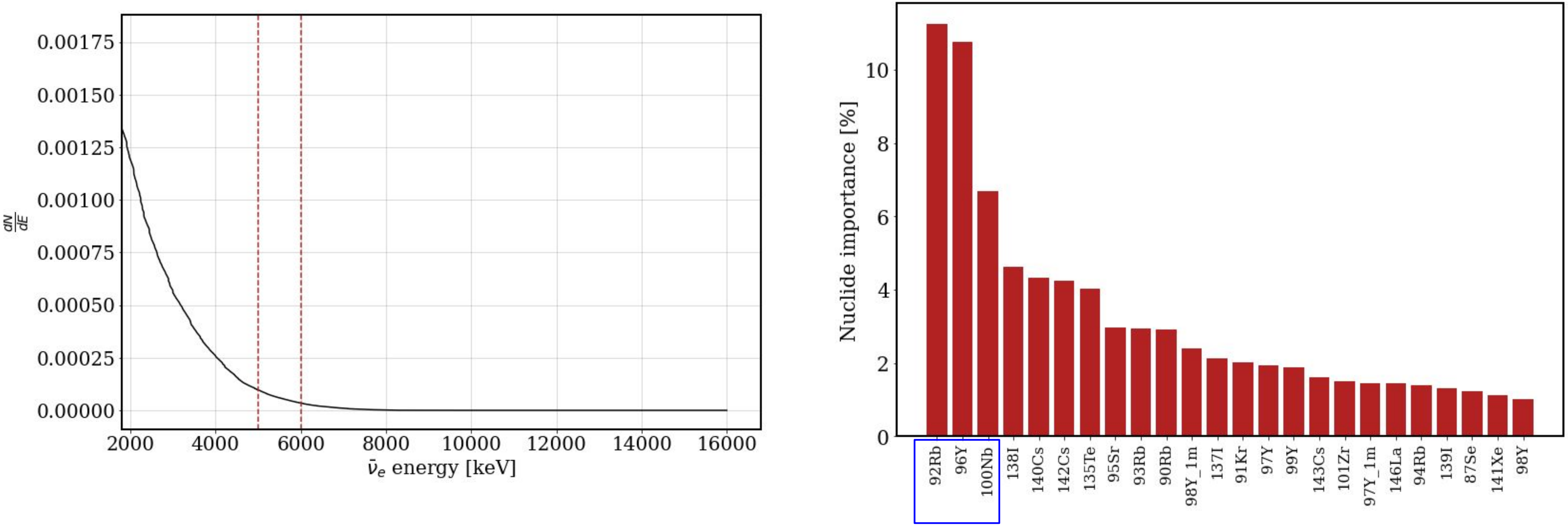
$$N\left(x \times e^{-\frac{(x-\overset{a\,[0,1]}{a}\times Q)^2}{(2(Q/3)^2)}} \times (x - Q - \overset{b\,[0,0.5]}{b}Q)\right)$$






100Nb
true
approx
0.00030
0.00025
0.00020
0.00015
0.00010
0.00005
0.00000
0
1000
2000
3000
4000
5000
6000


92Rb
true
approx
0.00020
0.00015
0.00010
0.00005
0.00000
0
1000
2000
3000
4000
5000
6000
7000
8000

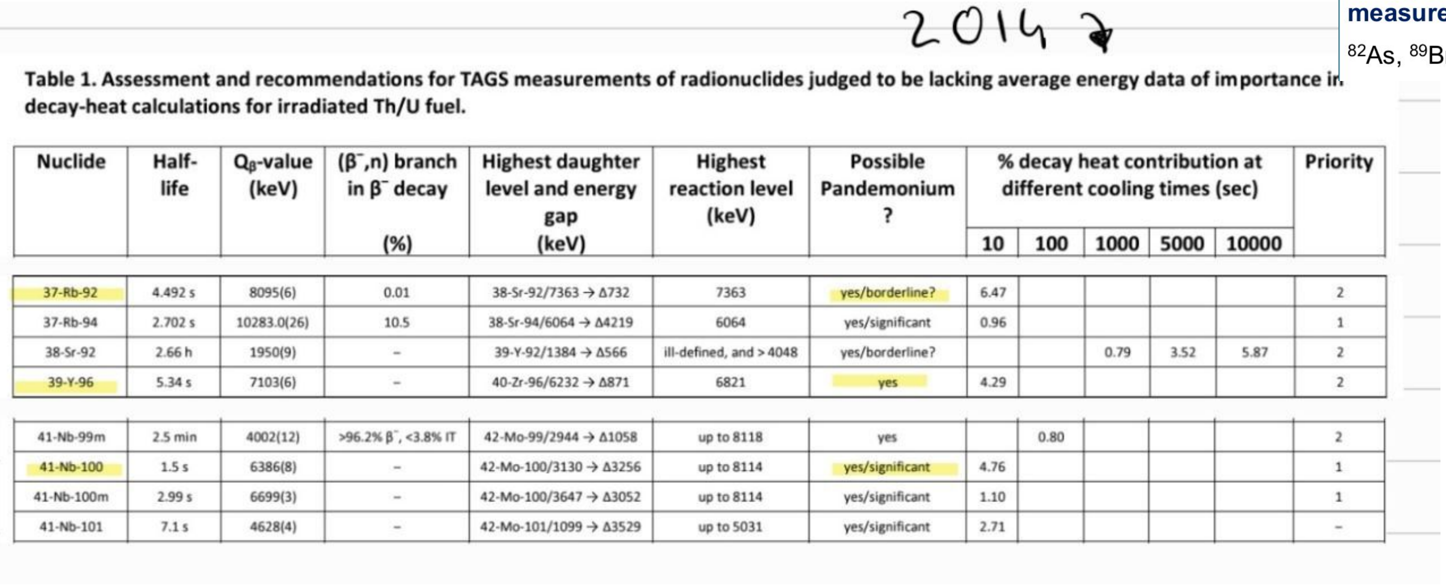

0.00175
0.00150
0.00125
0.00100
0.00075
0.00050
0.00025
0.00000
$\frac{dN}{dE}$
2000
4000
6000
8000
10000
12000
14000
16000
$\bar{\nu}_e$ energy [keV]
10
8
6
4
2
0
Nuclide importance [%]
92Rb
96Y
100Nb
138I
140Cs
142Cs
135Te
95Sr
93Rb
90Rb
98Y_1m
137I
91Kr
97Y
99Y
143Cs
101Zr
97Y_1m
146La
94Rb
139I
87Se
141Xe
98Y

ENDF/B Contains TAGS data for 55 materials:

^{86}Br (ORNL), ^{87,88}Br (Valencia),
^{90,90m,91,93}Rb (INL), ^{94}Rb (Valencia),
^{93}Sr (Greenwood), ^{95}Y (INL),
^{101}Nb (Valencia), ^{103,104}Nbm (MSU),
^{105}Mo (Valencia), ^{102,104,105,106,107}Tc (Valencia),
^{140,141}Cs (INL),^{142}Cs (ORNL),
^{141,142,143,144,145}Ba (INL),
^{142,143,144,145}La (INL),
^{145,146,147,148}Ce (INL),
^{146,147,148,148m,149,151}Pr (INL),
^{149,151,153,154,155}Nd (INL),
^{152,153,154,155,156,157}Pm (INL),
^{157,158}Sm (INL), ^{158}Eu I(INL).

IB adjusted to match the electron spectra measured by Tengblad *et al.* for:

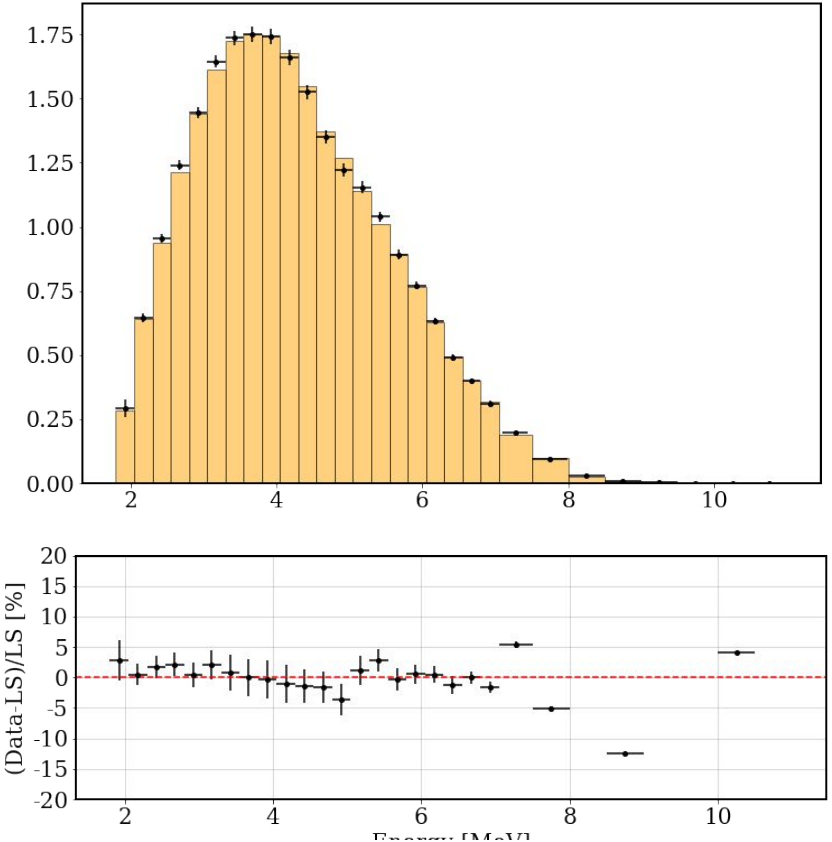
^{82}As, ^{89}Br, ^{90}Br, ^{95,96}Rb, ^{98,99}Y, ^{134}Sb, ^{138}I

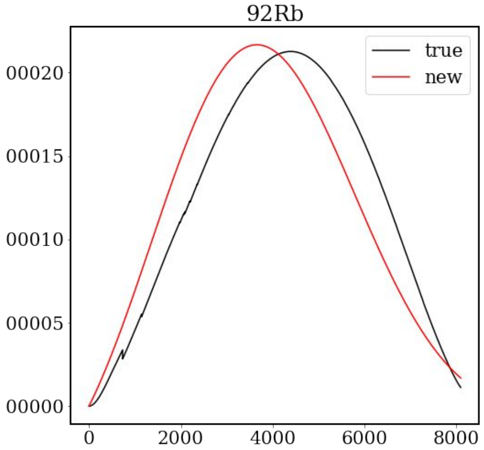


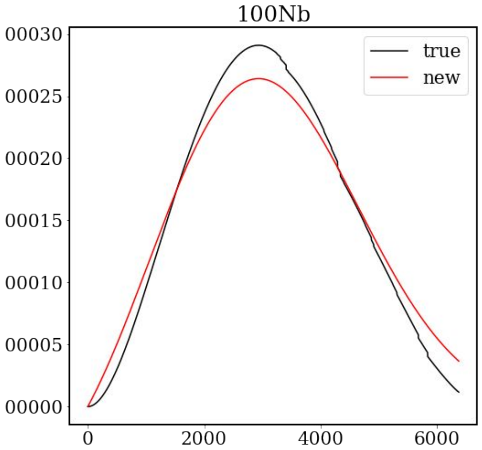
2014 ?

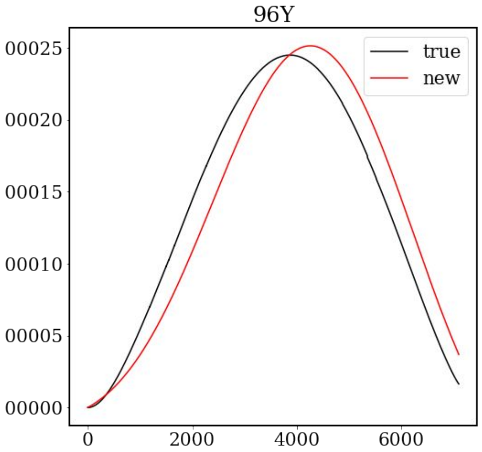
Table 1. Assessment and recommendations for TAGS measurements of radionuclides judged to be lacking average energy data of importance in decay-heat calculations for irradiated Th/U fuel.

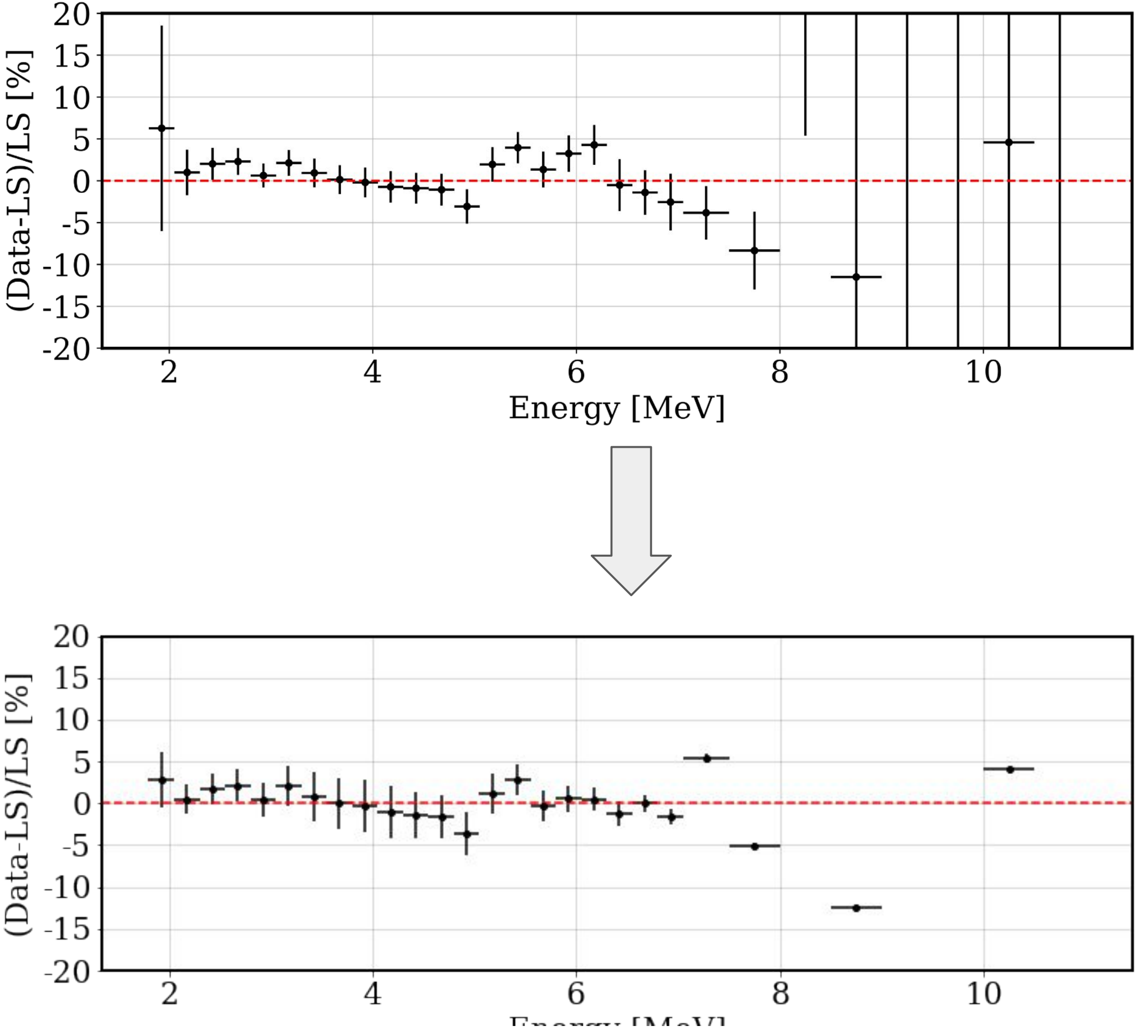
Nuclide	Half-life	Q_β-value (keV)	(β^-,n) branch in β^- decay (%)	Highest daughter level and energy gap (keV)	Highest reaction level (keV)	Possible Pandemonium ?	% decay heat contribution at different cooling times (sec)					Priority
							10	100	1000	5000	10000	
37-Rb-92	4.492 s	8095(6)	0.01	38-Sr-92/7363 → Δ732	7363	yes/borderline?	6.47					2
37-Rb-94	2.702 s	10283.0(26)	10.5	38-Sr-94/6064 → Δ4219	6064	yes/significant	0.96					1
38-Sr-92	2.66 h	1950(9)	–	39-Y-92/1384 → Δ566	ill-defined, and > 4048	yes/borderline?			0.79	3.52	5.87	2
39-Y-96	5.34 s	7103(6)	–	40-Zr-96/6232 → Δ871	6821	yes	4.29					2
41-Nb-99m	2.5 min	4002(12)	>96.2% β^-, <3.8% IT	42-Mo-99/2944 → Δ1058	up to 8118	yes		0.80				2
41-Nb-100	1.5 s	6386(8)	–	42-Mo-100/3130 → Δ3256	up to 8114	yes/significant	4.76					1
41-Nb-100m	2.99 s	6699(3)	–	42-Mo-100/3647 → Δ3052	up to 8114	yes/significant	1.10					1
41-Nb-101	7.1 s	4628(4)	–	42-Mo-101/1099 → Δ3529	up to 5031	yes/significant	2.71					–


1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
2
4
6
8
10
(Data-LS)/LS [%]
20
15
10
5
0
-5
-10
-15
-20
Energy [MeV]


92Rb
true
new
00020
00015
00010
00005
00000
0
2000
4000
6000
8000


100Nb
true
new
00030
00025
00020
00015
00010
00005
00000
0
2000
4000
6000


96Y
true
new
00025
00020
00015
00010
00005
00000
0
2000
4000
6000


(Data-LS)/LS [%]
20
15
10
5
0
-5
-10
-15
-20
2
4
6
8
10
Energy [MeV]
(Data-LS)/LS [%]
20
15
10
5
0
-5
-10
-15
-20
2
4
6
8
10
Energy [MeV]

ROMA:

- vedere differenze “reali” tra gli spettri misurati generati 2 modelli (HM e summation dei francesi, EF) -> qual’è la massima discrepanza accettabile per non vedere differenze con la statistica di TAO?
  - Quanto tempo (statistica) serve per vedere una differenza?

POLIMI:

- capire come verrà fatta l’analisi NMO: taox8 esiste?
  Se si:
  - generare spettri tao-like (senza considerare la risposta del rivelatore) più realistici possibili.
  - iniziare a vedere le differenze tra gli spettri “tao + tao_corrected” e “taox2”. Quant’è la differenza percentuale tra i due spettri?
  - fare lo stesso lavoro con taox8
- confrontare gli spettri da reattore a diversi burnup. Quant’è la differenza? -> va considerato per calcolare lo spettro non oscillato?

UNIMIB:

- trovare un metodo “robusto” per usare uno spettro misurato (e.g. tao) per correggere il modello teorico in maniera sensata.
- effetto del fondo sullo spettro non oscillato.