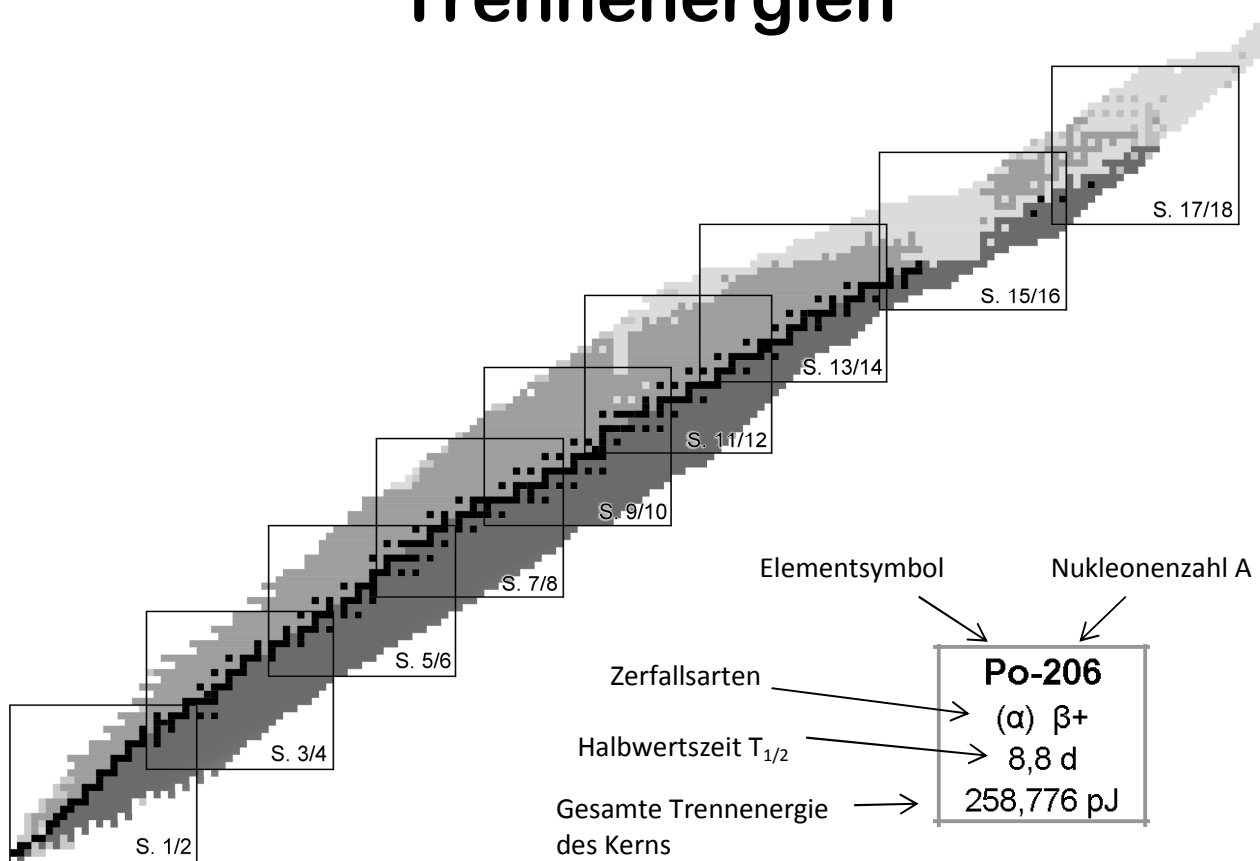


Nuklidkarte mit Halbwertszeiten und Trennenergien



Zerfallsarten sind aufgeführt, wenn sie zu einem Anteil von mindestens 1% auftreten. Liegt der Anteil zwischen 1% und 10%, ist die Zerfallsart eingeklammert.

Schwarze Felder: Stabile Nuklide und Nuklide mit einer Halbwertszeit über 50 Mio. Jahren.

Graue Felder: Nuklide, bei denen der α -Zerfall vorherrscht.

$$1 \text{ pJ} = 10^{-12} \text{ J} = 6,2415 \text{ MeV}$$

$$1 \text{ MeV} = 0,160218 \text{ pJ}$$

$$1 \text{ d} = 86400 \text{ s (Tag)}$$

$$1 \text{ m} = 60 \text{ s (Minute)}$$

$$1 \text{ a} = 31536000 \text{ s (Jahr)}$$

$$1 \text{ h} = 3600 \text{ s (Stunde)}$$

Lichtgeschwindigkeit: $c = 299.792.458 \text{ m/s}$

	Ruheenergie (pJ)	Masse (kg)	Elektrische Ladung (e)	Baryonen- zahl	Leptonen- zahl
p	150,328	$1,6726 \cdot 10^{-27}$	1	1	0
n	150,535	$1,6749 \cdot 10^{-27}$	0	1	0
e^- / e^+	0,082	$9,109 \cdot 10^{-31}$	-1 / +1	0 / 0	+1 / -1
$\nu / \bar{\nu}$	~ 0	~ 0	0 / 0	0 / 0	+1 / -1
γ	0	0	0	0	0

Z \ N	0	1	2	3	4	5	6	7	8	9	10	11	12
21													
20													
19													
18													Ar-30 20 ns 33,319 pJ
17												Cl-28 29,824 pJ	Cl-29 20 ns 33,263 pJ
16											S-26 10 ms 27,456 pJ	S-27 β+, (2p) 21 ms 30,099 pJ	S-28 β+, β+p 125 ms 33,551 pJ
15										P-24 24,029 pJ	P-25 30 ns 27,425 pJ	P-26 β+, (2p) 30 ms 29,984 pJ	P-27 β+ 260 ms 33,15 pJ
14									Si-22 β+, β+p 29 ms 21,54 pJ	Si-23 β+p, β+, (2p) 42,3 ms 24,181 pJ	Si-24 β+, β+p 140 ms 27,558 pJ	Si-25 β+, β+p 220 ms 29,962 pJ	Si-26 β+ 2,234 s 33,012 pJ
13									Al-21 35 ns 21,341 pJ	Al-22 β+, β+p 59 ms 23,909 pJ	Al-23 β+, (β+p) 470 ms 27,029 pJ	Al-24 β+ 2,053 s 29,416 pJ	Al-25 β+ 7,183 s 32,128 pJ
12								Mg-19 17,772 pJ	Mg-20 β+, β+p 90 ms 21,544 pJ	Mg-21 β+ 122 ms 23,904 pJ	Mg-22 β+ 3,857 s 27,009 pJ	Mg-23 β+ 11,32 s 29,116 pJ	Mg-24 stabil 31,764 pJ
11								Na-18 p 1,3E-21 s 18,022 pJ	Na-19 p 40 ns 21,12 pJ	Na-20 β+, β+α 447,9 ms 23,387 pJ	Na-21 β+ 22,49 s 26,128 pJ	Na-22 β+ 2,604 a 27,901 pJ	Na-23 stabil 29,891 pJ
10							Ne-16 2p 9,0E-21 s 15,593 pJ	Ne-17 β+p, (β+α), (β+) 109,2 ms 18,093 pJ	Ne-18 β+ 1,672 s 21,172 pJ	Ne-19 β+ 17,3 s 23,036 pJ	Ne-20 stabil 25,738 pJ	Ne-21 stabil 26,821 pJ	Ne-22 stabil 28,482 pJ
9					F-14 11,745 pJ	F-15 p 4,1E-22 s 15,583 pJ	F-16 p 1,1E-20 s 17,851 pJ	F-17 β+ 64,49 s 20,543 pJ	F-18 β+ 109,8 m 22,009 pJ	F-19 stabil 23,68 pJ	F-20 β- 11,16 s 24,738 pJ	F-21 β- 4,158 s 26,036 pJ	
8				O-12 2p 5,8E-22 s 9,381 pJ	O-13 β+, β+p 8,58 ms 12,105 pJ	O-14 β+ 70,6 s 15,819 pJ	O-15 β+ 122,2 s 17,937 pJ	O-16 stabil 20,447 pJ	O-17 stabil 21,111 pJ	O-18 stabil 22,399 pJ	O-19 β- 26,46 s 23,033 pJ	O-20 β- 13,51 s 24,252 pJ	
7			N-10 2,0E-22 s 5,832 pJ	N-11 p 5,9E-22 s 9,453 pJ	N-12 β+, (β+α) 11 ms 11,863 pJ	N-13 β+ 9,965 m 15,077 pJ	N-14 stabil 16,768 pJ	N-15 stabil 18,504 pJ	N-16 β- 7,13 s 18,903 pJ	N-17 β- 4,173 s 19,845 pJ	N-18 β-, β-α, β-n 622 ms 20,298 pJ	N-19 β-n, β- 271 ms 21,151 pJ	
6		C-8 2p 2,0E-21 s 3,971 pJ	C-9 β+, β+p, β+α 126,5 ms 6,254 pJ	C-10 β+ 19,29 s 9,664 pJ	C-11 β+ 20,39 m 11,766 pJ	C-12 stabil 14,766 pJ	C-13 stabil 15,558 pJ	C-14 β- 5704 a 16,868 pJ	C-15 β- 2,449 s 17,064 pJ	C-16 β-n, (β-) 747 ms 17,745 pJ	C-17 β-, β-n 193 ms 17,861 pJ	C-18 β-, β-n 92 ms 18,531 pJ	
5		B-7 p 3,5E-22 s 3,96 pJ	B-8 β+α 770 ms 6,046 pJ	B-9 p 8,0E-19 s 9,023 pJ	B-10 stabil 10,374 pJ	B-11 stabil 12,209 pJ	B-12 β-, (β-α) 20,2 ms 12,749 pJ	B-13 β- 17,33 ms 13,531 pJ	B-14 β-, (β-n) 12,5 ms 13,686 pJ	B-15 β-n, (β-) 9,87 ms 14,129 pJ	B-16 β-, β-α, β-n 190 ps 14,122 pJ	B-17 β-n, β-, β-2n 5,08 ms 14,343 pJ	
4		Be-6 2p 5,0E-21 s 4,314 pJ	Be-7 β+ 53,22 d 6,024 pJ	Be-8 α 6,7E-17 s 9,052 pJ	Be-9 stabil 9,319 pJ	Be-10 β- 1,51E+06 a 10,41 pJ	Be-11 β-, (β-α) 13,81 s 10,491 pJ	Be-12 β- 21,5 ms 10,999 pJ	Be-13 β- 500 ps 10,983 pJ	Be-14 β-n 4,35 ms 11,202 pJ	Be-15 β- 200 ns 10,911 pJ	Be-16 β- 200 ns 10,946 pJ	
3	Li-4 p 9,1E-23 s 0,737 pJ	Li-5 p 3,7E-22 s 4,219 pJ	Li-6 stabil 5,126 pJ	Li-7 stabil 6,288 pJ	Li-8 β-α 840,3 ms 6,613 pJ	Li-9 β-n, β- 178,3 ms 7,264 pJ	Li-10 n 2,0E-21 s 7,26 pJ	Li-11 β-n, (β-), (β-2n) 8,75 ms 7,312 pJ	Li-12 n 10 ns 7,114 pJ				
2	He-3 stabil 1,237 pJ	He-4 stabil 4,533 pJ	He-5 n 7,0E-22 s 4,391 pJ	He-6 β- 806,7 ms 4,689 pJ	He-7 n 2,9E-21 s 4,62 pJ	He-8 β-, β-n 119 ms 5,032 pJ	He-9 n 7,0E-21 s 4,829 pJ	He-10 2n 2,7E-21 s 4,861 pJ					
1	H-1 stabil	H-2 β- 12,33 a 0,356 pJ	H-3 n 1,4E-22 s 0,897 pJ	H-4 n 9,1E-22 s 1,07 pJ	H-5 2n 2,9E-22 s 0,923 pJ	H-6 n 2,3E-23 s 1,054 pJ	H-7 n						
0		n-1 β- 10,23 m											
Z / N	0	1	2	3	4	5	6	7	8	9	10	11	12

13	14	15	16	17	18	19	20	21	22	23	24	25	Z / N
		Sc-36	Sc-37	Sc-38	Sc-39	Sc-40	Sc-41	Sc-42	Sc-43	Sc-44	Sc-45	Sc-46	21
		41,696 pJ	44,757 pJ	300 ns 47,3 pJ	p 300 ns 50,071 pJ	β^+ 182,3 ms 52,383 pJ	β^+ 596,3 ms 54,977 pJ	β^+ 681,3 ms 56,827 pJ	β^+ 3,891 h 58,772 pJ	β^+ 3,97 h 60,326 pJ	stabil 62,14 pJ	β^- 83,79 d 63,544 pJ	
	Ca-34	Ca-35	Ca-36	Ca-37	Ca-38	Ca-39	Ca-40	Ca-41	Ca-42	Ca-43	Ca-44	Ca-45	20
	35 ns 39,352 pJ	β^+ , β^+ , (2p) 25,7 ms 42,018 pJ	β^+ , β^+ 102 ms 45,079 pJ	β^+ , β^+ 181,1 ms 47,449 pJ	β^+ 440 ms 50,168 pJ	β^+ 859,6 ms 52,296 pJ	stabil 54,803 pJ	β^+ 1,02E+05 a 56,143 pJ	stabil 57,982 pJ	stabil 59,253 pJ	stabil 61,036 pJ	β^- 162,7 d 62,224 pJ	
K-32	K-33	K-34	K-35	K-36	K-37	K-38	K-39	K-40	K-41	K-42	K-43	K-44	19
35,73 pJ	25 ns 39,21 pJ	40 ns 41,825 pJ	β^+ 178 ms 44,669 pJ	β^+ 342 ms 46,964 pJ	β^+ 1,226 s 49,439 pJ	β^+ 7,636 m 51,373 pJ	stabil 53,468 pJ	β^- , β^+ 1,25E+09 a 54,718 pJ	stabil 56,335 pJ	β^- 12,36 h 57,543 pJ	β^- 22,3 h 59,087 pJ	β^- 22,13 m 60,255 pJ	
Ar-31	Ar-32	Ar-33	Ar-34	Ar-35	Ar-36	Ar-37	Ar-38	Ar-39	Ar-40	Ar-41	Ar-42	Ar-43	18
β^+ , β^+ , (2p) 14,4 ms 36,024 pJ	β^+ , β^+ 98 ms 39,478 pJ	β^+ , β^+ 173 ms 41,922 pJ	β^+ 845 ms 44,656 pJ	β^+ 1,775 s 46,697 pJ	stabil 49,141 pJ	β^+ 35,04 d 50,549 pJ	stabil 52,446 pJ	β^- 269,2 a 53,503 pJ	stabil 55,084 pJ	β^- 109,6 m 56,062 pJ	β^- 32,92 a 57,572 pJ	β^- 5,37 m 58,479 pJ	
Cl-30	Cl-31	Cl-32	Cl-33	Cl-34	Cl-35	Cl-36	Cl-37	Cl-38	Cl-39	Cl-40	Cl-41	Cl-42	17
30 ns 35,953 pJ	β^+ 150 ms 39,09 pJ	β^+ 298 ms 41,386 pJ	β^+ 2,511 s 43,909 pJ	β^+ 1,526 s 45,753 pJ	stabil 47,778 pJ	β^- , (β^+) 3,01E+05 a 49,153 pJ	stabil 50,805 pJ	β^- 37,24 m 51,784 pJ	β^- 55,6 m 53,077 pJ	β^- 81 s 54,011 pJ	β^- 38,4 s 55,264 pJ	β^- 6,8 s 56,175 pJ	
S-29	S-30	S-31	S-32	S-33	S-34	S-35	S-36	S-37	S-38	S-39	S-40	S-41	16
β^+ , β^+ 187 ms 36,002 pJ	β^+ 1,178 s 39,043 pJ	β^+ 2,572 s 41,134 pJ	stabil 43,544 pJ	stabil 44,929 pJ	stabil 46,758 pJ	β^- 87,51 d 47,877 pJ	stabil 49,461 pJ	β^- 5,05 m 50,151 pJ	β^- 2,838 h 51,438 pJ	β^- 11,5 s 52,139 pJ	β^- 8,8 s 53,385 pJ	β^- 1,99 s 54,062 pJ	
P-28	P-29	P-30	P-31	P-32	P-33	P-34	P-35	P-36	P-37	P-38	P-39	P-40	15
β^+ 270,3 ms 35,475 pJ	β^+ 4,142 s 38,338 pJ	β^+ 149,9 s 40,151 pJ	stabil 42,124 pJ	β^- 14,26 d 43,395 pJ	β^- 25,34 d 45,014 pJ	β^- 12,43 s 46,022 pJ	β^- 47,3 s 47,363 pJ	β^- 5,6 s 47,919 pJ	β^- 2,31 s 49,01 pJ	β^- , β^- 640 ms 49,625 pJ	β^- , β^- 190 ms 50,616 pJ	β^- , β^- 153 ms 51,148 pJ	
Si-27	Si-28	Si-29	Si-30	Si-31	Si-32	Si-33	Si-34	Si-35	Si-36	Si-37	Si-38	Si-39	14
β^+ 4,16 s 35,145 pJ	stabil 37,897 pJ	stabil 39,255 pJ	stabil 40,955 pJ	β^- 157,3 m 42,01 pJ	β^- 132,1 a 43,485 pJ	β^- 6,18 s 44,203 pJ	β^- 2,77 s 45,41 pJ	β^- , (β^-) 780 ms 45,807 pJ	β^- , β^- 450 ms 46,8 pJ	β^- , β^- 90 ms 47,146 pJ	β^- 90 ms 48,036 pJ	β^- 90 ms 48,37 pJ	
Al-26	Al-27	Al-28	Al-29	Al-30	Al-31	Al-32	Al-33	Al-34	Al-35	Al-36	Al-37	Al-38	13
β^+ 7,17E+05 a 33,949 pJ	stabil 36,041 pJ	β^- 134,5 s 37,279 pJ	β^- 6,56 m 38,791 pJ	β^- 3,6 s 39,709 pJ	β^- , (β^-) 644 ms 40,854 pJ	β^- 31,7 ms 41,524 pJ	β^- , (β^-) 41,7 ms 42,412 pJ	β^- , β^- 56,3 ms 42,806 pJ	β^- , β^- 38,6 ms 43,65 pJ	β^- , β^- 90 ms 43,997 pJ	β^- 20 ms 44,626 pJ	β^- 40 ms 44,938 pJ	
Mg-25	Mg-26	Mg-27	Mg-28	Mg-29	Mg-30	Mg-31	Mg-32	Mg-33	Mg-34	Mg-35	Mg-36	Mg-37	12
stabil 32,939 pJ	stabil 34,716 pJ	β^- 9,458 m 35,748 pJ	β^- 20,92 h 37,111 pJ	β^- 1,3 s 37,699 pJ	β^- 335 ms 38,719 pJ	β^- , (β^-) 230 ms 39,1 pJ	β^- , (β^-) 95 ms 40,03 pJ	β^- , β^- 90,5 ms 40,386 pJ	β^- , β^- 20 ms 41,052 pJ	β^- , β^- 70 ms 41,171 pJ	β^- , (β^-) 5 ms 41,615 pJ	β^- 40 ms 41,656 pJ	
Na-24	Na-25	Na-26	Na-27	Na-28	Na-29	Na-30	Na-31	Na-32	Na-33	Na-34	Na-35	Na-36	11
β^- 14,96 h 31,006 pJ	β^- 59,1 s 32,45 pJ	β^- 1,077 s 33,343 pJ	β^- 301 ms 34,421 pJ	β^- 30,5 ms 34,988 pJ	β^- , β^- 44,9 ms 35,696 pJ	β^- , β^- , (β^-) 48,4 ms 36,077 pJ	β^- , β^- 17 ms 36,679 pJ	β^- , β^- , (β^-) 12,9 ms 36,95 pJ	β^- , β^- , β^- 8,2 ms 37,306 pJ	β^- , β^- , β^- 5,5 ms 37,342 pJ	β^- 1,5 ms 37,543 pJ	β^- 260 ns 37,491 pJ	
Ne-23	Ne-24	Ne-25	Ne-26	Ne-27	Ne-28	Ne-29	Ne-30	Ne-31	Ne-32	Ne-33	Ne-34	10	
β^- 37,24 s 29,315 pJ	β^- 3,38 m 30,736 pJ	β^- 602 ms 31,413 pJ	β^- 197 ms 32,3 pJ	β^- , (β^-) 32 ms 32,531 pJ	β^- , β^- 18,3 ms 33,152 pJ	β^- , β^- , (β^-) 15,6 ms 33,356 pJ	β^- , β^- 5,8 ms 33,838 pJ	β^- 3,4 ms 33,893 pJ	β^- 3,5 ms 34,156 pJ	β^- 260 ns 34,049 pJ	β^- 1 ms 34,204 pJ		
F-22	F-23	F-24	F-25	F-26	F-27	F-28	F-29	F-30	F-31	9			
β^- , β^- 4,23 s 26,874 pJ	β^- , β^- 2,23 s 28,08 pJ	β^- , (β^-) 400 ms 28,697 pJ	β^- , β^- 50 ms 29,396 pJ	β^- , β^- 10,2 ms 29,568 pJ	β^- , β^- 4,9 ms 29,792 pJ	40 ns 29,756 pJ	β^- , β^- 2,6 ms 29,918 pJ	260 ns 29,829 pJ	β^- 1 ms 29,94 pJ				
O-21	O-22	O-23	O-24	O-25	O-26	O-27	O-28	8					
β^- 3,42 s 24,862 pJ	β^- , β^- 2,25 s 25,959 pJ	β^- , β^- 90 ms 26,399 pJ	β^- , β^- 65 ms 26,978 pJ	50 ns 26,929 pJ	n 40 ns 26,898 pJ	260 ns 26,712 pJ	100 ns 26,58 pJ						
N-20	N-21	N-22	N-23	N-24	N-25	7							
β^- , β^- 130 ms 21,499 pJ	β^- , β^- 87 ms 22,233 pJ	β^- , β^- 13,9 ms 22,439 pJ	β^- , β^- 14,5 ms 22,714 pJ	52 ns 22,541 pJ	260 ns 22,398 pJ								
C-19	C-20	C-21	C-22	6									
β^- , β^- , (β^-) 46,2 ms 18,624 pJ	β^- , β^- 16 ms 19,095 pJ	30 ns 19,04 pJ	β^- , (β^-) 6,2 ms 19,175 pJ										
B-18	B-19	5											
26 ns 14,275 pJ	β^- , β^- , β^- 2,92 ms 14,432 pJ												
4													
3													
2													
1													
0													
13	14	15	16	17	18	19	20	21	22	23	24	25	Z \ N

Z \ N	19	20	21	22	23	24	25	26	27	28	29	30	31
34													Se-65 β+ 50 ms 85,073 pj
33									As-60	As-61	As-62	As-63	As-64
32								Ge-58	Ge-59	Ge-60	Ge-61	Ge-62	Ge-63
31							Ga-56	Ga-57	Ga-58	Ga-59	Ga-60	Ga-61	Ga-62
30						Zn-54	Zn-55	Zn-56	Zn-57	Zn-58	Zn-59	Zn-60	Zn-61
29					Cu-52	Cu-53	Cu-54	Cu-55	Cu-56	Cu-57	Cu-58	Cu-59	Cu-60
28		Ni-48	Ni-49	Ni-50	Ni-51	Ni-52	Ni-53	Ni-54	Ni-55	Ni-56	Ni-57	Ni-58	Ni-59
27		Co-47	Co-48	Co-49	Co-50	Co-51	Co-52	Co-53	Co-54	Co-55	Co-56	Co-57	Co-58
26	Fe-45	Fe-46	Fe-47	Fe-48	Fe-49	Fe-50	Fe-51	Fe-52	Fe-53	Fe-54	Fe-55	Fe-56	Fe-57
25	Mn-44	Mn-45	Mn-46	Mn-47	Mn-48	Mn-49	Mn-50	Mn-51	Mn-52	Mn-53	Mn-54	Mn-55	Mn-56
24	Cr-43	Cr-44	Cr-45	Cr-46	Cr-47	Cr-48	Cr-49	Cr-50	Cr-51	Cr-52	Cr-53	Cr-54	Cr-55
23	V-42	V-43	V-44	V-45	V-46	V-47	V-48	V-49	V-50	V-51	V-52	V-53	V-54
22	Ti-41	Ti-42	Ti-43	Ti-44	Ti-45	Ti-46	Ti-47	Ti-48	Ti-49	Ti-50	Ti-51	Ti-52	Ti-53
21	Sc-40	Sc-41	Sc-42	Sc-43	Sc-44	Sc-45	Sc-46	Sc-47	Sc-48	Sc-49	Sc-50	Sc-51	Sc-52
20	Ca-39	Ca-40	Ca-41	Ca-42	Ca-43	Ca-44	Ca-45	Ca-46	Ca-47	Ca-48	Ca-49	Ca-50	Ca-51
19	K-38	K-39	K-40	K-41	K-42	K-43	K-44	K-45	K-46	K-47	K-48	K-49	K-50
18	Ar-37	Ar-38	Ar-39	Ar-40	Ar-41	Ar-42	Ar-43	Ar-44	Ar-45	Ar-46	Ar-47	Ar-48	Ar-49
17	Cl-36	Cl-37	Cl-38	Cl-39	Cl-40	Cl-41	Cl-42	Cl-43	Cl-44	Cl-45	Cl-46	Cl-47	Cl-48
16	S-35	S-36	S-37	S-38	S-39	S-40	S-41	S-42	S-43	S-44	S-45	S-46	S-47
15	P-34	P-35	P-36	P-37	P-38	P-39	P-40	P-41	P-42	P-43	P-44	P-45	P-46
14	Si-33	Si-34	Si-35	Si-36	Si-37	Si-38	Si-39	Si-40	Si-41	Si-42	Si-43	Si-44	
13	Al-32	Al-33	Al-34	Al-35	Al-36	Al-37	Al-38	Al-39	Al-40	Al-41	Al-42		
Z / N	19	20	21	22	23	24	25	26	27	28	29	30	31

32	33	34	35	36	37	38	39	40	41	42	43	44	Z / N
Se-66 β+ 33 ms 87,767 pJ	Se-67 β+ 133 ms 89,827 pJ	Se-68 β+ 35,5 s 92,36 pJ	Se-69 β+ 27,4 s 93,988 pJ	Se-70 β+ 41,1 m 96,201 pJ	Se-71 β+ 4,74 m 97,665 pJ	Se-72 β+ 8,4 d 99,724 pJ	Se-73 β+ 7,15 h 101,069 pJ	Se-74 stabil 103,002 pJ	Se-75 β+ 119,8 d 104,289 pJ	Se-76 stabil 106,076 pJ	Se-77 stabil 107,264 pJ	Se-78 stabil 108,946 pJ	34
As-65 β+ 170 ms 87,448 pJ	As-66 β+ 95,77 ms 89,459 pJ	As-67 β+ 42,5 s 91,582 pJ	As-68 β+ 151,6 s 93,236 pJ	As-69 β+ 15,2 m 95,2 pJ	As-70 β+ 52,6 m 96,694 pJ	As-71 β+ 65,28 h 98,556 pJ	As-72 β+ 26 h 99,903 pJ	As-73 β+ 80,3 d 101,633 pJ	As-74 β+, β- 17,77 d 102,911 pJ	As-75 stabil 104,552 pJ	As-76 β- 25,87 h 105,726 pJ	As-77 β- 38,83 h 107,28 pJ	33
Ge-64 β+ 63,7 s 87,46 pJ	Ge-65 β+ 30,9 s 89,084 pJ	Ge-66 β+ 135,6 m 91,211 pJ	Ge-67 β+ 18,9 m 92,67 pJ	Ge-68 β+ 271 d 94,656 pJ	Ge-69 β+ 39,05 h 95,968 pJ	Ge-70 stabil 97,816 pJ	Ge-71 β+ 11,43 d 99,004 pJ	Ge-72 stabil 100,727 pJ	Ge-73 stabil 101,813 pJ	Ge-74 stabil 103,447 pJ	Ge-75 β- 82,78 m 104,489 pJ	Ge-76 β- 1,58E+21 a 106 pJ	32
Ga-63 β+ 32,4 s 86,644 pJ	Ga-64 β+ 157,6 s 88,303 pJ	Ga-65 β+ 15,2 m 90,209 pJ	Ga-66 β+ 9,49 h 91,673 pJ	Ga-67 β+ 78,27 h 93,472 pJ	Ga-68 β+ 67,71 m 94,798 pJ	Ga-69 stabil 96,45 pJ	Ga-70 β- 21,14 m 97,677 pJ	Ga-71 stabil 99,167 pJ	Ga-72 β- 14,1 h 100,212 pJ	Ga-73 β- 4,86 h 101,683 pJ	Ga-74 β- 8,12 m 102,711 pJ	Ga-75 β- 126 s 104,071 pJ	31
Zn-62 β+ 9,186 h 86,217 pJ	Zn-63 β+ 38,47 m 87,677 pJ	Zn-64 stabil 89,577 pJ	Zn-65 β+ 244,1 d 90,856 pJ	Zn-66 stabil 92,628 pJ	Zn-67 stabil 93,757 pJ	Zn-68 stabil 95,391 pJ	Zn-69 β- 56,4 m 96,43 pJ	Zn-70 stabil 97,907 pJ	Zn-71 β- 147 s 98,841 pJ	Zn-72 β- 46,5 h 100,264 pJ	Zn-73 β- 23,5 s 101,12 pJ	Zn-74 β- 95,6 s 102,462 pJ	30
Cu-61 β+ 3,333 h 85,179 pJ	Cu-62 β+ 9,673 m 86,603 pJ	Cu-63 stabil 88,342 pJ	Cu-64 β+, β- 12,7 h 89,61 pJ	Cu-65 stabil 91,198 pJ	Cu-66 β- 5,12 m 92,33 pJ	Cu-67 β- 61,83 h 93,793 pJ	Cu-68 β- 31,1 s 94,805 pJ	Cu-69 β- 171 s 96,126 pJ	Cu-70 β- 44,5 s 96,977 pJ	Cu-71 β- 19,4 s 98,227 pJ	Cu-72 β- 6,6 s 99,051 pJ	Cu-73 β- 4,2 s 100,217 pJ	29
Ni-60 stabil 84,41 pJ	Ni-61 stabil 85,663 pJ	Ni-62 stabil 87,361 pJ	Ni-63 β- 100,2 a 88,456 pJ	Ni-64 stabil 90,004 pJ	Ni-65 β- 151 m 90,981 pJ	Ni-66 β- 54,6 h 92,415 pJ	Ni-67 β- 21 s 93,345 pJ	Ni-68 β- 29 s 94,594 pJ	Ni-69 β- 11,5 s 95,329 pJ	Ni-70 β- 6 s 96,485 pJ	Ni-71 β- 2,56 s 97,146 pJ	Ni-72 β- 1,57 s 98,238 pJ	28
Co-59 stabil 82,883 pJ	Co-60 β- 5,275 a 84,083 pJ	Co-61 β- 99 m 85,576 pJ	Co-62 β- 90 s 86,634 pJ	Co-63 β- 26,9 s 87,993 pJ	Co-64 β- 300 ms 88,958 pJ	Co-65 β- 1,2 s 90,152 pJ	Co-66 β- 194 ms 90,95 pJ	Co-67 β- 425 ms 92,081 pJ	Co-68 β- 200 ms 92,78 pJ	Co-69 β-, (β-n) 227 ms 93,857 pJ	Co-70 β- 125 ms 94,455 pJ	Co-71 β- 97 ms 95,463 pJ	27
Fe-58 stabil 81,703 pJ	Fe-59 β- 44,5 d 82,757 pJ	Fe-60 β- 1,50E+06 a 84,17 pJ	Fe-61 β- 5,98 m 85,065 pJ	Fe-62 β- 68 s 86,354 pJ	Fe-63 β- 6,1 s 87,71 pJ	Fe-64 β- 2 s 88,276 pJ	Fe-65 β- 1,3 s 88,947 pJ	Fe-66 β- 440 ms 90,03 pJ	Fe-67 β- 394 ms 90,707 pJ	Fe-68 β- 187 ms 91,582 pJ	Fe-69 β-, (β-n) 109 ms 92,121 pJ	Fe-70 β- 94 ms 93,019 pJ	26
Mn-57 β- 85,4 s 79,787 pJ	Mn-58 β- 3 s 80,827 pJ	Mn-59 β- 4,59 s 82,052 pJ	Mn-60 β- 51 s 82,976 pJ	Mn-61 β- 670 ms 84,011 pJ	Mn-62 β- 671 ms 84,743 pJ	Mn-63 β- 275 ms 85,766 pJ	Mn-64 β- 88,8 ms 86,461 pJ	Mn-65 β- 92 ms 87,437 pJ	Mn-66 β- 64,4 ms 88,021 pJ	Mn-67 β- 45 ms 88,861 pJ	Mn-68 β- 28 ms 89,381 pJ	Mn-69 β-, (β-n) 14 ms 90,154 pJ	25
Cr-56 β- 5,94 m 78,266 pJ	Cr-57 β- 21,1 s 79,118 pJ	Cr-58 β- 7 s 80,298 pJ	Cr-59 β- 460 ms 80,964 pJ	Cr-60 β- 560 ms 82,028 pJ	Cr-61 β- 261 ms 82,633 pJ	Cr-62 β- 199 ms 83,64 pJ	Cr-63 β- 129 ms 84,151 pJ	Cr-64 β- 43 ms 85,067 pJ	Cr-65 β- 27 ms 85,5 pJ	Cr-66 β- 10 ms 86,319 pJ	Cr-67 β- 10 ms 86,682 pJ		24
V-55 β- 6,54 s 76,116 pJ	V-56 β- 216 ms 76,919 pJ	V-57 β- 350 ms 77,909 pJ	V-58 β- 191 ms 78,56 pJ	V-59 β- 75 ms 79,357 pJ	V-60 β- 122 ms 79,923 pJ	V-61 β-, (β-n) 47 ms 80,708 pJ	V-62 β- 33,5 ms 81,206 pJ	V-63 β-, (β-n) 17 ms 81,941 pJ	V-64 β- 10 ms 82,349 pJ	V-65 β- 10 ms 82,98 pJ			23
Ti-54 β- 1,5 s 74,378 pJ	Ti-55 β- 490 ms 75,043 pJ	Ti-56 β- 164 ms 75,896 pJ	Ti-57 β- 60 ms 76,329 pJ	Ti-58 β- 54 ms 77,175 pJ	Ti-59 β- 30 ms 77,579 pJ	Ti-60 β- 22 ms 78,298 pJ	Ti-61 β- 10 ms 78,636 pJ	Ti-62 β- 10 ms 79,289 pJ	Ti-63 β- 3 ms 79,549 pJ				22
Sc-53 β- 3 s 71,932 pJ	Sc-54 β- 260 ms 72,683 pJ	Sc-55 β- 120 ms 73,227 pJ	Sc-56 β- 80 ms 73,832 pJ	Sc-57 β-, (β-n) 13 ms 74,393 pJ	Sc-58 β- 12 ms 74,806 pJ	Sc-59 β- 10 ms 75,273 pJ	Sc-60 β- 3 ms 75,597 pJ						21
Ca-52 β-, (β-n) 4,6 s 69,95 pJ	Ca-53 β-, (β-n) 90 ms 70,497 pJ	Ca-54 β- 50 ms 71,152 pJ	Ca-55 β- 30 ms 71,518 pJ	Ca-56 β- 10 ms 72,065 pJ	Ca-57 β- 5 ms 72,347 pJ								20
K-51 β-, (β-n) 365 ms 67,093 pJ	K-52 β-, (β-2n, β-) 105 ms 67,459 pJ	K-53 β-, (β-2n, β-) 30 ms 68,077 pJ	K-54 β- 10 ms 68,314 pJ	K-55 β- 3 ms 68,786 pJ									19
Ar-50 β-, (β-n) 85 ms 64,728 pJ	Ar-51 β- 60 ms 64,944 pJ	Ar-52 β- 10 ms 65,467 pJ	Ar-53 β- 3 ms 65,546 pJ										18
Cl-49 β- 50 ms 61,188 pJ	Cl-50 β- 20 ms 61,355 pJ	Cl-51 β- 2 ms 61,659 pJ											17
S-48 β- 10 ms 57,955 pJ	S-49 β- 200 ns 57,836 pJ												16

Z \ N	36	37	38	39	40	41	42	43	44	45	46	47	48
47											Ag-93 5 ms 121,869 pJ	Ag-94 β+ 37 ms 124,204 pJ	Ag-95 β+ 1,74 s 126,59 pJ
46										Pd-91 β+ 10 ms 119,511 pJ	Pd-92 β+ 1,1 s 122,092 pJ	Pd-93 β+ 1,07 s 124,059 pJ	Pd-94 β+ 9 s 126,417 pJ
45								Rh-89 β+ 10 ms 117,084 pJ	Rh-90 β+ 15 ms 119,264 pJ	Rh-91 β+ 1,74 s 121,508 pJ	Rh-92 β+ 4,3 s 123,477 pJ	Rh-93 β+ 13,9 s 125,713 pJ	
44							Ru-87 β+ 50 ms 114,578 pJ	Ru-88 β+ 1,3 s 117,206 pJ	Ru-89 β+ 1,38 s 119,109 pJ	Ru-90 β+ 11 s 121,326 pJ	Ru-91 β+ 9 s 123,17 pJ	Ru-92 β+ 3,65 m 125,379 pJ	
43						Tc-85 β+ 110 ns 112,162 pJ	Tc-86 β+ 55 ms 114,35 pJ	Tc-87 β+ 2,18 s 116,585 pJ	Tc-88 β+ 5,8 s 118,461 pJ	Tc-89 β+ 12,8 s 120,577 pJ	Tc-90 β+ 8,7 s 122,404 pJ	Tc-91 β+ 3,14 m 124,462 pJ	
42				Mo-83 β+ 23 ms 109,722 pJ	Mo-84 β+ 3,8 ms 112,296 pJ	Mo-85 β+ 3,2 s 114,123 pJ	Mo-86 β+ 19,6 s 116,292 pJ	Mo-87 β+, β+p 14,05 s 118,086 pJ	Mo-88 β+ 8 m 120,182 pJ	Mo-89 β+ 126,6 s 121,844 pJ	Mo-90 β+ 5,56 h 123,965 pJ		
41				Nb-81 β+ 44 ns 107,208 pJ	Nb-82 β+ 51 ms 109,386 pJ	Nb-83 β+ 4,1 s 111,637 pJ	Nb-84 β+ 9,8 s 113,399 pJ	Nb-85 β+ 20,9 s 115,538 pJ	Nb-86 β+ 88 s 117,261 pJ	Nb-87 β+ 3,75 m 119,252 pJ	Nb-88 β+ 14,5 m 120,848 pJ	Nb-89 β+ 121,8 m 122,874 pJ	
40		Zr-78 β+ 50 ms 102,538 pJ	Zr-79 β+ 56 ms 104,738 pJ	Zr-80 β+ 4,6 s 107,333 pJ	Zr-81 β+ 5,5 s 109,104 pJ	Zr-82 β+ 32 s 111,317 pJ	Zr-83 β+ 41,6 s 112,967 pJ	Zr-84 β+ 25,9 m 115,068 pJ	Zr-85 β+ 7,86 m 116,625 pJ	Zr-86 β+ 16,5 h 118,664 pJ	Zr-87 β+ 100,8 m 120,205 pJ	Zr-88 β+ 83,4 d 122,183 pJ	
39		Y-76 β+ 500 ns 99,592 pJ	Y-77 β+, p 63 ms 102,198 pJ	Y-78 β+ 54 ms 104,4 pJ	Y-79 β+ 14,8 s 106,624 pJ	Y-80 β+ 30,1 s 108,372 pJ	Y-81 β+ 70,4 s 110,436 pJ	Y-82 β+ 8,3 s 112,076 pJ	Y-83 β+ 7,08 m 114,032 pJ	Y-84 β+ 4,6 s 115,619 pJ	Y-85 β+ 160,8 m 117,502 pJ	Y-86 β+ 14,74 h 119,026 pJ	Y-87 β+ 79,8 h 120,918 pJ
38	Sr-74 β+ 50 ms 97,457 pJ	Sr-75 β+, (β+p) 88 ms 99,695 pJ	Sr-76 β+ 8,9 s 102,209 pJ	Sr-77 β+ 9 s 104,072 pJ	Sr-78 β+ 159 s 106,226 pJ	Sr-79 β+ 135 s 107,888 pJ	Sr-80 β+ 106,3 m 109,955 pJ	Sr-81 β+ 22,3 m 111,443 pJ	Sr-82 β+ 25,36 d 113,455 pJ	Sr-83 β+ 32,41 h 114,874 pJ	Sr-84 stabil 116,783 pJ	Sr-85 β+ 64,85 d 118,15 pJ	Sr-86 stabil 119,991 pJ
37	Rb-73 β+ 30 ns 97,146 pJ	Rb-74 β+ 64,76 ms 99,375 pJ	Rb-75 β+ 19 s 101,518 pJ	Rb-76 β+ 36,5 s 103,333 pJ	Rb-77 β+ 3,77 m 105,322 pJ	Rb-78 β+ 17,66 m 106,954 pJ	Rb-79 β+ 22,9 m 108,866 pJ	Rb-80 β+ 33,4 s 110,379 pJ	Rb-81 β+ 4,576 h 112,198 pJ	Rb-82 β+ 76,38 s 113,609 pJ	Rb-83 β+ 86,2 d 115,364 pJ	Rb-84 β+, (β-) 32,77 d 116,766 pJ	Rb-85 stabil 118,446 pJ
36	Kr-72 β+ 17,16 s 97,238 pJ	Kr-73 β+ 28,6 s 98,949 pJ	Kr-74 β+ 11,5 m 101,169 pJ	Kr-75 β+ 4,29 m 102,781 pJ	Kr-76 β+ 14,8 h 104,826 pJ	Kr-77 β+ 74,4 m 106,304 pJ	Kr-78 stabil 108,24 pJ	Kr-79 β+ 35,04 h 109,575 pJ	Kr-80 stabil 111,421 pJ	Kr-81 β+ 2,29E+05 a 112,682 pJ	Kr-82 stabil 114,439 pJ	Kr-83 stabil 115,635 pJ	Kr-84 stabil 117,321 pJ
35	Br-71 β+ 21,4 s 96,566 pJ	Br-72 β+ 78,6 s 98,177 pJ	Br-73 β+ 3,4 m 100,208 pJ	Br-74 β+ 25,4 m 101,77 pJ	Br-75 β+ 96,7 m 103,678 pJ	Br-76 β+ 16,2 h 105,155 pJ	Br-77 β+ 57,04 h 106,92 pJ	Br-78 β+ 6,46 m 108,248 pJ	Br-79 stabil 109,961 pJ	Br-80 β-, (β+) 17,68 m 111,225 pJ	Br-81 stabil 112,852 pJ	Br-82 β- 35,28 h 114,069 pJ	Br-83 β- 144 m 115,604 pJ
34	Se-70 β+ 41,1 m 96,201 pJ	Se-71 β+ 4,74 m 97,665 pJ	Se-72 β+ 8,4 d 99,724 pJ	Se-73 β+ 7,15 h 101,069 pJ	Se-74 stabil 103,002 pJ	Se-75 β+ 119,8 d 104,289 pJ	Se-76 stabil 106,076 pJ	Se-77 stabil 107,264 pJ	Se-78 stabil 108,946 pJ	Se-79 β- 2,95E+05 a 110,062 pJ	Se-80 stabil 111,65 pJ	Se-81 β- 18,45 m 112,724 pJ	Se-82 β- 9,71E+19 a 114,21 pJ
33	As-69 β+ 15,2 m 95,2 pJ	As-70 β+ 52,6 m 96,694 pJ	As-71 β+ 65,28 h 98,556 pJ	As-72 β+ 26 h 99,903 pJ	As-73 β+ 80,3 d 101,633 pJ	As-74 β+, β- 17,77 d 102,911 pJ	As-75 stabil 104,552 pJ	As-76 β- 25,87 h 105,726 pJ	As-77 β- 38,83 h 107,28 pJ	As-78 β- 90,7 m 108,397 pJ	As-79 β- 9,01 m 109,822 pJ	As-80 β- 15,2 s 110,878 pJ	As-81 β- 33,3 s 112,231 pJ
32	Ge-68 β+ 271 d 94,656 pJ	Ge-69 β+ 39,05 h 95,968 pJ	Ge-70 stabil 97,816 pJ	Ge-71 β+ 11,43 d 99,004 pJ	Ge-72 stabil 100,727 pJ	Ge-73 stabil 101,813 pJ	Ge-74 stabil 103,447 pJ	Ge-75 β- 82,78 m 104,489 pJ	Ge-76 β- 1,58E+21 a 106 pJ	Ge-77 β- 11,3 h 106,973 pJ	Ge-78 β- 88 m 108,37 pJ	Ge-79 β- 18,98 s 109,282 pJ	Ge-80 β- 29,5 s 110,58 pJ
31	Ga-67 β+ 78,27 h 93,472 pJ	Ga-68 β+ 67,71 m 94,798 pJ	Ga-69 stabil 96,45 pJ	Ga-70 β- 21,14 m 97,677 pJ	Ga-71 stabil 99,167 pJ	Ga-72 β- 14,1 h 100,212 pJ	Ga-73 β- 4,86 h 101,683 pJ	Ga-74 β- 8,12 m 102,711 pJ	Ga-75 β- 126 s 104,071 pJ	Ga-76 β- 32,6 s 105,017 pJ	Ga-77 β- 13,2 s 106,261 pJ	Ga-78 β- 5,09 s 107,188 pJ	Ga-79 β- 2,847 s 108,29 pJ
30	Zn-66 stabil 92,628 pJ	Zn-67 stabil 93,757 pJ	Zn-68 stabil 95,391 pJ	Zn-69 β- 56,4 m 96,43 pJ	Zn-70 stabil 97,907 pJ	Zn-71 β- 147 s 98,841 pJ	Zn-72 β- 46,5 h 100,264 pJ	Zn-73 β- 23,5 s 101,12 pJ	Zn-74 β- 95,6 s 102,462 pJ	Zn-75 β- 10,2 s 103,236 pJ	Zn-76 β- 5,7 s 104,476 pJ	Zn-77 β- 2,08 s 105,221 pJ	Zn-78 β- 1,47 s 106,294 pJ
29	Cu-65 stabil 91,198 pJ	Cu-66 β- 5,12 m 92,33 pJ	Cu-67 β- 61,83 h 93,793 pJ	Cu-68 β- 31,1 s 94,805 pJ	Cu-69 β- 171 s 96,126 pJ	Cu-70 β- 44,5 s 96,977 pJ	Cu-71 β- 19,4 s 98,227 pJ	Cu-72 β- 6,6 s 99,051 pJ	Cu-73 β- 4,2 s 100,217 pJ	Cu-74 β- 1,594 s 101,033 pJ	Cu-75 β-, (β-n) 1,224 s 102,019 pJ	Cu-76 β-, (β-n) 641 ms 102,813 pJ	Cu-77 β- 469 ms 103,727 pJ
28	Ni-64 stabil 90,004 pJ	Ni-65 β- 151 m 90,981 pJ	Ni-66 β- 54,6 h 92,415 pJ	Ni-67 β- 21 s 93,345 pJ	Ni-68 β- 29 s 94,594 pJ	Ni-69 β- 11,5 s 95,329 pJ	Ni-70 β- 6 s 96,485 pJ	Ni-71 β- 2,56 s 97,146 pJ	Ni-72 β- 1,57 s 98,238 pJ	Ni-73 β- 840 ms 98,877 pJ	Ni-74 β- 680 ms 99,935 pJ	Ni-75 β-, (β-n) 600 ms 100,517 pJ	Ni-76 β- 470 ms 101,443 pJ
27	Co-63 β- 26,9 s 87,993 pJ	Co-64 β- 300 ms 88,958 pJ	Co-65 β- 1,2 s 90,152 pJ	Co-66 β- 194 ms 90,95 pJ	Co-67 β- 425 ms 92,081 pJ	Co-68 β- 200 ms 92,78 pJ	Co-69 β-, (β-n) 227 ms 93,857 pJ	Co-70 β- 125 ms 94,455 pJ	Co-71 β- 97 ms 95,463 pJ	Co-72 β- 90,03 ms 96,023 pJ	Co-73 β- 80 ms 96,947 pJ	Co-74 β- 50 ms 97,481 pJ	Co-75 β- 40 ms 98,33 pJ
26	Fe-62 β- 68 s 86,354 pJ	Fe-63 β- 6,1 s 87,11 pJ	Fe-64 β- 2 s 88,276 pJ	Fe-65 β- 1,3 s 88,947 pJ	Fe-66 β- 440 ms 90,03 pJ	Fe-67 β- 394 ms 90,707 pJ	Fe-68 β- 187 ms 91,582 pJ	Fe-69 β-, (β-n) 109 ms 92,121 pJ	Fe-70 β- 94 ms 93,019 pJ	Fe-71 β- 30 ms 93,518 pJ	Fe-72 β- 10 ms 94,385 pJ		
Z / N	36	37	38	39	40	41	42	43	44	45	46	47	48

49	50	51	52	53	54	55	56	57	58	59	60	61	Z / N
Ag-96 β+, (β+p) 4,45 s 128,6 pj	Ag-97 β+ 25,3 s 130,887 pj	Ag-98 β+ 47,5 s 132,544 pj	Ag-99 β+ 124 s 134,43 pj	Ag-100 β+ 120,6 s 135,946 pj	Ag-101 β+ 11,1 m 137,733 pj	Ag-102 β+ 12,9 m 139,192 pj	Ag-103 β+ 65,7 m 140,89 pj	Ag-104 β+ 69,2 m 142,235 pj	Ag-105 β+ 41,29 d 143,841 pj	Ag-106 β+ 23,96 m 145,113 pj	Ag-107 stabil 146,641 pj	Ag-108 β-, (β+) 142,2 s 147,806 pj	47
Pd-95 β+ 10 s 128,326 pj	Pd-96 β+ 122 s 130,591 pj	Pd-97 β+ 3,1 m 132,131 pj	Pd-98 β+ 17,7 m 133,99 pj	Pd-99 β+ 21,4 m 135,426 pj	Pd-100 β+ 87,12 h 137,206 pj	Pd-101 β+ 8,47 h 138,531 pj	Pd-102 stabil 140,224 pj	Pd-103 β+ 16,99 d 141,446 pj	Pd-104 stabil 143,045 pj	Pd-105 stabil 144,182 pj	Pd-106 stabil 145,714 pj	Pd-107 β- 6,50E+06 a 146,761 pj	46
Rh-94 β+, (β+p) 70,6 s 127,607 pj	Rh-95 β+ 5,02 m 129,762 pj	Rh-96 β+ 9,9 m 131,27 pj	Rh-97 β+ 30,7 m 133,029 pj	Rh-98 β+ 8,72 m 134,416 pj	Rh-99 β+ 16,1 d 136,094 pj	Rh-100 β+ 20,8 h 137,388 pj	Rh-101 β+ 3,302 a 138,974 pj	Rh-102 β-, β- 207 d 140,165 pj	Rh-103 stabil 141,658 pj	Rh-104 β- 42,3 s 142,78 pj	Rh-105 β- 35,36 h 144,216 pj	Rh-106 β- 29,8 s 145,272 pj	45
Ru-93 β+ 59,7 s 127,129 pj	Ru-94 β+ 51,8 m 129,271 pj	Ru-95 β+ 98,58 m 130,706 pj	Ru-96 stabil 132,419 pj	Ru-97 β+ 69,6 h 133,719 pj	Ru-98 stabil 135,35 pj	Ru-99 stabil 136,546 pj	Ru-100 stabil 138,096 pj	Ru-101 stabil 139,186 pj	Ru-102 stabil 140,663 pj	Ru-103 β- 39,26 d 141,661 pj	Ru-104 stabil 143,088 pj	Ru-105 β- 4,44 h 144,034 pj	44
Tc-92 β+ 4,25 m 126,228 pj	Tc-93 β+ 165 m 128,269 pj	Tc-94 β+ 4,883 h 129,651 pj	Tc-95 β+ 20 h 131,242 pj	Tc-96 β+ 4,28 d 132,504 pj	Tc-97 β- 2,60E+06 a 134,022 pj	Tc-98 β- 4,20E+06 a 135,188 pj	Tc-99 β- 2,11E+05 a 136,624 pj	Tc-100 β- 15,8 s 137,708 pj	Tc-101 β- 14,22 m 139,053 pj	Tc-102 β- 5,28 s 140,062 pj	Tc-103 β- 54,2 s 141,36 pj	Tc-104 β- 18,3 m 142,316 pj	43
Mo-91 β+ 15,49 m 125,584 pj	Mo-92 stabil 127,615 pj	Mo-93 β+ 4003 a 128,908 pj	Mo-94 stabil 130,458 pj	Mo-95 stabil 131,639 pj	Mo-96 stabil 133,105 pj	Mo-97 stabil 134,198 pj	Mo-98 stabil 135,583 pj	Mo-99 β- 65,94 h 136,532 pj	Mo-100 β- 8,51E+18 a 137,86 pj	Mo-101 β- 14,61 m 138,725 pj	Mo-102 β- 11,3 m 140,026 pj	Mo-103 β- 67,5 s 140,884 pj	42
Nb-90 β+ 14,6 h 124,489 pj	Nb-91 β+ 680,5 a 126,419 pj	Nb-92 β+ 3,47E+07 a 127,683 pj	Nb-93 stabil 129,098 pj	Nb-94 β- 20310 a 130,256 pj	Nb-95 β- 34,99 d 131,616 pj	Nb-96 β- 23,35 h 132,72 pj	Nb-97 β- 72,1 m 134,014 pj	Nb-98 β- 2,86 s 134,974 pj	Nb-99 β- 15 s 136,075 pj	Nb-100 β- 1,5 s 136,985 pj	Nb-101 β- 7,1 s 138,119 pj	Nb-102 β- 1,3 s 138,995 pj	41
Zr-89 β+ 78,41 h 123,676 pj	Zr-90 stabil 125,593 pj	Zr-91 stabil 126,746 pj	Zr-92 stabil 128,129 pj	Zr-93 β- 1,53E+06 a 129,208 pj	Zr-94 stabil 130,526 pj	Zr-95 β- 64,03 d 131,561 pj	Zr-96 β- 2,40E+19 a 132,82 pj	Zr-97 β- 16,9 h 133,713 pj	Zr-98 β- 30,7 s 134,74 pj	Zr-99 β- 2,1 s 135,47 pj	Zr-100 β- 7,1 s 136,576 pj	Zr-101 β- 2,3 s 137,366 pj	40
Y-88 β+ 106,6 d 122,416 pj	Y-89 stabil 124,255 pj	Y-90 β- 64 h 125,353 pj	Y-91 β- 58,51 d 126,624 pj	Y-92 β- 3,54 h 127,671 pj	Y-93 β- 10,18 h 128,87 pj	Y-94 β- 18,7 m 129,863 pj	Y-95 β- 10,3 m 130,973 pj	Y-96 β- 5,34 s 131,808 pj	Y-97 β- 3,75 s 132,767 pj	Y-98 β- 548 ms 133,453 pj	Y-99 β-, (β-n) 1,47 s 134,383 pj	Y-100 β- 735 ms 135,209 pj	39
Sr-87 stabil 121,342 pj	Sr-88 stabil 123,122 pj	Sr-89 β- 50,53 d 124,141 pj	Sr-90 β- 28,81 a 125,391 pj	Sr-91 β- 9,63 h 126,317 pj	Sr-92 β- 159,6 m 127,485 pj	Sr-93 β- 7,423 m 128,332 pj	Sr-94 β- 75,3 s 129,426 pj	Sr-95 β- 23,9 s 130,123 pj	Sr-96 β- 1,07 s 131,067 pj	Sr-97 β- 429 ms 131,695 pj	Sr-98 β- 653 ms 132,645 pj	Sr-99 β- 269 ms 133,224 pj	38
Rb-86 β- 18,64 d 119,832 pj	Rb-87 β- 4,93E+10 a 121,422 pj	Rb-88 β- 17,78 m 122,396 pj	Rb-89 β- 15,15 m 123,546 pj	Rb-90 β- 158 s 124,462 pj	Rb-91 β- 58,4 s 125,497 pj	Rb-92 β- 4,492 s 126,313 pj	Rb-93 β-, (β-n) 5,84 s 127,261 pj	Rb-94 β-, β-n 2,702 s 127,903 pj	Rb-95 β-, (β-n) 377,5 ms 128,764 pj	Rb-96 β-, β-n 203 ms 129,315 pj	Rb-97 β-, β-n 169,9 ms 130,149 pj	Rb-98 β-, β-n 114 ms 130,78 pj	37
Kr-85 β- 10,78 a 118,461 pj	Kr-86 stabil 120,041 pj	Kr-87 β- 76,3 m 120,924 pj	Kr-88 β- 2,84 h 122,054 pj	Kr-89 β- 3,15 m 122,873 pj	Kr-90 β- 32,32 s 123,884 pj	Kr-91 β- 8,57 s 124,59 pj	Kr-92 β- 1,84 s 125,48 pj	Kr-93 β-, (β-n) 1,286 s 126,008 pj	Kr-94 β-, (β-n) 210 ms 126,839 pj	Kr-95 β-, (β-n) 114 ms 127,321 pj	Kr-96 β-, (β-n) 80 ms 128,123 pj	Kr-97 β-, (β-n) 63 ms 128,603 pj	36
Br-84 β- 31,8 m 116,704 pj	Br-85 β- 174 s 118,127 pj	Br-86 β- 55,1 s 118,944 pj	Br-87 β-, (β-n) 55,65 s 119,952 pj	Br-88 β-, (β-n) 16,36 s 120,744 pj	Br-89 β-, β-n 4,4 s 121,691 pj	Br-90 β-, β-n 1,91 s 122,352 pj	Br-91 β-, β-n 541 ms 123,145 pj	Br-92 β-, β-n 343 ms 123,65 pj	Br-93 β-, β-n 102 ms 124,372 pj	Br-94 β-, β-n 70 ms 124,836 pj	Br-95 β- 50 ms 125,494 pj	Br-96 β- 20 ms 125,939 pj	35
Se-83 β- 22,3 m 115,142 pj	Se-84 β- 3,1 m 116,533 pj	Se-85 β- 31,7 s 117,262 pj	Se-86 β- 15,3 s 118,253 pj	Se-87 β- 5,5 s 118,912 pj	Se-88 β- 1,53 s 119,771 pj	Se-89 β-, (β-n) 410 ms 120,321 pj	Se-90 β- 300 ms 121,081 pj	Se-91 β-, β-n 270 ms 121,479 pj	Se-92 β- 100 ms 122,18 pj	Se-93 β- 50 ms 122,525 pj	Se-94 β- 20 ms 123,195 pj		34
As-82 β- 19,1 s 113,171 pj	As-83 β- 13,4 s 114,393 pj	As-84 β- 4,02 s 115,082 pj	As-85 β-, β-n 2,021 s 115,934 pj	As-86 β-, β-n 945 ms 116,554 pj	As-87 β-, β-n 610 ms 117,338 pj	As-88 β- 300 ms 117,883 pj	As-89 β- 200 ms 118,51 pj	As-90 β- 80 ms 118,89 pj	As-91 β- 50 ms 119,452 pj	As-92 β- 30 ms 119,792 pj			33
Ge-81 β- 8 s 111,358 pj	Ge-82 β- 4,55 s 112,543 pj	Ge-83 β- 1,85 s 113,073 pj	Ge-84 β-, β-n 954 ms 113,951 pj	Ge-85 β-, β-n 540 ms 114,409 pj	Ge-86 β- 300 ms 115,19 pj	Ge-87 β- 150 ms 115,582 pj	Ge-88 β- 80 ms 116,219 pj	Ge-89 β- 50 ms 116,485 pj					32
Ga-80 β- 1,697 s 109,042 pj	Ga-81 β-, β-n 1,217 s 110,15 pj	Ga-82 β-, β-n 599 ms 110,66 pj	Ga-83 β-, β-n 308 ms 111,358 pj	Ga-84 β-, β-n 85 ms 111,811 pj	Ga-85 β- 50 ms 112,448 pj	Ga-86 β- 30 ms 112,834 pj							31
Zn-79 β-, (β-n) 995 ms 106,953 pj	Zn-80 β-, (β-n) 545 ms 108 pj	Zn-81 β-, (β-n) 290 ms 108,376 pj	Zn-82 β- 100 ms 109,084 pj	Zn-83 β- 80 ms 109,39 pj									30
Cu-78 β- 342 ms 104,4 pj	Cu-79 β-, β-n 188 ms 105,308 pj	Cu-80 β- 100 ms 105,654 pj											29
Ni-77 β- 300 ms 101,951 pj	Ni-78 β- 200 ms 102,85 pj												28
													27
													26

Z \ N	51	52	53	54	55	56	57	58	59	60	61	62	63
58											Ce-119 β+ 200 ms 153,671 pJ	Ce-120 β+ 250 ms 155,866 pJ	Ce-121 β+, (β+p) 1,1 s 157,65 pJ
57										La-117 p, (β+) 23,5 ms 151,613 pJ	La-118 β+ 200 ms 153,401 pJ	La-119 β+ 1 s 155,54 pJ	La-120 β+ 2,8 s 157,27 pJ
56								Ba-114 β+, β+p 530 ms 147,762 pJ	Ba-115 β+, β+p 450 ms 149,556 pJ	Ba-116 β+, (β+p) 1,3 s 151,73 pJ	Ba-117 β+, β+p 1,75 s 153,45 pJ	Ba-118 β+ 5,2 s 155,575 pJ	Ba-119 β+, β+p 5,4 s 157,216 pJ
55							Cs-112 p 500 μs 145,349 pJ	Cs-113 p 16,7 μs 147,518 pJ	Cs-114 β+, (β+p) 570 ms 149,26 pJ	Cs-115 β+ 1,4 s 151,38 pJ	Cs-116 β+ 700 ms 153,05 pJ	Cs-117 β+ 8,4 s 155,051 pJ	Cs-118 β+ 14 s 156,66 pJ
54						Xe-110 α 310 ms 143,795 pJ	Xe-111 β+, α 740 ms 145,492 pJ	Xe-112 β+ 2,7 s 147,673 pJ	Xe-113 β+, (β+p) 2,74 s 149,307 pJ	Xe-114 β+ 10 s 151,401 pJ	Xe-115 β+ 18 s 152,946 pJ	Xe-116 β+ 59 s 154,942 pJ	Xe-117 β+ 61 s 156,418 pJ
53				I-108 α, (β+), (p) 36 ms 141,456 pJ	I-109 p 103 μs 143,543 pJ	I-110 β+, α, β+p 650 ms 145,274 pJ	I-111 β+ 2,5 s 147,306 pJ	I-112 β+ 3,42 s 148,938 pJ	I-113 β+ 6,6 s 150,88 pJ	I-114 β+ 2,1 s 152,438 pJ	I-115 β+ 78 s 154,302 pJ	I-116 β+ 2,91 s 155,78 pJ	
52		Te-105 α 1 μs 137,678 pJ	Te-106 α 70 μs 139,884 pJ	Te-107 α, β+ 3,1 ms 141,552 pJ	Te-108 α, β+, (β+p) 2,1 s 143,674 pJ	Te-109 β+, (β+p), (α) 4,6 s 145,27 pJ	Te-110 β+ 18,6 s 147,31 pJ	Te-111 β+ 19,3 s 148,797 pJ	Te-112 β+ 120 s 150,702 pJ	Te-113 β+ 102 s 152,163 pJ	Te-114 β+ 15,2 m 154,023 pJ	Te-115 β+ 5,8 m 155,344 pJ	
51		Sb-103 β+ 100 ms 135,798 pJ	Sb-104 β+, (β+p), (p) 470 ms 137,583 pJ	Sb-105 β+, (p) 1,12 s 139,615 pJ	Sb-106 β+ 600 ms 141,316 pJ	Sb-107 β+ 4,6 s 143,301 pJ	Sb-108 β+ 7,4 s 144,882 pJ	Sb-109 β+ 17 s 146,781 pJ	Sb-110 β+ 23 s 148,288 pJ	Sb-111 β+ 75 s 150,109 pJ	Sb-112 β+ 51,4 s 151,516 pJ	Sb-113 β+ 6,67 m 153,261 pJ	Sb-114 β+ 3,49 m 154,569 pJ
50	Sn-101 β+ 3 s 133,89 pJ	Sn-102 β+ 4,6 s 136,039 pJ	Sn-103 β+ 7 s 137,663 pJ	Sn-104 β+ 20,8 s 139,693 pJ	Sn-105 β+ 34 s 141,253 pJ	Sn-106 β+ 115,2 s 143,213 pJ	Sn-107 β+ 174 s 144,691 pJ	Sn-108 β+ 10,3 m 146,539 pJ	Sn-109 β+ 18 m 147,928 pJ	Sn-110 β+ 4,11 h 149,735 pJ	Sn-111 β+ 35,3 m 151,044 pJ	Sn-112 stabil 152,773 pJ	Sn-113 β+ 115,1 d 154,013 pJ
49	In-100 β+, (β+p) 5,9 s 133,456 pJ	In-101 β+ 15,1 s 135,459 pJ	In-102 β+ 23,3 s 137,09 pJ	In-103 β+ 60 s 139,006 pJ	In-104 β+ 108 s 140,541 pJ	In-105 β+ 5,07 m 142,375 pJ	In-106 β+ 6,2 m 143,848 pJ	In-107 β+ 32,4 m 145,615 pJ	In-108 β+ 58 m 146,997 pJ	In-109 β+ 4,2 h 148,67 pJ	In-110 β+ 4,9 h 149,961 pJ	In-111 β+ 67,31 h 151,562 pJ	In-112 β+, β- 14,97 m 152,791 pJ
48	Cd-99 β+ 16 s 133,205 pJ	Cd-100 β+ 49,1 s 135,196 pJ	Cd-101 β+ 81,6 s 136,73 pJ	Cd-102 β+ 5,5 m 138,652 pJ	Cd-103 β+ 7,3 m 140,101 pJ	Cd-104 β+ 57,7 m 141,927 pJ	Cd-105 β+ 55,5 m 143,277 pJ	Cd-106 stabil 145,019 pJ	Cd-107 β+ 6,5 h 146,289 pJ	Cd-108 stabil 147,945 pJ	Cd-109 β+ 461,4 d 149,119 pJ	Cd-110 stabil 150,708 pJ	Cd-111 stabil 151,826 pJ
47	Ag-98 β+ 47,5 s 132,544 pJ	Ag-99 β+ 124 s 134,43 pJ	Ag-100 β+ 120,6 s 135,946 pJ	Ag-101 β+ 11,1 m 137,733 pJ	Ag-102 β+ 12,9 m 139,192 pJ	Ag-103 β+ 65,7 m 140,89 pJ	Ag-104 β+ 69,2 m 142,235 pJ	Ag-105 β+ 41,29 d 143,841 pJ	Ag-106 β+ 23,96 m 145,113 pJ	Ag-107 stabil 146,641 pJ	Ag-108 β-, (β+) 142,2 s 147,806 pJ	Ag-109 stabil 149,279 pJ	Ag-110 β- 24,6 s 150,37 pJ
46	Pd-97 β+ 3,1 m 132,131 pJ	Pd-98 β+ 17,7 m 133,99 pJ	Pd-99 β+ 21,4 m 135,426 pJ	Pd-100 β+ 87,12 h 137,206 pJ	Pd-101 β+ 8,47 h 138,531 pJ	Pd-102 stabil 140,224 pJ	Pd-103 β+ 16,99 d 141,446 pJ	Pd-104 stabil 143,045 pJ	Pd-105 stabil 144,182 pJ	Pd-106 stabil 145,714 pJ	Pd-107 β- 6,50E+06 a 146,761 pJ	Pd-108 stabil 148,239 pJ	Pd-109 β- 13,7 h 149,225 pJ
45	Rh-96 β+ 9,9 m 131,27 pJ	Rh-97 β+ 30,7 m 133,029 pJ	Rh-98 β+ 8,72 m 134,416 pJ	Rh-99 β+ 16,1 d 136,094 pJ	Rh-100 β+ 20,8 h 137,388 pJ	Rh-101 β+ 3,302 a 138,974 pJ	Rh-102 β+, β- 207 d 140,165 pJ	Rh-103 stabil 141,658 pJ	Rh-104 β- 42,3 s 142,78 pJ	Rh-105 β- 35,36 h 144,216 pJ	Rh-106 β- 29,8 s 145,272 pJ	Rh-107 β- 21,7 m 146,645 pJ	Rh-108 β- 16,8 s 147,644 pJ
44	Ru-95 β+ 98,58 m 130,706 pJ	Ru-96 stabil 132,419 pJ	Ru-97 β+ 69,6 h 133,719 pJ	Ru-98 stabil 135,35 pJ	Ru-99 stabil 136,546 pJ	Ru-100 stabil 138,096 pJ	Ru-101 stabil 139,186 pJ	Ru-102 stabil 140,663 pJ	Ru-103 β- 39,26 d 141,661 pJ	Ru-104 stabil 143,088 pJ	Ru-105 β- 4,44 h 144,034 pJ	Ru-106 β- 373,6 d 145,391 pJ	Ru-107 β- 3,75 m 146,299 pJ
43	Tc-94 β+ 4,883 h 129,651 pJ	Tc-95 β+ 20 h 131,242 pJ	Tc-96 β+ 4,28 d 132,504 pJ	Tc-97 β+ 2,60E+06 a 134,022 pJ	Tc-98 β- 4,20E+06 a 135,188 pJ	Tc-99 β- 2,11E+05 a 136,624 pJ	Tc-100 β- 15,8 s 137,708 pJ	Tc-101 β- 14,22 m 139,053 pJ	Tc-102 β- 5,28 s 140,062 pJ	Tc-103 β- 54,2 s 141,36 pJ	Tc-104 β- 18,3 m 142,316 pJ	Tc-105 β- 7,6 m 143,576 pJ	Tc-106 β- 35,6 s 144,467 pJ
42	Mo-93 β+ 4003 a 128,908 pJ	Mo-94 stabil 130,458 pJ	Mo-95 stabil 131,639 pJ	Mo-96 stabil 133,105 pJ	Mo-97 stabil 134,198 pJ	Mo-98 stabil 135,583 pJ	Mo-99 β- 65,94 h 136,532 pJ	Mo-100 β- 8,51E+18 a 137,86 pJ	Mo-101 β- 14,61 m 138,725 pJ	Mo-102 β- 11,3 m 140,026 pJ	Mo-103 β- 67,5 s 140,884 pJ	Mo-104 β- 60 s 142,096 pJ	Mo-105 β- 35,6 s 142,908 pJ
41	Nb-92 β+ 3,47E+07 a 127,683 pJ	Nb-93 stabil 129,098 pJ	Nb-94 β- 20310 a 130,256 pJ	Nb-95 β- 34,99 d 131,616 pJ	Nb-96 β- 23,35 h 132,72 pJ	Nb-97 β- 72,1 m 134,014 pJ	Nb-98 β- 2,86 s 134,974 pJ	Nb-99 β- 15 s 136,075 pJ	Nb-100 β- 1,5 s 136,985 pJ	Nb-101 β- 7,1 s 138,119 pJ	Nb-102 β- 1,3 s 138,995 pJ	Nb-103 β- 1,5 s 140,124 pJ	Nb-104 β- 4,9 s 140,923 pJ
40	Zr-91 stabil 126,746 pJ	Zr-92 stabil 128,129 pJ	Zr-93 β- 1,53E+06 a 129,208 pJ	Zr-94 stabil 130,526 pJ	Zr-95 β- 64,03 d 131,561 pJ	Zr-96 β- 2,40E+19 a 132,82 pJ	Zr-97 β- 16,9 h 133,713 pJ	Zr-98 β- 30,7 s 134,74 pJ	Zr-99 β- 2,1 s 135,47 pJ	Zr-100 β- 7,1 s 136,576 pJ	Zr-101 β- 2,3 s 137,366 pJ	Zr-102 β- 2,9 s 138,384 pJ	Zr-103 β- 1,3 s 139,137 pJ
39	Y-90 β- 64 h 125,353 pJ	Y-91 β- 58,51 d 126,624 pJ	Y-92 β- 3,54 h 127,671 pJ	Y-93 β- 10,18 h 128,87 pJ	Y-94 β- 18,7 m 129,863 pJ	Y-95 β- 10,3 m 130,973 pJ	Y-96 β- 5,34 s 131,808 pJ	Y-97 β- 3,75 s 132,767 pJ	Y-98 β- 548 ms 133,453 pJ	Y-99 β-, (β-n) 1,47 s 134,383 pJ	Y-100 β-, (β-n) 735 ms 135,209 pJ	Y-101 β-, (β-n) 426 ms 136,121 pJ	Y-102 β-, (β-n) 300 ms 136,931 pJ
38	Sr-89 β- 50,53 d 124,141 pJ	Sr-90 β- 28,81 a 125,391 pJ	Sr-91 β- 9,63 h 126,317 pJ	Sr-92 β- 159,6 m 127,485 pJ	Sr-93 β- 7,423 m 128,332 pJ	Sr-94 β- 75,3 s 129,426 pJ	Sr-95 β- 23,9 s 130,123 pJ	Sr-96 β- 1,07 s 131,067 pJ	Sr-97 β- 429 ms 131,695 pJ	Sr-98 β- 653 ms 132,645 pJ	Sr-99 β- 269 ms 133,224 pJ	Sr-100 β- 202 ms 134,202 pJ	Sr-101 β-, (β-n) 118 ms 134,725 pJ
37	Rb-88 β- 17,78 m 122,396 pJ	Rb-89 β- 15,15 m 123,546 pJ	Rb-90 β- 158 s 124,462 pJ	Rb-91 β- 58,4 s 125,497 pJ	Rb-92 β- 4,492 s 126,313 pJ	Rb-93 β-, (β-n) 5,84 s 127,261 pJ	Rb-94 β-, (β-n) 2,702 s 127,903 pJ	Rb-95 β-, (β-n) 377,5 ms 128,764 pJ	Rb-96 β-, (β-n) 203 ms 129,315 pJ	Rb-97 β-, (β-n) 169,9 ms 130,149 pJ	Rb-98 β-, (β-n) 114 ms 130,78 pJ	Rb-99 β-, (β-n) 50,3 ms 131,538 pJ	Rb-100 β-, (β-n) 51 ms 132,164 pJ
Z / N	51	52	53	54	55	56	57	58	59	60	61	62	63

64	65	66	67	68	69	70	71	72	73	74	75	76	Z / N
Ce-122 β+ 2 s 159,754 pj	Ce-123 β+ 3,8 s 161,438 pj	Ce-124 β+ 9,1 s 163,466 pj	Ce-125 β+ 9,3 s 165,064 pj	Ce-126 β+ 51 s 167,016 pj	Ce-127 β+ 29 s 168,495 pj	Ce-128 β+ 3,93 m 170,357 pj	Ce-129 β+ 3,5 m 171,771 pj	Ce-130 β+ 22,9 m 173,567 pj	Ce-131 β+ 10,2 m 174,907 pj	Ce-132 β+ 3,51 h 176,642 pj	Ce-133 β+ 97 m 177,927 pj	Ce-134 β+ 75,84 h 179,607 pj	58
La-121 β+ 5,3 s 159,317 pj	La-122 β+ 8,7 s 160,966 pj	La-123 β+ 17 s 162,916 pj	La-124 β+ 29,21 s 164,465 pj	La-125 β+ 64,8 s 166,319 pj	La-126 β+ 54 s 167,806 pj	La-127 β+ 5,1 m 169,568 pj	La-128 β+ 5,18 m 170,978 pj	La-129 β+ 11,6 m 172,704 pj	La-130 β+ 8,7 m 174,045 pj	La-131 β+ 59 m 175,682 pj	La-132 β+ 4,8 h 176,97 pj	La-133 β+ 3,912 h 178,544 pj	57
Ba-120 β+ 24 s 159,198 pj	Ba-121 β+ 29,7 s 160,788 pj	Ba-122 β+ 117 s 162,701 pj	Ba-123 β+ 162 s 164,162 pj	Ba-124 β+ 11 m 166,005 pj	Ba-125 β+ 3,5 m 167,391 pj	Ba-126 β+ 100 m 169,165 pj	Ba-127 β+ 12,7 m 170,481 pj	Ba-128 β+ 58,32 h 172,189 pj	Ba-129 β+ 133,8 m 173,428 pj	Ba-130 stabil 175,073 pj	Ba-131 β+ 11,5 d 176,274 pj	Ba-132 stabil 177,848 pj	56
Cs-119 β+ 43 s 158,577 pj	Cs-120 β+ 61,2 s 160,124 pj	Cs-121 β+ 155 s 161,932 pj	Cs-122 β+ 21,18 s 163,392 pj	Cs-123 β+ 5,87 m 165,15 pj	Cs-124 β+ 30,9 s 166,554 pj	Cs-125 β+ 45 m 168,224 pj	Cs-126 β+ 98,4 s 169,559 pj	Cs-127 β+ 6,25 h 171,155 pj	Cs-128 β+ 3,64 m 172,399 pj	Cs-129 β+ 32,06 h 173,944 pj	Cs-130 β+, (β-) 29,21 m 175,141 pj	Cs-131 β+ 9,689 d 176,62 pj	55
Xe-118 β+ 3,8 m 158,335 pj	Xe-119 β+ 5,8 m 159,743 pj	Xe-120 β+ 40 m 161,577 pj	Xe-121 β+ 40,1 m 162,918 pj	Xe-122 β+ 20,1 h 164,673 pj	Xe-123 β+ 124,8 m 165,949 pj	Xe-124 stabil 167,629 pj	Xe-125 β+ 16,9 h 168,847 pj	Xe-126 stabil 170,457 pj	Xe-127 β+ 36,34 d 171,614 pj	Xe-128 stabil 173,154 pj	Xe-129 stabil 174,261 pj	Xe-130 stabil 175,744 pj	54
I-117 β+ 133,2 s 157,544 pj	I-118 β+ 13,7 m 158,923 pj	I-119 β+ 19,1 m 160,664 pj	I-120 β+ 81,6 m 161,961 pj	I-121 β+ 127,2 m 163,655 pj	I-122 β+ 3,63 m 164,915 pj	I-123 β+ 13,22 h 166,506 pj	I-124 β+ 4,176 d 167,707 pj	I-125 β+ 59,4 d 169,236 pj	I-126 β+, β- 12,93 d 170,381 pj	I-127 stabil 171,846 pj	I-128 β-, (β+) 24,99 m 172,939 pj	I-129 β- 1,57E+07 a 174,355 pj	53
Te-116 β+ 149,4 m 157,151 pj	Te-117 β+ 62 m 158,417 pj	Te-118 β+ 6 d 160,13 pj	Te-119 β+ 16,05 h 161,337 pj	Te-120 stabil 162,986 pj	Te-121 β+ 19,16 d 164,143 pj	Te-122 stabil 165,718 pj	Te-123 β+ 6,00E+14 a 166,829 pj	Te-124 stabil 168,338 pj	Te-125 stabil 169,391 pj	Te-126 stabil 170,851 pj	Te-127 β- 9,35 h 171,858 pj	Te-128 β- 2,20E+24 a 173,266 pj	52
Sb-115 β+ 32,1 m 156,261 pj	Sb-116 β+ 15,8 m 157,525 pj	Sb-117 β+ 2,8 h 159,11 pj	Sb-118 β+ 3,6 m 160,3 pj	Sb-119 β+ 38,19 h 161,83 pj	Sb-120 β+ 15,89 m 162,955 pj	Sb-121 stabil 164,435 pj	Sb-122 β-, (β+) 65,37 h 165,526 pj	Sb-123 stabil 166,962 pj	Sb-124 β- 60,2 d 167,998 pj	Sb-125 β- 2,76 a 169,393 pj	Sb-126 β- 12,35 d 170,389 pj	Sb-127 β- 92,4 h 171,73 pj	51
Sn-114 stabil 155,663 pj	Sn-115 stabil 156,872 pj	Sn-116 stabil 158,405 pj	Sn-117 stabil 159,517 pj	Sn-118 stabil 161,011 pj	Sn-119 stabil 162,05 pj	Sn-120 stabil 163,509 pj	Sn-121 β- 27,03 h 164,498 pj	Sn-122 stabil 165,91 pj	Sn-123 β- 129,2 d 166,863 pj	Sn-124 stabil 168,223 pj	Sn-125 β- 9,64 d 169,141 pj	Sn-126 β- 2,30E+05 a 170,454 pj	50
In-113 stabil 154,305 pj	In-114 β- 71,9 s 155,47 pj	In-115 β- 4,41E+14 a 156,918 pj	In-116 β- 14,1 s 158,005 pj	In-117 β- 43,2 m 159,409 pj	In-118 β- 5 s 160,428 pj	In-119 β- 144 s 161,797 pj	In-120 β- 3,08 s 162,774 pj	In-121 β- 23,1 s 164,085 pj	In-122 β- 1,5 s 165,016 pj	In-123 β- 5,98 s 166,284 pj	In-124 β- 3,11 s 167,169 pj	In-125 β- 2,36 s 168,398 pj	49
Cd-112 stabil 153,331 pj	Cd-113 β- 7,71E+15 a 154,379 pj	Cd-114 stabil 155,827 pj	Cd-115 β- 53,46 h 156,811 pj	Cd-116 β- 3,00E+19 a 158,205 pj	Cd-117 β- 149,4 m 159,131 pj	Cd-118 β- 50,3 m 160,469 pj	Cd-119 β- 161,4 s 161,315 pj	Cd-120 β- 50,8 s 162,618 pj	Cd-121 β- 13,5 s 163,444 pj	Cd-122 β- 5,24 s 164,684 pj	Cd-123 β- 2,1 s 165,43 pj	Cd-124 β- 1,25 s 166,626 pj	48
Ag-111 β- 7,45 d 151,785 pj	Ag-112 β- 3,13 h 152,822 pj	Ag-113 β- 5,37 h 154,181 pj	Ag-114 β- 4,6 s 155,14 pj	Ag-115 β- 20 m 156,44 pj	Ag-116 β- 160,8 s 157,345 pj	Ag-117 β- 73,6 s 158,59 pj	Ag-118 β- 3,76 s 159,451 pj	Ag-119 β- 6 s 160,583 pj	Ag-120 β- 1,23 s 161,409 pj	Ag-121 β- 790 ms 162,545 pj	Ag-122 β- 520 ms 163,292 pj	Ag-123 β- 296 ms 164,374 pj	47
Pd-110 stabil 150,638 pj	Pd-111 β- 23,4 m 151,555 pj	Pd-112 β- 21,03 h 152,902 pj	Pd-113 β- 93 s 153,771 pj	Pd-114 β- 145,2 s 155,033 pj	Pd-115 β- 25 s 155,83 pj	Pd-116 β- 11,8 s 157,053 pj	Pd-117 β- 4,3 s 157,796 pj	Pd-118 β- 1,9 s 158,919 pj	Pd-119 β- 920 ms 159,601 pj	Pd-120 β- 500 ms 160,653 pj	Pd-121 β- 400 ms 161,314 pj	Pd-122 β- 300 ms 162,373 pj	46
Rh-109 β- 80 s 148,935 pj	Rh-110 β- 28,5 s 149,87 pj	Rh-111 β- 11 s 151,096 pj	Rh-112 β- 3,4 s 151,971 pj	Rh-113 β- 2,8 s 153,094 pj	Rh-114 β- 1,85 s 153,897 pj	Rh-115 β- 990 ms 154,964 pj	Rh-116 β- 680 ms 155,7 pj	Rh-117 β- 440 ms 156,712 pj	Rh-118 β- 310 ms 157,39 pj	Rh-119 β- 300 ms 158,38 pj	Rh-120 β- 200 ms 159,038 pj	Rh-121 β- 100 ms 159,976 pj	45
Ru-108 β- 4,55 m 147,552 pj	Ru-109 β- 34,5 s 148,394 pj	Ru-110 β- 11,6 s 149,548 pj	Ru-111 β- 2,12 s 150,31 pj	Ru-112 β- 1,75 s 151,413 pj	Ru-113 β- 800 ms 152,18 pj	Ru-114 β- 530 ms 153,205 pj	Ru-115 β- 740 ms 153,842 pj	Ru-116 β- 400 ms 154,815 pj	Ru-117 β- 300 ms 155,4 pj	Ru-118 β- 200 ms 156,35 pj	Ru-119 β- 170 ms 156,893 pj	Ru-120 β- 80 ms 157,827 pj	44
Tc-107 β- 21,2 s 145,653 pj	Tc-108 β- 5,17 s 146,441 pj	Tc-109 β- 860 ms 147,507 pj	Tc-110 β- 920 ms 148,228 pj	Tc-111 β- 290 ms 149,241 pj	Tc-112 β-, (β-n) 290 ms 150,019 pj	Tc-113 β-, (β-n) 170 ms 150,956 pj	Tc-114 β- 150 ms 151,598 pj	Tc-115 β- 100 ms 152,467 pj	Tc-116 β- 90 ms 153,068 pj	Tc-117 β- 40 ms 153,9 pj	Tc-118 β- 30 ms 154,441 pj		43
Mo-106 β- 8,73 s 144,029 pj	Mo-107 β- 3,5 s 144,79 pj	Mo-108 β- 1,09 s 145,817 pj	Mo-109 β- 530 ms 146,468 pj	Mo-110 β- 300 ms 147,477 pj	Mo-111 β- 200 ms 148,071 pj	Mo-112 β- 150 ms 148,992 pj	Mo-113 β- 100 ms 149,544 pj	Mo-114 β- 80 ms 150,374 pj	Mo-115 β- 60 ms 150,864 pj				42
Nb-105 β-, (β-n) 2,95 s 141,995 pj	Nb-106 β-, (β-n) 920 ms 142,692 pj	Nb-107 β-, (β-n) 300 ms 143,626 pj	Nb-108 β-, (β-n) 193 ms 144,242 pj	Nb-109 β-, β-n 190 ms 145,124 pj	Nb-110 β-, β-n 170 ms 145,697 pj	Nb-111 β- 80 ms 146,506 pj	Nb-112 β- 60 ms 147,036 pj	Nb-113 β- 30 ms 147,752 pj					41
Zr-104 β- 1,2 s 140,099 pj	Zr-105 β- 600 ms 140,757 pj	Zr-106 β- 200 ms 141,622 pj	Zr-107 β- 150 ms 142,204 pj	Zr-108 β- 80 ms 143,013 pj	Zr-109 β- 60 ms 143,517 pj	Zr-110 β- 30 ms 144,27 pj							40
Y-103 β-, (β-n) 224 ms 137,746 pj	Y-104 β- 180 ms 138,4 pj	Y-105 β- 60 ms 139,125 pj	Y-106 β- 50 ms 139,686 pj	Y-107 β- 30 ms 140,318 pj	Y-108 β- 20 ms 140,816 pj								39
Sr-102 β-, (β-n) 69 ms 135,644 pj	Sr-103 β- 50 ms 136,046 pj	Sr-104 β- 30 ms 136,834 pj	Sr-105 β- 20 ms 137,207 pj										38
Rb-101 β-, β-n 32 ms 132,958 pj	Rb-102 β-, β-n 37 ms 133,401 pj												37

64 65 66 67 68 69 70 71 72 73 74 75 76 Z \ N

Z \ N	66	67	68	69	70	71	72	73	74	75	76	77	78
68										Er-143 β+ 200 ms 181,433 pJ	Er-144 β+ 400 ms 183,602 pJ	Er-145 β+ 900 ms 185,341 pJ	Er-146 β+ 1,7 s 187,438 pJ
67								Ho-140 p, (β+) 6 ms 177,335 pJ	Ho-141 p, (β+) 4,1 ms 179,438 pJ	Ho-142 β+ 400 ms 181,234 pJ	Ho-143 β+ 300 ms 183,289 pJ	Ho-144 β+ 700 ms 185,055 pJ	Ho-145 β+ 2,4 s 186,991 pJ
66							Dy-138 β+ 200 ms 175,775 pJ	Dy-139 β+ 600 ms 177,516 pJ	Dy-140 β+ 700 ms 179,623 pJ	Dy-141 β+ 900 ms 181,335 pJ	Dy-142 β+ 2,3 s 183,372 pJ	Dy-143 β+ 5,6 s 185,03 pJ	Dy-144 β+ 9,1 s 187,009 pJ
65						Tb-136 β+ 200 ms 173,489 pJ	Tb-137 β+ 600 ms 175,577 pJ	Tb-138 β+ 800 ms 177,3 pJ	Tb-139 β+ 1,6 s 179,32 pJ	Tb-140 β+ 2,4 s 180,991 pJ	Tb-141 β+ 3,5 s 182,928 pJ	Tb-142 β+ 597 ms 184,624 pJ	Tb-143 β+ 12 s 186,458 pJ
64				Gd-134 β+ 400 ms 171,925 pJ	Gd-135 β+ 1,1 s 173,641 pJ	Gd-136 β+ 1 s 175,711 pJ	Gd-137 β+ 2,2 s 177,355 pJ	Gd-138 β+ 4,7 s 179,379 pJ	Gd-139 β+, (β+p) 5,7 s 180,946 pJ	Gd-140 β+ 15,8 s 182,92 pJ	Gd-141 β+ 14 s 184,444 pJ	Gd-142 β+ 70,2 s 186,336 pJ	
63		Eu-130 p, (β+) 1,1 ms 165,647 pJ	Eu-131 p, β+ 17,8 ms 167,959 pJ	Eu-132 β+ 100 ms 169,613 pJ	Eu-133 β+ 200 ms 171,665 pJ	Eu-134 β+ 500 ms 173,364 pJ	Eu-135 β+ 1,5 s 175,371 pJ	Eu-136 β+ 3,3 s 176,997 pJ	Eu-137 β+ 8,4 s 178,891 pJ	Eu-138 β+ 12,1 s 180,454 pJ	Eu-139 β+ 17,9 s 182,331 pJ	Eu-140 β+ 1,51 s 183,878 pJ	Eu-141 β+ 40,7 s 185,643 pJ
62	Sm-128 β+ 500 ms 164,001 pJ	Sm-129 β+ 550 ms 165,82 pJ	Sm-130 β+ 1 s 167,959 pJ	Sm-131 β+ 1,2 s 169,613 pJ	Sm-132 β+ 4 s 171,77 pJ	Sm-133 β+ 2,9 s 173,37 pJ	Sm-134 β+ 10 s 175,36 pJ	Sm-135 β+ 10,3 s 176,876 pJ	Sm-136 β+ 47 s 178,804 pJ	Sm-137 β+ 45 s 180,291 pJ	Sm-138 β+ 3,1 m 182,141 pJ	Sm-139 β+ 154,2 s 183,575 pJ	Sm-140 β+ 14,82 m 185,361 pJ
61	Pm-127 β+ 1 s 163,799 pJ	Pm-128 β+ 1 s 165,58 pJ	Pm-129 β+ 3 s 167,659 pJ	Pm-130 β+ 2,6 s 169,355 pJ	Pm-131 β+ 6,3 s 171,329 pJ	Pm-132 β+ 6,3 s 172,933 pJ	Pm-133 β+ 15 s 174,825 pJ	Pm-134 β+ 22 s 176,331 pJ	Pm-135 β+ 49 s 178,144 pJ	Pm-136 β+ 107 s 179,631 pJ	Pm-137 β+ 120 s 181,386 pJ	Pm-138 β+ 10 s 182,818 pJ	Pm-139 β+ 4,15 m 184,52 pJ
60	Nd-126 β+ 1 s 163,902 pJ	Nd-127 β+ 1,8 s 165,589 pJ	Nd-128 β+ 5 s 167,652 pJ	Nd-129 β+ 4,9 s 169,272 pJ	Nd-130 β+ 21 s 171,261 pJ	Nd-131 β+ 33 s 172,742 pJ	Nd-132 β+ 93,6 s 174,621 pJ	Nd-133 β+ 70 s 176,059 pJ	Nd-134 β+ 8,5 m 177,884 pJ	Nd-135 β+ 12,4 m 179,268 pJ	Nd-136 β+ 50,7 m 181,039 pJ	Nd-137 β+ 38,5 m 182,393 pJ	Nd-138 β+ 5,04 h 184,077 pJ
59	Pr-125 β+ 3,3 s 163,522 pJ	Pr-126 β+ 3,12 s 165,194 pJ	Pr-127 β+ 4,2 s 167,156 pJ	Pr-128 β+ 2,84 s 168,757 pJ	Pr-129 β+ 30 s 170,602 pJ	Pr-130 β+ 40 s 172,121 pJ	Pr-131 β+ 90 s 173,911 pJ	Pr-132 β+ 89,4 s 175,353 pJ	Pr-133 β+ 6,5 m 177,083 pJ	Pr-134 β+ 11 m 178,468 pJ	Pr-135 β+ 24 m 180,15 pJ	Pr-136 β+ 13,1 m 181,505 pJ	Pr-137 β+ 76,8 m 183,095 pJ
58	Ce-124 β+ 9,1 s 163,466 pJ	Ce-125 β+ 9,3 s 165,064 pJ	Ce-126 β+ 51 s 167,016 pJ	Ce-127 β+ 29 s 168,495 pJ	Ce-128 β+ 3,93 m 170,357 pJ	Ce-129 β+ 3,5 m 171,771 pJ	Ce-130 β+ 22,9 m 173,567 pJ	Ce-131 β+ 10,2 m 174,907 pJ	Ce-132 β+ 3,51 h 176,642 pJ	Ce-133 β+ 97 m 177,927 pJ	Ce-134 β+ 75,84 h 179,607 pJ	Ce-135 β+ 17,7 h 180,866 pJ	Ce-136 stabil 182,455 pJ
57	La-123 β+ 17 s 162,916 pJ	La-124 β+ 29,21 s 164,465 pJ	La-125 β+ 64,8 s 166,319 pJ	La-126 β+ 54 s 167,806 pJ	La-127 β+ 5,1 m 169,568 pJ	La-128 β+ 5,18 m 170,978 pJ	La-129 β+ 11,6 m 172,704 pJ	La-130 β+ 8,7 m 174,045 pJ	La-131 β+ 59 m 175,682 pJ	La-132 β+ 4,8 h 176,97 pJ	La-133 β+ 3,912 h 178,544 pJ	La-134 β+ 6,45 m 179,793 pJ	La-135 β+ 19,5 h 181,316 pJ
56	Ba-122 β+ 117 s 162,701 pJ	Ba-123 β+ 162 s 164,162 pJ	Ba-124 β+ 11 m 166,005 pJ	Ba-125 β+ 3,5 m 167,391 pJ	Ba-126 β+ 100 m 169,165 pJ	Ba-127 β+ 12,7 m 170,481 pJ	Ba-128 β+ 58,32 h 172,189 pJ	Ba-129 β+ 133,8 m 173,428 pJ	Ba-130 stabil 175,073 pJ	Ba-131 β+ 11,5 d 176,274 pJ	Ba-132 stabil 177,848 pJ	Ba-133 β+ 10,52 a 179 pJ	Ba-134 stabil 180,516 pJ
55	Cs-121 β+ 155 s 161,932 pJ	Cs-122 β+ 21,18 s 163,392 pJ	Cs-123 β+ 5,87 m 165,15 pJ	Cs-124 β+ 30,9 s 166,554 pJ	Cs-125 β+ 45 m 168,224 pJ	Cs-126 β+ 98,4 s 169,559 pJ	Cs-127 β+ 6,25 h 171,155 pJ	Cs-128 β+ 3,64 m 172,399 pJ	Cs-129 β+ 32,06 h 173,944 pJ	Cs-130 β+, (β-) 29,21 m 175,141 pJ	Cs-131 β+ 9,689 d 176,62 pJ	Cs-132 β+, (β-) 6,479 d 177,768 pJ	Cs-133 stabil 179,208 pJ
54	Xe-120 β+ 40 m 161,577 pJ	Xe-121 β+ 40,1 m 162,918 pJ	Xe-122 β+ 20,1 h 164,673 pJ	Xe-123 β+ 124,8 m 165,949 pJ	Xe-124 stabil 167,629 pJ	Xe-125 β+ 16,9 h 168,847 pJ	Xe-126 stabil 170,457 pJ	Xe-127 β+ 36,34 d 171,614 pJ	Xe-128 stabil 173,154 pJ	Xe-129 stabil 174,261 pJ	Xe-130 stabil 175,744 pJ	Xe-131 stabil 176,802 pJ	Xe-132 stabil 178,234 pJ
53	I-119 β+ 19,1 m 160,664 pJ	I-120 β+ 81,6 m 161,961 pJ	I-121 β+ 127,2 m 163,655 pJ	I-122 β+ 3,63 m 164,915 pJ	I-123 β+ 13,22 h 166,506 pJ	I-124 β+ 4,176 d 167,707 pJ	I-125 β+ 59,4 d 169,236 pJ	I-126 β+, β- 12,93 d 170,381 pJ	I-127 stabil 171,846 pJ	I-128 β-, (β+) 24,99 m 172,939 pJ	I-129 β- 1,57E+07 a 174,355 pJ	I-130 β- 12,36 h 175,397 pJ	I-131 β- 8,021 d 176,772 pJ
52	Te-118 β+ 6 d 160,13 pJ	Te-119 β+ 16,05 h 161,337 pJ	Te-120 stabil 162,986 pJ	Te-121 β+ 19,16 d 164,143 pJ	Te-122 stabil 165,718 pJ	Te-123 β+ 6,00E+14 a 166,829 pJ	Te-124 stabil 168,338 pJ	Te-125 stabil 169,391 pJ	Te-126 stabil 170,851 pJ	Te-127 β- 9,35 h 171,858 pJ	Te-128 β- 2,20E+24 a 173,266 pJ	Te-129 β- 69,6 m 174,24 pJ	Te-130 β- 7,91E+20 a 175,589 pJ
51	Sb-117 β+ 2,8 h 159,11 pJ	Sb-118 β+ 3,6 m 160,3 pJ	Sb-119 β+ 38,19 h 161,83 pJ	Sb-120 β+ 15,89 m 162,955 pJ	Sb-121 stabil 164,435 pJ	Sb-122 β-, (β+) 65,37 h 165,526 pJ	Sb-123 stabil 166,962 pJ	Sb-124 β- 60,2 d 167,998 pJ	Sb-125 β- 2,76 a 169,393 pJ	Sb-126 β- 12,35 d 170,389 pJ	Sb-127 β- 92,4 h 171,73 pJ	Sb-128 β- 9,01 h 172,689 pJ	Sb-129 β- 4,4 h 173,985 pJ
50	Sn-116 stabil 158,405 pJ	Sn-117 stabil 159,517 pJ	Sn-118 stabil 161,011 pJ	Sn-119 stabil 162,05 pJ	Sn-120 stabil 163,509 pJ	Sn-121 β- 27,03 h 164,498 pJ	Sn-122 stabil 165,91 pJ	Sn-123 β- 129,2 d 166,863 pJ	Sn-124 stabil 168,223 pJ	Sn-125 β- 9,64 d 169,141 pJ	Sn-126 β- 2,30E+05 a 170,454 pJ	Sn-127 β- 126 m 171,343 pJ	Sn-128 β- 59,07 m 172,61 pJ
49	In-115 β- 4,41E+14 a 156,918 pJ	In-116 β- 14,1 s 158,005 pJ	In-117 β- 43,2 m 159,409 pJ	In-118 β- 5 s 160,428 pJ	In-119 β- 144 s 161,797 pJ	In-120 β- 3,08 s 162,774 pJ	In-121 β- 23,1 s 164,085 pJ	In-122 β- 1,5 s 165,016 pJ	In-123 β- 5,98 s 166,284 pJ	In-124 β- 3,11 s 167,169 pJ	In-125 β- 2,36 s 168,398 pJ	In-126 β- 1,53 s 169,263 pJ	In-127 β- 1,09 s 170,424 pJ
48	Cd-114 stabil 155,827 pJ	Cd-115 β- 53,46 h 156,811 pJ	Cd-116 β-, (β-) 3,00E+19 a 158,205 pJ	Cd-117 β- 149,4 m 159,131 pJ	Cd-118 β- 50,3 m 160,469 pJ	Cd-119 β- 161,4 s 161,315 pJ	Cd-120 β- 50,8 s 162,618 pJ	Cd-121 β- 13,5 s 163,444 pJ	Cd-122 β- 5,24 s 164,684 pJ	Cd-123 β- 2,1 s 165,43 pJ	Cd-124 β- 1,25 s 166,626 pJ	Cd-125 β- 650 ms 167,383 pJ	Cd-126 β- 515 ms 168,51 pJ
47	Ag-113 β- 5,37 h 154,181 pJ	Ag-114 β- 4,6 s 155,14 pJ	Ag-115 β- 20 m 156,44 pJ	Ag-116 β- 160,8 s 157,345 pJ	Ag-117 β- 73,6 s 158,59 pJ	Ag-118 β- 3,76 s 159,451 pJ	Ag-119 β- 6 s 160,583 pJ	Ag-120 β- 1,23 s 161,409 pJ	Ag-121 β- 790 ms 162,545 pJ	Ag-122 β- 520 ms 163,292 pJ	Ag-123 β- 296 ms 164,374 pJ	Ag-124 β- 172 ms 165,115 pJ	Ag-125 β- 166 ms 166,146 pJ
Z / N	66	67	68	69	70	71	72	73	74	75	76	77	78

79	80	81	82	83	84	85	86	87	88	89	90	91	Z \ N
Er-147 β+ 2,5 s 189,099 pj	Er-148 β+ 4,6 s 191,144 pj	Er-149 β+, (β+p) 4 s 192,769 pj	Er-150 β+ 18,5 s 194,718 pj	Er-151 β+ 23,5 s 196,08 pj	Er-152 α, β+ 10,3 s 197,731 pj	Er-153 α, β+ 37,1 s 199,022 pj	Er-154 β+ 3,73 m 200,656 pj	Er-155 β+ 5,3 m 201,885 pj	Er-156 β+ 19,5 m 203,499 pj	Er-157 β+ 18,65 m 204,665 pj	Er-158 β+ 137,4 m 206,26 pj	Er-159 β+ 36 m 207,435 pj	68
Ho-146 β+ 3,6 s 188,655 pj	Ho-147 β+ 5,8 s 190,644 pj	Ho-148 β+ 2,2 s 192,285 pj	Ho-149 β+ 21,1 s 194,167 pj	Ho-150 β+ 76,8 s 195,502 pj	Ho-151 β+, α 35,2 s 197,065 pj	Ho-152 β+, α 161,8 s 198,354 pj	Ho-153 β+ 120,6 s 199,874 pj	Ho-154 β+ 11,76 m 201,107 pj	Ho-155 β+ 48 m 202,623 pj	Ho-156 β+ 56 m 203,807 pj	Ho-157 β+ 12,6 m 205,336 pj	Ho-158 β+ 11,3 m 206,527 pj	67
Dy-145 β+ 9,5 s 188,575 pj	Dy-146 β+ 33,2 s 190,552 pj	Dy-147 β+ 40 s 192,107 pj	Dy-148 β+ 3,3 m 193,988 pj	Dy-149 β+ 4,2 m 195,258 pj	Dy-150 β+, α 7,17 m 196,808 pj	Dy-151 β+, (α) 17,9 m 198,012 pj	Dy-152 β+ 142,8 m 199,524 pj	Dy-153 β+ 6,4 h 200,661 pj	Dy-154 α 3,00E+06 a 202,154 pj	Dy-155 β+ 9,9 h 203,249 pj	Dy-156 stabil 204,761 pj	Dy-157 β+ 8,14 h 205,878 pj	66
Tb-144 β+ 1 s 188,061 pj	Tb-145 β+ 20 m 189,918 pj	Tb-146 β+ 8 s 191,513 pj	Tb-147 β+ 98,4 m 193,284 pj	Tb-148 β+ 60 m 194,543 pj	Tb-149 β+, α 4,118 h 195,989 pj	Tb-150 β+ 3,48 h 197,221 pj	Tb-151 β+ 17,61 h 198,597 pj	Tb-152 β+ 17,5 h 199,745 pj	Tb-153 β+ 56,16 h 201,134 pj	Tb-154 β+ 21,5 h 202,241 pj	Tb-155 β+ 5,32 d 203,71 pj	Tb-156 β+ 5,35 d 204,817 pj	65
Gd-143 β+ 39 s 187,832 pj	Gd-144 β+ 4,47 m 189,691 pj	Gd-145 β+ 23 m 191,171 pj	Gd-146 β+ 48,27 d 192,972 pj	Gd-147 β+ 38,06 h 194,148 pj	Gd-148 β+ 74,65 a 195,587 pj	Gd-149 β+ 9,28 d 196,698 pj	Gd-150 α 1,79E+06 a 198,092 pj	Gd-151 β+ 124 d 199,134 pj	Gd-152 α 1,08E+14 a 200,51 pj	Gd-153 β+ 240,4 d 201,511 pj	Gd-154 stabil 202,936 pj	Gd-155 stabil 203,967 pj	64
Eu-142 β+ 2,36 s 187,16 pj	Eu-143 β+ 155,4 s 188,921 pj	Eu-144 β+ 10,2 s 190,435 pj	Eu-145 β+ 5,93 d 192,109 pj	Eu-146 β+ 4,61 d 193,262 pj	Eu-147 β+ 24,1 d 194,624 pj	Eu-148 β+ 54,5 d 195,717 pj	Eu-149 β+ 93,1 d 197,033 pj	Eu-150 β+ 36,92 a 198,062 pj	Eu-151 stabil 199,333 pj	Eu-152 β+, β- 13,55 a 200,344 pj	Eu-153 stabil 201,714 pj	Eu-154 β- 8,599 a 202,746 pj	63
Sm-141 β+ 10,2 m 186,732 pj	Sm-142 β+ 72,49 m 188,514 pj	Sm-143 β+ 8,75 m 189,893 pj	Sm-144 stabil 191,578 pj	Sm-145 β+ 340 d 192,661 pj	Sm-146 α 1,03E+08 a 194,009 pj	Sm-147 α 1,06E+11 a 195,025 pj	Sm-148 α 7,00E+15 a 196,329 pj	Sm-149 stabil 197,27 pj	Sm-150 stabil 198,55 pj	Sm-151 β- 90,06 a 199,446 pj	Sm-152 stabil 200,769 pj	Sm-153 β- 46,28 h 201,71 pj	62
Pm-140 β+ 9,2 s 185,928 pj	Pm-141 β+ 20,9 m 187,592 pj	Pm-142 β+ 40,5 s 188,987 pj	Pm-143 β+ 265 d 190,569 pj	Pm-144 β+ 363 d 191,615 pj	Pm-145 β+ 17,71 a 192,885 pj	Pm-146 β+, β- 5,534 a 193,887 pj	Pm-147 β- 2,625 a 195,114 pj	Pm-148 β- 5,368 d 196,059 pj	Pm-149 β- 53,08 h 197,224 pj	Pm-150 β- 160,8 m 198,122 pj	Pm-151 β- 28,4 h 199,381 pj	Pm-152 β- 4,12 m 200,333 pj	61
Nd-139 β+ 29,7 m 185,366 pj	Nd-140 β+ 80,88 h 187,021 pj	Nd-141 β+ 149,4 m 188,306 pj	Nd-142 stabil 189,881 pj	Nd-143 stabil 190,862 pj	Nd-144 α 2,29E+15 a 192,114 pj	Nd-145 stabil 193,036 pj	Nd-146 stabil 194,248 pj	Nd-147 β- 10,98 d 195,096 pj	Nd-148 stabil 196,271 pj	Nd-149 β- 103,7 m 197,078 pj	Nd-150 β- 6,70E+18 a 198,261 pj	Nd-151 β- 12,44 m 199,115 pj	60
Pr-138 β+ 87 s 184,381 pj	Pr-139 β+ 4,41 h 185,945 pj	Pr-140 β+ 3,39 m 187,218 pj	Pr-141 stabil 188,723 pj	Pr-142 β- 19,12 h 189,659 pj	Pr-143 β- 13,57 d 190,837 pj	Pr-144 β- 17,28 m 191,759 pj	Pr-145 β- 5,984 h 192,872 pj	Pr-146 β- 24,15 m 193,698 pj	Pr-147 β- 13,4 m 194,789 pj	Pr-148 β- 137,4 s 195,614 pj	Pr-149 β- 135,6 s 196,671 pj	Pr-150 β- 6,19 s 197,523 pj	59
Ce-137 β+ 9 h 183,653 pj	Ce-138 stabil 185,217 pj	Ce-139 β+ 137,6 d 186,412 pj	Ce-140 stabil 187,886 pj	Ce-141 β- 32,51 d 188,756 pj	Ce-142 stabil 189,904 pj	Ce-143 β- 33,04 h 190,729 pj	Ce-144 β- 284,9 d 191,833 pj	Ce-145 β- 3,01 m 192,591 pj	Ce-146 β- 13,52 m 193,656 pj	Ce-147 β- 56,4 s 194,366 pj	Ce-148 β- 56 s 195,397 pj	Ce-149 β- 5,3 s 196,098 pj	58
La-136 β+ 9,87 m 182,51 pj	La-137 β+ 60040 a 183,974 pj	La-138 β+, β- 1,02E+11 a 185,175 pj	La-139 stabil 186,582 pj	La-140 β- 40,27 h 187,408 pj	La-141 β- 3,92 h 188,48 pj	La-142 β- 91,1 m 189,308 pj	La-143 β- 14,2 m 190,305 pj	La-144 β- 40,8 s 191,07 pj	La-145 β- 24,8 s 192,058 pj	La-146 β- 6,27 s 192,732 pj	La-147 β- 4,015 s 193,661 pj	La-148 β- 1,26 s 194,36 pj	57
Ba-135 stabil 181,633 pj	Ba-136 stabil 183,093 pj	Ba-137 stabil 184,199 pj	Ba-138 stabil 185,579 pj	Ba-139 β- 83,1 m 186,336 pj	Ba-140 β- 12,75 d 187,366 pj	Ba-141 β- 18,27 m 188,091 pj	Ba-142 β- 10,6 m 189,079 pj	Ba-143 β- 14,5 s 189,749 pj	Ba-144 β- 11,5 s 190,695 pj	Ba-145 β- 4,31 s 191,291 pj	Ba-146 β- 2,22 s 192,196 pj	Ba-147 β- 893 ms 192,797 pj	56
Cs-134 β- 2,066 a 180,312 pj	Cs-135 β- 2,30E+06 a 181,716 pj	Cs-136 β- 13,16 d 182,81 pj	Cs-137 β- 30,19 a 184,136 pj	Cs-138 β- 33,41 m 184,843 pj	Cs-139 β- 9,27 m 185,786 pj	Cs-140 β- 63,7 s 186,494 pj	Cs-141 β- 24,84 s 187,375 pj	Cs-142 β- 1,689 s 188,034 pj	Cs-143 β-, (β-n) 1,791 s 188,871 pj	Cs-144 β-, (β-n) 994 ms 189,459 pj	Cs-145 β-, (β-n) 582 ms 190,237 pj	Cs-146 β-, (β-n) 323 ms 190,821 pj	55
Xe-133 β- 5,248 d 179,265 pj	Xe-134 stabil 180,635 pj	Xe-135 β- 9,14 h 181,654 pj	Xe-136 stabil 182,949 pj	Xe-137 β- 3,818 m 183,594 pj	Xe-138 β- 14,08 m 184,53 pj	Xe-139 β- 39,68 s 185,101 pj	Xe-140 β- 13,6 s 185,969 pj	Xe-141 β- 1,73 s 186,516 pj	Xe-142 β- 1,22 s 187,351 pj	Xe-143 β-, (β-n) 511 ms 187,848 pj	Xe-144 β-, (β-n) 388 ms 188,631 pj	Xe-145 β-, (β-n) 188 ms 189,082 pj	54
I-132 β- 137,7 m 177,785 pj	I-133 β- 20,8 h 179,109 pj	I-134 β- 52,5 m 180,111 pj	I-135 β- 6,57 h 181,359 pj	I-136 β- 83,4 s 181,965 pj	I-137 β-, (β-n) 24,13 s 182,778 pj	I-138 β-, (β-n) 6,23 s 183,403 pj	I-139 β-, (β-n) 2,282 s 184,136 pj	I-140 β-, (β-n) 860 ms 184,692 pj	I-141 β-, (β-n) 430 ms 185,379 pj	I-142 β-, (β-n) 200 ms 185,92 pj	I-143 β-, (β-n) 100 ms 186,542 pj	I-144 β-, (β-n) 50 ms 187,039 pj	53
Te-131 β- 25 m 176,539 pj	Te-132 β- 76,9 h 177,828 pj	Te-133 β- 12,5 m 178,762 pj	Te-134 β- 41,8 m 179,994 pj	Te-135 β- 19 s 180,53 pj	Te-136 β-, (β-n) 17,63 s 181,276 pj	Te-137 β-, (β-n) 2,49 s 181,791 pj	Te-138 β-, (β-n) 1,4 s 182,496 pj	Te-139 β- 500 ms 182,972 pj	Te-140 β- 300 ms 183,661 pj	Te-141 β- 100 ms 184,069 pj	Te-142 β- 50 ms 184,715 pj		52
Sb-130 β- 39,5 m 174,904 pj	Sb-131 β- 23,03 m 176,148 pj	Sb-132 β- 167,4 s 177,07 pj	Sb-133 β- 150 s 178,247 pj	Sb-134 β- 780 ms 178,774 pj	Sb-135 β-, (β-n) 1,68 s 179,353 pj	Sb-136 β-, (β-n) 923 ms 179,873 pj	Sb-137 β-, (β-n) 450 ms 180,428 pj	Sb-138 β- 500 ms 180,904 pj	Sb-139 β- 300 ms 181,413 pj				51
Sn-129 β- 133,8 s 173,464 pj	Sn-130 β- 3,72 m 174,684 pj	Sn-131 β- 56 s 175,525 pj	Sn-132 β- 39,7 s 176,696 pj	Sn-133 β- 1,45 s 177,092 pj	Sn-134 β-, (β-n) 1,12 s 177,72 pj	Sn-135 β-, (β-n) 530 ms 178,053 pj	Sn-136 β-, (β-n) 250 ms 178,653 pj	Sn-137 β-, (β-n) 190 ms 178,957 pj					50
In-128 β- 840 ms 171,298 pj	In-129 β- 611 ms 172,363 pj	In-130 β- 290 ms 173,166 pj	In-131 β-, (β-n) 280 ms 174,18 pj	In-132 β-, (β-n) 206 ms 174,557 pj	In-133 β-, (β-n) 165 ms 175,138 pj	In-134 β-, (β-n) 140 ms 175,467 pj	In-135 β- 92 ms 175,998 pj						49
Cd-127 β- 370 ms 169,193 pj	Cd-128 β- 280 ms 170,289 pj	Cd-129 β- 242 ms 170,925 pj	Cd-130 β-, (β-n) 162 ms 171,96 pj	Cd-131 β-, (β-n) 68 ms 172,253 pj	Cd-132 β-, (β-n) 97 ms 172,806 pj								48
Ag-126 β- 107 ms 166,829 pj	Ag-127 β- 79 ms 167,787 pj	Ag-128 β- 58 ms 168,411 pj	Ag-129 β- 44 ms 169,334 pj	Ag-130 β- 50 ms 169,626 pj									47

Z \ N	80	81	82	83	84	85	86	87	88	89	90	91	92
78									Pt-166 α 300 μs 205,668 pJ	Pt-167 α 700 μs 207,228 pJ	Pt-168 α 2 ms 209,244 pJ	Pt-169 α, (β+) 3,7 ms 210,739 pJ	Pt-170 α, (β+) 13,8 ms 212,674 pJ
77								Ir-164 1 ms 203,584 pJ	Ir-165 1 μs 205,592 pJ	Ir-166 α, (p) 10,5 ms 207,131 pJ	Ir-167 α, p 35,2 ms 209,044 pJ	Ir-168 α 161 ms 210,595 pJ	Ir-169 α 780 ms 212,431 pJ
76							Os-162 α 1,87 ms 202,295 pJ	Os-163 α 5,5 ms 203,831 pJ	Os-164 α, (β+) 21 ms 205,831 pJ	Os-165 α, β+ 71 ms 207,31 pJ	Os-166 α, β+ 216 ms 209,215 pJ	Os-167 α, β+ 810 ms 210,679 pJ	Os-168 β+, α 2,06 s 212,531 pJ
75					Re-160 p, (α) 860 μs 200,182 pJ	Re-161 p 370 μs 202,143 pJ	Re-162 α 107 ms 203,671 pJ	Re-163 β+, α 390 ms 205,552 pJ	Re-164 α 207,105 pJ	Re-165 β+ 1 s 208,883 pJ	Re-166 β+ 2 s 210,375 pJ	Re-167 α 3,4 s 212,151 pJ	
74				W-158 α 1,37 ms 198,845 pJ	W-159 α 8,2 ms 200,383 pJ	W-160 α 90 ms 202,336 pJ	W-161 α, β+ 409 ms 203,807 pJ	W-162 β+, α 1,36 s 205,665 pJ	W-163 β+, α 2,8 s 207,104 pJ	W-164 β+, (α) 6,3 s 208,93 pJ	W-165 β+ 5,1 s 210,323 pJ	W-166 β+ 19,2 s 212,102 pJ	
73		Ta-155 p 13 μs 195,094 pJ	Ta-156 p 144 ms 196,727 pJ	Ta-157 α, (p), (β+) 10,1 ms 198,625 pJ	Ta-158 α 49 ms 200,136 pJ	Ta-159 β+, α 1,04 s 201,983 pJ	Ta-160 β+ 1,7 s 203,505 pJ	Ta-161 β+ 3 s 205,251 pJ	Ta-162 β+ 3,57 s 206,715 pJ	Ta-163 β+ 10,6 s 208,452 pJ	Ta-164 β+ 14,2 s 209,864 pJ	Ta-165 β+ 31 s 211,569 pJ	
72		Hf-153 β+ 400 ms 193,214 pJ	Hf-154 β+ 2 s 195,365 pJ	Hf-155 β+ 890 ms 196,882 pJ	Hf-156 α 23 ms 198,786 pJ	Hf-157 α, β+ 115 ms 200,202 pJ	Hf-158 β+, α 2,84 s 202,041 pJ	Hf-159 β+, α 5,2 s 202,455 pJ	Hf-160 β+ 13,6 s 205,242 pJ	Hf-161 β+ 18,2 s 206,596 pJ	Hf-162 β+ 39,4 s 208,347 pJ	Hf-163 β+ 40 s 209,658 pJ	Hf-164 β+ 111 s 211,357 pJ
71	Lu-151 p, β+ 80,6 ms 191,196 pJ	Lu-152 β+, β+p 650 ms 193,023 pJ	Lu-153 α 900 ms 195,109 pJ	Lu-154 β+ 1 s 196,599 pJ	Lu-155 α, (β+) 68,6 ms 198,359 pJ	Lu-156 α, (β+) 494 ms 199,844 pJ	Lu-157 β+ 6,8 s 201,575 pJ	Lu-158 β+ 10,6 s 202,985 pJ	Lu-159 β+ 12,1 s 204,679 pJ	Lu-160 β+ 36,1 s 206,06 pJ	Lu-161 β+ 77 s 207,722 pJ	Lu-162 β+ 82,2 s 209,059 pJ	Lu-163 β+ 3,97 m 210,665 pJ
70	Yb-150 β+ 700 ms 191,396 pJ	Yb-151 β+ 1,6 s 193,151 pJ	Yb-152 β+ 3,04 s 195,207 pJ	Yb-153 β+, α 4,2 s 196,621 pJ	Yb-154 α, (β+) 409 ms 198,374 pJ	Yb-155 α, β+ 1,793 s 199,758 pJ	Yb-156 β+, α 26,1 s 201,494 pJ	Yb-157 β+ 38,6 s 202,815 pJ	Yb-158 β+ 89,4 s 204,521 pJ	Yb-159 β+ 103,2 s 205,786 pJ	Yb-160 β+ 4,8 m 207,452 pJ	Yb-161 β+ 4,2 m 208,693 pJ	Yb-162 β+ 18,87 m 210,305 pJ
69	Tm-149 β+ 900 ms 191,099 pJ	Tm-150 β+ 3 s 192,79 pJ	Tm-151 β+ 4,17 s 194,755 pJ	Tm-152 β+ 8 s 196,208 pJ	Tm-153 α, (β+) 1,48 s 197,86 pJ	Tm-154 α, β+ 8,1 s 199,219 pJ	Tm-155 β+, (α) 21,6 s 200,866 pJ	Tm-156 β+ 83,8 s 202,192 pJ	Tm-157 β+ 3,63 m 203,785 pJ	Tm-158 β+ 3,98 m 205,077 pJ	Tm-159 β+ 9,13 m 206,669 pJ	Tm-160 β+ 9,4 m 207,919 pJ	Tm-161 β+ 30,2 m 209,468 pJ
68	Er-148 β+ 4,6 s 191,144 pJ	Er-149 β+, (β+p) 4 s 192,769 pJ	Er-150 β+ 18,5 s 194,718 pJ	Er-151 β+ 23,5 s 196,08 pJ	Er-152 α, β+ 10,3 s 197,731 pJ	Er-153 α, β+ 37,1 s 199,022 pJ	Er-154 β+ 3,73 m 200,656 pJ	Er-155 β+ 5,3 m 201,885 pJ	Er-156 β+ 19,5 m 203,499 pJ	Er-157 β+ 18,65 m 204,665 pJ	Er-158 β+ 137,4 m 206,26 pJ	Er-159 β+ 36 m 207,435 pJ	Er-160 β+ 28,58 h 208,967 pJ
67	Ho-147 β+ 5,8 s 190,644 pJ	Ho-148 β+ 2,2 s 192,285 pJ	Ho-149 β+ 21,1 s 194,167 pJ	Ho-150 β+ 76,8 s 195,502 pJ	Ho-151 β+, α 35,2 s 197,065 pJ	Ho-152 β+, α 161,8 s 198,354 pJ	Ho-153 β+ 120,6 s 199,874 pJ	Ho-154 β+ 11,76 m 201,107 pJ	Ho-155 β+ 48 m 202,623 pJ	Ho-156 β+ 56 m 203,807 pJ	Ho-157 β+ 12,6 m 205,336 pJ	Ho-158 β+ 11,3 m 206,527 pJ	Ho-159 β+ 33,05 m 208,004 pJ
66	Dy-146 β+ 33,2 s 190,552 pJ	Dy-147 β+ 40 s 192,107 pJ	Dy-148 β+ 3,3 m 193,988 pJ	Dy-149 β+ 4,2 m 195,258 pJ	Dy-150 β+, α 7,17 m 196,808 pJ	Dy-151 β+, (α) 17,9 m 198,012 pJ	Dy-152 β+ 142,8 m 199,524 pJ	Dy-153 β+ 6,4 h 200,661 pJ	Dy-154 3,00E+06 a 202,154 pJ	Dy-155 β+ 9,9 h 203,249 pJ	Dy-156 stabil 204,761 pJ	Dy-157 β+ 8,14 h 205,878 pJ	Dy-158 stabil 207,329 pJ
65	Tb-145 β+ 20 m 189,918 pJ	Tb-146 β+ 8 s 191,513 pJ	Tb-147 β+ 98,4 m 193,284 pJ	Tb-148 β+ 60 m 194,543 pJ	Tb-149 β+, α 4,118 h 195,989 pJ	Tb-150 β+ 3,48 h 197,221 pJ	Tb-151 β+ 17,61 h 198,597 pJ	Tb-152 β+ 17,5 h 199,745 pJ	Tb-153 β+ 56,16 h 201,134 pJ	Tb-154 β+ 21,5 h 202,241 pJ	Tb-155 β+ 5,32 d 203,71 pJ	Tb-156 β+ 5,35 d 204,817 pJ	Tb-157 β+ 71,05 a 206,219 pJ
64	Gd-144 β+ 4,47 m 189,691 pJ	Gd-145 β+ 23 m 191,171 pJ	Gd-146 β+ 48,27 d 192,972 pJ	Gd-147 β+ 38,06 h 194,148 pJ	Gd-148 α 74,65 a 195,587 pJ	Gd-149 β+ 9,28 d 196,698 pJ	Gd-150 α 1,79E+06 a 198,092 pJ	Gd-151 β+ 124 d 199,134 pJ	Gd-152 β+ 1,08E+14 a 200,51 pJ	Gd-153 β+ 240,4 d 201,511 pJ	Gd-154 stabil 202,936 pJ	Gd-155 stabil 203,967 pJ	Gd-156 stabil 205,335 pJ
63	Eu-143 β+ 155,4 s 188,921 pJ	Eu-144 β+ 10,2 s 190,435 pJ	Eu-145 β+ 5,93 d 192,109 pJ	Eu-146 β+ 4,61 d 193,262 pJ	Eu-147 β+ 24,1 d 194,624 pJ	Eu-148 β+ 54,5 d 195,717 pJ	Eu-149 β+ 93,1 d 197,033 pJ	Eu-150 β+ 36,92 a 198,062 pJ	Eu-151 stabil 199,333 pJ	Eu-152 β+, β- 13,55 a 200,344 pJ	Eu-153 stabil 201,714 pJ	Eu-154 β- 8,599 a 202,746 pJ	Eu-155 β- 4,764 a 204,052 pJ
62	Sm-142 β+ 72,49 m 188,514 pJ	Sm-143 β+ 8,75 m 189,893 pJ	Sm-144 stabil 191,578 pJ	Sm-145 β+ 340 d 192,661 pJ	Sm-146 α 1,03E+08 a 194,009 pJ	Sm-147 α 1,06E+11 a 195,025 pJ	Sm-148 α 7,00E+15 a 196,329 pJ	Sm-149 stabil 197,27 pJ	Sm-150 stabil 198,55 pJ	Sm-151 β- 90,06 a 199,446 pJ	Sm-152 stabil 200,769 pJ	Sm-153 β- 46,28 h 201,71 pJ	Sm-154 stabil 202,986 pJ
61	Pm-141 β+ 20,9 m 187,592 pJ	Pm-142 β+ 40,5 s 188,987 pJ	Pm-143 β+ 265 d 190,569 pJ	Pm-144 β+ 363 d 191,615 pJ	Pm-145 β+ 17,71 a 192,885 pJ	Pm-146 β+, β- 5,534 a 193,887 pJ	Pm-147 β- 2,625 a 195,114 pJ	Pm-148 β- 5,368 d 196,059 pJ	Pm-149 β- 53,08 h 197,224 pJ	Pm-150 β- 160,8 m 198,122 pJ	Pm-151 β- 28,4 h 199,381 pJ	Pm-152 β- 4,12 m 200,333 pJ	Pm-153 β- 5,25 m 201,533 pJ
60	Nd-140 β+ 80,88 h 187,021 pJ	Nd-141 β+ 149,4 m 188,306 pJ	Nd-142 stabil 189,881 pJ	Nd-143 stabil 190,862 pJ	Nd-144 2,29E+15 a 192,114 pJ	Nd-145 stabil 193,036 pJ	Nd-146 stabil 194,248 pJ	Nd-147 β- 10,98 d 195,096 pJ	Nd-148 stabil 196,271 pJ	Nd-149 β- 103,7 m 197,078 pJ	Nd-150 6,70E+18 a 198,261 pJ	Nd-151 β- 12,44 m 199,115 pJ	Nd-152 β- 11,4 m 200,281 pJ
59	Pr-139 β+ 4,41 h 185,945 pJ	Pr-140 β+ 3,39 m 187,218 pJ	Pr-141 stabil 188,723 pJ	Pr-142 β- 19,12 h 189,659 pJ	Pr-143 β- 13,57 d 190,837 pJ	Pr-144 β- 17,28 m 191,759 pJ	Pr-145 β- 5,984 h 192,872 pJ	Pr-146 β- 24,15 m 193,698 pJ	Pr-147 β- 13,4 m 194,789 pJ	Pr-148 β- 137,4 s 195,614 pJ	Pr-149 β- 135,6 s 196,671 pJ	Pr-150 β- 6,19 s 197,523 pJ	Pr-151 β- 18,9 s 198,571 pJ
58	Ce-138 stabil 185,217 pJ	Ce-139 β+ 137,6 d 186,412 pJ	Ce-140 stabil 187,886 pJ	Ce-141 β- 32,51 d 188,756 pJ	Ce-142 stabil 189,904 pJ	Ce-143 β- 33,04 h 190,729 pJ	Ce-144 β- 284,9 d 191,833 pJ	Ce-145 β- 3,01 m 192,591 pJ	Ce-146 β- 13,52 m 193,656 pJ	Ce-147 β- 56,4 s 194,366 pJ	Ce-148 β- 56 s 195,397 pJ	Ce-149 β- 5,3 s 196,098 pJ	Ce-150 β- 4 s 197,092 pJ
57	La-137 β+ 60040 a 183,974 pJ	La-138 β+, β- 1,02E+11 a 185,175 pJ	La-139 stabil 186,582 pJ	La-140 β- 40,27 h 187,408 pJ	La-141 β- 3,92 h 188,48 pJ	La-142 β- 91,1 m 189,308 pJ	La-143 β- 14,2 m 190,305 pJ	La-144 β- 40,8 s 191,07 pJ	La-145 β- 24,8 s 192,058 pJ	La-146 β- 6,27 s 192,732 pJ	La-147 β- 4,015 s 193,661 pJ	La-148 β- 1,26 s 194,36 pJ	La-149 β-, (β-n) 1,05 s 195,276 pJ
Z / N	80	81	82	83	84	85	86	87	88	89	90	91	92

93	94	95	96	97	98	99	100	101	102	103	104	105	Z \ N
Pt-171 α, (β+) 44 ms 214,153 pj	Pt-172 α 98,4 ms 216,029 pj	Pt-173 α, β+ 365 ms 217,456 pj	Pt-174 α 889 ms 219,291 pj	Pt-175 α 2,52 s 220,643 pj	Pt-176 β+, α 6,33 s 222,455 pj	Pt-177 β+, (α) 10,6 s 223,819 pj	Pt-178 β+, (α) 21,1 s 225,534 pj	Pt-179 β+ 21,2 s 226,869 pj	Pt-180 β+ 52 s 228,51 pj	Pt-181 β+ 52 s 229,794 pj	Pt-182 β+ 132 s 231,375 pj	Pt-183 β+ 6,5 m 232,604 pj	78
Ir-170 β+, (α) 910 ms 213,919 pj	Ir-171 α 3,6 s 215,714 pj	Ir-172 β+, (α) 4,4 s 217,18 pj	Ir-173 β+, (α) 9 s 218,917 pj	Ir-174 β+ 7,9 s 220,305 pj	Ir-175 β+ 9 s 222,009 pj	Ir-176 β+, (α) 8,3 s 223,371 pj	Ir-177 β+ 30 s 225,014 pj	Ir-178 β+ 12 s 226,34 pj	Ir-179 β+ 79 s 227,926 pj	Ir-180 β+ 90 s 229,203 pj	Ir-181 β+ 4,9 m 230,736 pj	Ir-182 β+ 15 m 231,962 pj	77
Os-169 β+, α 3,46 s 213,941 pj	Os-170 β+, (α) 7,46 s 215,748 pj	Os-171 β+, (α) 8,3 s 217,1 pj	Os-172 β+, (α) 19,2 s 218,865 pj	Os-173 β+ 22,4 s 220,19 pj	Os-174 β+ 44 s 221,893 pj	Os-175 β+ 84 s 223,203 pj	Os-176 β+ 3,6 m 224,816 pj	Os-177 β+ 180 s 226,085 pj	Os-178 β+ 5 m 227,634 pj	Os-179 β+ 6,5 m 228,843 pj	Os-180 β+ 21,5 m 230,351 pj	Os-181 β+ 105 m 231,515 pj	76
Re-168 β+ 4,4 s 213,586 pj	Re-169 β+ 8,1 s 215,295 pj	Re-170 β+ 9,2 s 216,673 pj	Re-171 β+ 15,2 s 218,34 pj	Re-172 β+ 15 s 219,677 pj	Re-173 β+ 120 s 221,295 pj	Re-174 β+ 144 s 222,607 pj	Re-175 β+ 5,89 m 224,159 pj	Re-176 β+ 5,3 m 225,416 pj	Re-177 β+ 14 m 226,903 pj	Re-178 β+ 13,2 m 228,097 pj	Re-179 β+ 19,5 m 229,54 pj	Re-180 β+ 146,4 s 230,713 pj	75
W-167 β+ 19,9 s 213,427 pj	W-168 β+ 51 s 215,169 pj	W-169 β+ 76 s 216,466 pj	W-170 β+, (α) 145,2 s 218,14 pj	W-171 β+ 142,8 s 219,4 pj	W-172 β+ 6,6 m 221,015 pj	W-173 β+ 7,6 m 222,249 pj	W-174 β+ 33,2 m 223,783 pj	W-175 β+ 35,2 m 224,981 pj	W-176 β+ 150 m 226,436 pj	W-177 β+ 132 m 227,578 pj	W-178 β+ 21,6 d 228,986 pj	W-179 β+ 37,05 m 230,101 pj	74
Ta-166 β+ 34,4 s 212,901 pj	Ta-167 β+ 79,8 s 214,555 pj	Ta-168 β+ 120 s 215,856 pj	Ta-169 β+ 4,9 m 217,453 pj	Ta-170 β+ 6,76 m 218,721 pj	Ta-171 β+ 23,3 m 220,268 pj	Ta-172 β+ 36,8 m 221,498 pj	Ta-173 β+ 3,14 h 222,962 pj	Ta-174 β+ 68,4 m 224,151 pj	Ta-175 β+ 10,5 h 225,551 pj	Ta-176 β+ 8,09 h 226,677 pj	Ta-177 β+ 56,56 h 228,027 pj	Ta-178 β+ 9,31 m 229,126 pj	73
Hf-165 β+ 76 s 212,621 pj	Hf-166 β+ 6,77 m 214,27 pj	Hf-167 β+ 123 s 215,5 pj	Hf-168 β+ 25,95 m 217,097 pj	Hf-169 β+ 3,24 m 218,287 pj	Hf-170 β+ 16,01 h 219,827 pj	Hf-171 β+ 12,1 h 220,988 pj	Hf-172 β+ 1,871 a 222,437 pj	Hf-173 β+ 23,6 h 223,571 pj	Hf-174 α 2,00E+15 a 224,934 pj	Hf-175 β+ 70 d 226,009 pj	Hf-176 stabil 227,317 pj	Hf-177 stabil 228,34 pj	72
Lu-164 β+ 3,14 m 211,934 pj	Lu-165 β+ 10,74 m 213,516 pj	Lu-166 β+ 159 s 214,742 pj	Lu-167 β+ 51,5 m 216,272 pj	Lu-168 β+ 5,5 m 217,495 pj	Lu-169 β+ 34,06 h 218,951 pj	Lu-170 β+ 48,29 h 220,121 pj	Lu-171 β+ 8,24 d 221,498 pj	Lu-172 β+ 6,7 d 222,616 pj	Lu-173 β+ 1,371 a 223,933 pj	Lu-174 β+ 3,312 a 225,016 pj	Lu-175 stabil 226,244 pj	Lu-176 β- 3,85E+10 a 227,252 pj	71
Yb-163 β+ 11,05 m 211,514 pj	Yb-164 β+ 75,8 m 213,082 pj	Yb-165 β+ 9,9 m 214,258 pj	Yb-166 β+ 56,7 h 215,759 pj	Yb-167 β+ 17,5 m 216,893 pj	Yb-168 stabil 218,343 pj	Yb-169 β+ 32,03 d 219,443 pj	Yb-170 stabil 220,801 pj	Yb-171 stabil 221,86 pj	Yb-172 stabil 223,145 pj	Yb-173 stabil 224,165 pj	Yb-174 stabil 225,361 pj	Yb-175 β- 4,185 d 226,294 pj	70
Tm-162 β+ 21,7 m 210,695 pj	Tm-163 β+ 108,6 m 212,189 pj	Tm-164 β+ 120 s 213,346 pj	Tm-165 β+ 30,06 h 214,807 pj	Tm-166 β+ 7,7 h 215,933 pj	Tm-167 β+ 9,25 d 217,331 pj	Tm-168 β+ 93,1 d 218,427 pj	Tm-169 stabil 219,715 pj	Tm-170 β- 128,6 d 220,771 pj	Tm-171 β- 1,921 a 221,97 pj	Tm-172 β- 63,6 h 222,969 pj	Tm-173 β- 8,24 h 224,083 pj	Tm-174 β- 5,4 m 224,993 pj	69
Er-161 β+ 3,21 h 210,124 pj	Er-162 stabil 211,599 pj	Er-163 β+ 75 m 212,705 pj	Er-164 stabil 214,122 pj	Er-165 β+ 10,36 h 215,188 pj	Er-166 stabil 216,545 pj	Er-167 stabil 217,577 pj	Er-168 stabil 218,822 pj	Er-169 β- 9,4 d 219,784 pj	Er-170 stabil 220,946 pj	Er-171 β- 7,516 h 221,857 pj	Er-172 β- 49,3 h 222,952 pj	Er-173 β- 86,04 s 223,792 pj	68
Ho-160 β+ 25,6 m 209,145 pj	Ho-161 β+ 148,8 m 210,569 pj	Ho-162 β+ 15 m 211,677 pj	Ho-163 β+ 4573 a 213,024 pj	Ho-164 β+, β- 29 m 214,093 pj	Ho-165 stabil 215,373 pj	Ho-166 β- 26,83 h 216,374 pj	Ho-167 β- 3,1 h 217,54 pj	Ho-168 β- 179,4 s 218,478 pj	Ho-169 β- 4,7 m 219,568 pj	Ho-170 β- 165,6 s 220,452 pj	Ho-171 β- 53 s 221,479 pj	Ho-172 β- 25 s 222,251 pj	67
Dy-159 β+ 144,4 d 208,424 pj	Dy-160 stabil 209,798 pj	Dy-161 stabil 210,832 pj	Dy-162 stabil 212,145 pj	Dy-163 stabil 213,15 pj	Dy-164 stabil 214,377 pj	Dy-165 β- 140 m 215,293 pj	Dy-166 β- 81,6 h 216,421 pj	Dy-167 β- 6,2 m 217,288 pj	Dy-168 β- 8,7 m 218,363 pj	Dy-169 β- 39 s 219,181 pj	Dy-170 β- 30 s 220,157 pj	Dy-171 β- 6 s 220,876 pj	66
Tb-158 β+, β- 180,1 a 207,304 pj	Tb-159 stabil 208,608 pj	Tb-160 β- 72,3 d 209,629 pj	Tb-161 β- 6,906 d 210,862 pj	Tb-162 β- 7,6 m 211,869 pj	Tb-163 β- 19,5 m 212,989 pj	Tb-164 β- 180 s 213,879 pj	Tb-165 β- 126,6 s 214,95 pj	Tb-166 β- 25,6 s 215,772 pj	Tb-167 β- 19 s 216,753 pj	Tb-168 β- 8,2 s 217,513 pj	Tb-169 β- 2 s 218,428 pj	Tb-170 β- 3 s 219,122 pj	65
Gd-157 stabil 206,353 pj	Gd-158 stabil 207,625 pj	Gd-159 β- 18,48 h 208,577 pj	Gd-160 stabil 209,771 pj	Gd-161 β- 3,646 m 210,674 pj	Gd-162 β- 8,4 m 211,771 pj	Gd-163 β- 68 s 212,606 pj	Gd-164 β- 45 s 213,621 pj	Gd-165 β- 10,3 s 214,395 pj	Gd-166 β- 4,8 s 215,349 pj	Gd-167 β- 3 s 216,058 pj	Gd-168 β- 300 ms 216,948 pj	Gd-169 β- 1 s 217,562 pj	64
Eu-156 β- 15,19 d 205,067 pj	Eu-157 β- 15,18 h 206,26 pj	Eu-158 β- 45,9 m 207,193 pj	Eu-159 β- 18,1 m 208,3 pj	Eu-160 β- 38 s 209,155 pj	Eu-161 β- 26 s 210,204 pj	Eu-162 β- 10,6 s 210,99 pj	Eu-163 β- 6 s 211,953 pj	Eu-164 β- 2 s 212,702 pj	Eu-165 β- 1 s 213,576 pj	Eu-166 β- 400 ms 214,232 pj	Eu-167 β- 200 ms 215,041 pj		63
Sm-155 β- 22,3 m 203,916 pj	Sm-156 β- 9,4 h 205,077 pj	Sm-157 β- 8,03 m 205,947 pj	Sm-158 β- 5,3 m 206,998 pj	Sm-159 β- 11,37 s 207,809 pj	Sm-160 β- 9,6 s 208,821 pj	Sm-161 β- 4,8 s 209,559 pj	Sm-162 β- 2,4 s 210,497 pj	Sm-163 β- 1 s 211,17 pj	Sm-164 β- 500 ms 212,019 pj	Sm-165 β- 200 ms 212,624 pj			62
Pm-154 β- 103,8 s 202,476 pj	Pm-155 β- 41,5 s 203,525 pj	Pm-156 β- 26,7 s 204,377 pj	Pm-157 β- 10,56 s 205,374 pj	Pm-158 β- 4,8 s 206,143 pj	Pm-159 β- 1,47 s 207,083 pj	Pm-160 β- 2 s 207,77 pj	Pm-161 β- 700 ms 208,63 pj	Pm-162 β- 500 ms 209,277 pj	Pm-163 β- 200 ms 210,047 pj				61
Nd-153 β- 31,6 s 201,124 pj	Nd-154 β- 25,9 s 202,153 pj	Nd-155 β- 8,9 s 202,941 pj	Nd-156 β- 5,49 s 203,911 pj	Nd-157 β- 2 s 204,604 pj	Nd-158 β- 700 ms 205,528 pj	Nd-159 β- 500 ms 206,141 pj	Nd-160 β- 300 ms 206,976 pj	Nd-161 β- 200 ms 207,573 pj					60
Pr-152 β- 3,63 s 199,388 pj	Pr-153 β- 4,28 s 200,332 pj	Pr-154 β- 2,3 s 201,077 pj	Pr-155 β- 1 s 201,973 pj	Pr-156 β- 500 ms 202,651 pj	Pr-157 β- 300 ms 203,472 pj	Pr-158 β- 200 ms 204,085 pj	Pr-159 β- 100 ms 204,867 pj						59
Ce-151 β- 1,02 s 197,852 pj	Ce-152 β- 1,1 s 198,77 pj	Ce-153 β- 500 ms 199,465 pj	Ce-154 β- 300 ms 200,324 pj	Ce-155 β- 200 ms 200,93 pj	Ce-156 β- 150 ms 201,726 pj	Ce-157 β- 50 ms 202,265 pj							58
La-150 β-, (β-n) 510 ms 195,962 pj	La-151 β- 300 ms 196,833 pj	La-152 β- 200 ms 197,43 pj	La-153 β- 150 ms 198,239 pj	La-154 β- 100 ms 198,795 pj	La-155 β- 60 ms 199,514 pj								57

Z \ N	96	97	98	99	100	101	102	103	104	105	106	107	108
88													
87													
86													
85													At-193 α 40 ms 238,95 pJ
84									Po-188 α 430 μs 232,673 pJ	Po-189 α 5 ms 234,106 pJ	Po-190 α 2,46 ms 235,904 pJ	Po-191 α 22 ms 237,276 pJ	Po-192 α 32,2 ms 239,052 pJ
83						Bi-184 α 6,6 ms 227,38 pJ	Bi-185 α 2 ms 229,179 pJ	Bi-186 α 14,8 ms 230,632 pJ	Bi-187 α 32 ms 232,44 pJ	Bi-188 α 44 ms 233,866 pJ	Bi-189 α, β+ 674 ms 235,617 pJ	Bi-190 α 6,3 s 237,044 pJ	Bi-191 α, β+ 12,3 s 238,712 pJ
82	Pb-178 α 230 μs 219,334 pJ	Pb-179 α 3 ms 220,885 pJ	Pb-180 α 5 ms 222,803 pJ	Pb-181 α, (β+) 45 ms 224,29 pJ	Pb-182 α, (β+) 60 ms 226,172 pJ	Pb-183 α, β+ 535 ms 227,584 pJ	Pb-184 α 490 ms 229,434 pJ	Pb-185 α 6,3 s 230,807 pJ	Pb-186 β+, α 4,82 s 232,603 pJ	Pb-187 β+, (α) 15,2 s 233,944 pJ	Pb-188 β+, (α) 25,5 s 235,691 pJ	Pb-189 β+ 51 s 236,995 pJ	Pb-190 β+ 71 s 238,695 pJ
81	Tl-177 α, p 18 ms 219,271 pJ	Tl-178 α, β+ 255 ms 220,792 pJ	Tl-179 α, β+ 270 ms 222,654 pJ	Tl-180 β+, (α) 1,5 s 224,109 pJ	Tl-181 α 3,2 s 225,961 pJ	Tl-182 β+, (α) 2 s 227,343 pJ	Tl-183 β+, (α) 6,9 s 229,154 pJ	Tl-184 β+, (α) 9,7 s 230,495 pJ	Tl-185 β+ 19,5 s 232,248 pJ	Tl-186 β+ 40 s 233,612 pJ	Tl-187 β+ 51 s 235,265 pJ	Tl-188 β+ 71 s 236,543 pJ	Tl-189 β+ 138 s 238,197 pJ
80	Hg-176 α 20,4 ms 219,457 pJ	Hg-177 α, β+ 127,3 ms 220,91 pJ	Hg-178 α, β+ 269 ms 222,77 pJ	Hg-179 α 1,09 s 224,16 pJ	Hg-180 β+, α 2,56 s 225,986 pJ	Hg-181 β+, α 3,6 s 227,346 pJ	Hg-182 β+, α 10,83 s 229,106 pJ	Hg-183 β+, α 9,4 s 230,435 pJ	Hg-184 β+, (α) 30,6 s 232,137 pJ	Hg-185 β+, (α) 49,1 s 233,402 pJ	Hg-186 β+ 82,8 s 235,074 pJ	Hg-187 β+ 114 s 236,3 pJ	Hg-188 β+ 3,25 m 237,927 pJ
79	Au-175 α 100 ms 219,197 pJ	Au-176 α, β+ 1,08 s 220,643 pJ	Au-177 α 1,46 s 222,441 pJ	Au-178 β+, α 2,6 s 223,858 pJ	Au-179 β+, α 7,1 s 225,572 pJ	Au-180 β+, (α) 8,1 s 226,969 pJ	Au-181 β+, (α) 13,7 s 228,627 pJ	Au-182 β+ 15,5 s 229,989 pJ	Au-183 β+ 42,8 s 231,584 pJ	Au-184 β+ 20,6 s 232,898 pJ	Au-185 β+ 4,25 m 234,439 pJ	Au-186 β+ 10,7 m 235,708 pJ	Au-187 β+ 8,4 m 237,208 pJ
78	Pt-174 α 889 ms 219,291 pJ	Pt-175 α 2,52 s 220,643 pJ	Pt-176 β+, α 6,33 s 222,455 pJ	Pt-177 β+, (α) 10,6 s 223,819 pJ	Pt-178 β+, (α) 21,1 s 225,534 pJ	Pt-179 β+ 21,2 s 226,869 pJ	Pt-180 β+ 52 s 228,51 pJ	Pt-181 β+ 52 s 229,794 pJ	Pt-182 β+ 132 s 231,375 pJ	Pt-183 β+ 6,5 m 232,604 pJ	Pt-184 β+ 17,3 m 234,147 pJ	Pt-185 β+ 70,9 m 235,336 pJ	Pt-186 β+ 124,8 m 236,819 pJ
77	Ir-173 β+, (α) 9 s 218,917 pJ	Ir-174 β+ 7,9 s 220,305 pJ	Ir-175 β+ 9 s 222,009 pJ	Ir-176 β+, (α) 8,3 s 223,371 pJ	Ir-177 β+ 30 s 225,014 pJ	Ir-178 β+ 12 s 226,34 pJ	Ir-179 β+ 79 s 227,926 pJ	Ir-180 β+ 90 s 229,203 pJ	Ir-181 β+ 4,9 m 230,736 pJ	Ir-182 β+ 15 m 231,962 pJ	Ir-183 β+ 58 m 233,438 pJ	Ir-184 β+ 3,09 h 234,638 pJ	Ir-185 β+ 14,4 h 236,047 pJ
76	Os-172 β+, (α) 19,2 s 218,865 pJ	Os-173 β+ 22,4 s 220,19 pJ	Os-174 β+ 44 s 221,893 pJ	Os-175 β+ 84 s 223,203 pJ	Os-176 β+ 3,6 m 224,816 pJ	Os-177 β+ 180 s 226,085 pJ	Os-178 β+ 5 m 227,634 pJ	Os-179 β+ 6,5 m 228,843 pJ	Os-180 β+ 21,5 m 230,351 pJ	Os-181 β+ 105 m 231,515 pJ	Os-182 β+ 22,1 h 232,977 pJ	Os-183 β+ 13 h 234,119 pJ	Os-184 stabil 235,507 pJ
75	Re-171 β+ 15,2 s 218,34 pJ	Re-172 β+ 15 s 219,677 pJ	Re-173 β+ 120 s 221,295 pJ	Re-174 β+ 144 s 222,607 pJ	Re-175 β+ 5,89 m 224,159 pJ	Re-176 β+ 5,3 m 225,416 pJ	Re-177 β+ 14 m 226,903 pJ	Re-178 β+ 13,2 m 228,097 pJ	Re-179 β+ 19,5 m 229,54 pJ	Re-180 β+ 146,4 s 230,713 pJ	Re-181 β+ 19,9 h 232,114 pJ	Re-182 β+ 64 h 233,236 pJ	Re-183 β+ 70 d 234,589 pJ
74	W-170 β+, (α) 145,2 s 218,14 pJ	W-171 β+ 142,8 s 219,4 pJ	W-172 β+ 6,6 m 221,015 pJ	W-173 β+ 7,6 m 222,249 pJ	W-174 β+ 33,2 m 223,783 pJ	W-175 β+ 35,2 m 224,981 pJ	W-176 β+ 150 m 226,436 pJ	W-177 β+ 132 m 227,578 pJ	W-178 β+ 21,6 d 228,986 pJ	W-179 β+ 37,05 m 230,101 pJ	W-180 stabil 231,448 pJ	W-181 β+ 121,2 d 232,519 pJ	W-182 stabil 233,811 pJ
73	Ta-169 β+ 4,9 m 217,453 pJ	Ta-170 β+ 6,76 m 218,721 pJ	Ta-171 β+ 23,3 m 220,268 pJ	Ta-172 β+ 36,8 m 222,498 pJ	Ta-173 β+ 3,14 h 222,962 pJ	Ta-174 β+ 68,4 m 224,151 pJ	Ta-175 β+ 10,5 h 225,551 pJ	Ta-176 β+ 8,09 h 226,677 pJ	Ta-177 β+ 56,56 h 228,027 pJ	Ta-178 β+ 9,31 m 229,126 pJ	Ta-179 β+ 1,821 a 230,396 pJ	Ta-180 β+ 8,152 h 231,46 pJ	Ta-181 stabil 232,674 pJ
72	Hf-168 β+ 25,95 m 217,097 pJ	Hf-169 β+ 3,24 m 218,287 pJ	Hf-170 β+ 16,01 h 219,827 pJ	Hf-171 β+ 12,1 h 220,988 pJ	Hf-172 β+ 1,871 a 222,437 pJ	Hf-173 β+ 23,6 h 223,571 pJ	Hf-174 α 2,00E+15 a 224,934 pJ	Hf-175 β+ 70 d 226,009 pJ	Hf-176 stabil 227,317 pJ	Hf-177 stabil 228,34 pJ	Hf-178 stabil 229,561 pJ	Hf-179 stabil 230,539 pJ	Hf-180 stabil 231,722 pJ
71	Lu-167 β+ 51,5 m 216,272 pJ	Lu-168 β+ 5,5 m 217,495 pJ	Lu-169 β+ 34,06 h 218,951 pJ	Lu-170 β+ 48,29 h 220,121 pJ	Lu-171 β+ 8,24 d 221,498 pJ	Lu-172 β+ 6,7 d 222,616 pJ	Lu-173 β+ 1,371 a 223,933 pJ	Lu-174 β+ 3,312 a 225,016 pJ	Lu-175 stabil 226,244 pJ	Lu-176 β- 3,85E+10 a 227,252 pJ	Lu-177 β- 6,647 d 228,385 pJ	Lu-178 β- 28,4 m 229,35 pJ	Lu-179 β- 4,59 h 230,438 pJ
70	Yb-166 β+ 56,7 h 215,759 pJ	Yb-167 β+ 17,5 m 216,893 pJ	Yb-168 stabil 218,343 pJ	Yb-169 β+ 32,03 d 219,443 pJ	Yb-170 stabil 220,801 pJ	Yb-171 stabil 221,86 pJ	Yb-172 stabil 223,145 pJ	Yb-173 stabil 224,165 pJ	Yb-174 stabil 225,361 pJ	Yb-175 β- 4,185 d 226,294 pJ	Yb-176 stabil 227,394 pJ	Yb-177 β- 114,7 m 228,286 pJ	Yb-178 β- 74 m 229,372 pJ
69	Tm-165 β+ 30,06 h 214,807 pJ	Tm-166 β+ 7,7 h 215,933 pJ	Tm-167 β+ 9,25 d 217,331 pJ	Tm-168 β+ 93,1 d 218,427 pJ	Tm-169 stabil 219,715 pJ	Tm-170 β- 128,6 d 220,771 pJ	Tm-171 β- 1,921 a 221,97 pJ	Tm-172 β- 63,6 h 222,969 pJ	Tm-173 β- 8,24 h 224,083 pJ	Tm-174 β- 5,4 m 224,993 pJ	Tm-175 β- 15,2 m 226,037 pJ	Tm-176 β- 111 s 226,858 pJ	Tm-177 β- 90 s 227,861 pJ
68	Er-164 stabil 214,122 pJ	Er-165 β+ 10,36 h 215,188 pJ	Er-166 stabil 216,545 pJ	Er-167 stabil 217,577 pJ	Er-168 stabil 218,822 pJ	Er-169 β- 9,4 d 219,784 pJ	Er-170 stabil 220,946 pJ	Er-171 β- 7,516 h 221,857 pJ	Er-172 β- 49,3 h 222,952 pJ	Er-173 β- 86,04 s 223,792 pJ	Er-174 β- 3,2 m 224,807 pJ	Er-175 β- 72 s 225,566 pJ	Er-176 β- 20 s 226,517 pJ
67	Ho-163 β+ 4573 a 213,024 pJ	Ho-164 β+, β- 29 m 214,093 pJ	Ho-165 stabil 215,373 pJ	Ho-166 β- 26,83 h 216,374 pJ	Ho-167 β- 3,1 h 217,54 pJ	Ho-168 β- 179,4 s 218,478 pJ	Ho-169 β- 4,7 m 219,568 pJ	Ho-170 β- 165,6 s 220,452 pJ	Ho-171 β- 53 s 221,479 pJ	Ho-172 β- 25 s 222,251 pJ	Ho-173 β- 10 s 223,183 pJ	Ho-174 β- 8 s 223,915 pJ	Ho-175 β- 5 s 224,753 pJ
Z / N	96	97	98	99	100	101	102	103	104	105	106	107	108

109	110	111	112	113	114	115	116	117	118	119	120	121	Z \ N
					Ra-202 α 2,6 ms 248,714 pJ	Ra-203 α 4 ms 250,098 pJ	Ra-204 α 60 ms 251,806 pJ	Ra-205 α 220 ms 253,133 pJ	Ra-206 α 240 ms 254,791 pJ	Ra-207 α, β+ 1,3 s 256,088 pJ	Ra-208 α, (β+) 1,3 s 257,674 pJ	Ra-209 α, β+ 4,6 s 258,944 pJ	88
			Fr-199 α 16 ms 245,352 pJ	Fr-200 α 24 ms 246,748 pJ	Fr-201 α, (β+) 61 ms 248,445 pJ	Fr-202 α, (β+) 290 ms 249,811 pJ	Fr-203 α, (β+) 550 ms 251,47 pJ	Fr-204 α 1,7 s 252,804 pJ	Fr-205 α, (β+) 3,85 s 254,404 pJ	Fr-206 β+, α 16 s 255,686 pJ	Fr-207 α, (β+) 14,8 s 257,236 pJ	Fr-208 α, β+ 59,1 s 258,501 pJ	87
Rn-195 α 6 ms 240,576 pJ	Rn-196 α 4,7 ms 242,365 pJ	Rn-197 α 66 ms 243,738 pJ	Rn-198 α, (β+) 65 ms 245,465 pJ	Rn-199 α, (β+) 620 ms 246,802 pJ	Rn-200 α, (β+) 1,03 s 248,496 pJ	Rn-201 α, β+ 7 s 249,798 pJ	Rn-202 α, β+ 9,94 s 251,445 pJ	Rn-203 α, β+ 43,5 s 252,72 pJ	Rn-204 α 74,4 s 254,306 pJ	Rn-205 β+, α 168 s 255,555 pJ	Rn-206 α, β+ 5,67 m 257,073 pJ	Rn-207 β+, α 9,25 m 258,289 pJ	86
At-194 α 40 ms 240,412 pJ	At-195 α 328 ms 242,07 pJ	At-196 α, (β+) 253 ms 243,437 pJ	At-197 α, (β+) 350 ms 245,116 pJ	At-198 α 4,2 s 246,462 pJ	At-199 α 7,2 s 248,099 pJ	At-200 α, β+ 43,2 s 249,419 pJ	At-201 α, β+ 85 s 251,001 pJ	At-202 β+, α 3,067 m 252,262 pJ	At-203 β+, α 7,4 m 253,807 pJ	At-204 β+, α 9,2 m 255,054 pJ	At-205 β+, α 26,2 m 256,523 pJ	At-206 β+ 30,6 m 257,728 pJ	85
Po-193 α, (β+) 420 ms 240,392 pJ	Po-194 α 392 ms 242,109 pJ	Po-195 α, β+ 4,64 s 243,413 pJ	Po-196 α, (β+) 5,56 s 245,091 pJ	Po-197 β+, α 53,6 s 246,365 pJ	Po-198 α, β+ 106,2 s 247,997 pJ	Po-199 β+, (α) 5,48 m 249,249 pJ	Po-200 β+, α 11,5 m 250,821 pJ	Po-201 β+, (α) 15,3 m 252,045 pJ	Po-202 β+, (α) 44,7 m 253,563 pJ	Po-203 β+ 36,7 m 254,757 pJ	Po-204 β+ 3,53 h 256,214 pJ	Po-205 β+ 99,6 m 257,376 pJ	84
Bi-192 β+, α 34,6 s 240,055 pJ	Bi-193 β+, (α) 67 s 241,721 pJ	Bi-194 β+ 95 s 243,033 pJ	Bi-195 β+ 3,05 m 244,652 pJ	Bi-196 β+ 5,1 m 245,942 pJ	Bi-197 β+ 9,3 m 247,505 pJ	Bi-198 β+ 10,3 m 248,747 pJ	Bi-199 β+ 27 m 250,269 pJ	Bi-200 β+ 36,4 m 251,493 pJ	Bi-201 β+ 108 m 252,954 pJ	Bi-202 β+ 103,2 m 254,138 pJ	Bi-203 β+ 11,76 h 255,56 pJ	Bi-204 β+ 11,22 h 256,714 pJ	83
Pb-191 β+ 79,8 s 239,96 pJ	Pb-192 β+ 3,5 m 241,624 pJ	Pb-193 β+ 5 m 242,859 pJ	Pb-194 β+ 12 m 244,475 pJ	Pb-195 β+ 15 m 245,689 pJ	Pb-196 β+ 37 m 247,246 pJ	Pb-197 β+ 8 m 248,441 pJ	Pb-198 β+ 144 m 249,942 pJ	Pb-199 β+ 90 m 251,104 pJ	Pb-200 β+ 21,5 h 252,56 pJ	Pb-201 β+ 9,33 h 253,695 pJ	Pb-202 β+, (α) 52530 a 255,097 pJ	Pb-203 β+ 51,87 h 256,206 pJ	82
Tl-190 β+ 156 s 239,447 pJ	Tl-191 β+ 20 m 241,053 pJ	Tl-192 β+ 9,6 m 242,28 pJ	Tl-193 β+ 21,6 m 243,805 pJ	Tl-194 β+ 33 m 245,021 pJ	Tl-195 β+ 69,6 m 246,526 pJ	Tl-196 β+ 110,4 m 247,713 pJ	Tl-197 β+ 2,84 h 249,142 pJ	Tl-198 β+ 5,3 h 250,298 pJ	Tl-199 β+ 7,42 h 251,683 pJ	Tl-200 β+ 26,1 h 252,814 pJ	Tl-201 β+ 72,91 h 254,129 pJ	Tl-202 β+ 12,23 d 255,23 pJ	81
Hg-189 β+ 7,6 m 239,128 pJ	Hg-190 β+ 20 m 240,7 pJ	Hg-191 β+ 49 m 241,869 pJ	Hg-192 β+ 4,85 h 243,389 pJ	Hg-193 β+ 3,8 h 244,528 pJ	Hg-194 β+ 440,3 a 246,005 pJ	Hg-195 β+ 10,53 h 247,107 pJ	Hg-196 stabil 248,532 pJ	Hg-197 β+ 64,94 h 249,62 pJ	Hg-198 stabil 250,979 pJ	Hg-199 stabil 252,047 pJ	Hg-200 stabil 253,333 pJ	Hg-201 stabil 254,331 pJ	80
Au-188 β+ 8,84 m 238,388 pJ	Au-189 β+ 28,7 m 239,887 pJ	Au-190 β+ 42,8 m 241,068 pJ	Au-191 β+ 3,18 h 242,509 pJ	Au-192 β+ 4,94 h 243,637 pJ	Au-193 β+ 17,65 h 245,029 pJ	Au-194 β+ 38,02 h 246,141 pJ	Au-195 β+ 186,1 d 247,484 pJ	Au-196 β+, (β-) 6,167 d 248,548 pJ	Au-197 stabil 249,841 pJ	Au-198 β+ 64,68 h 250,884 pJ	Au-199 β+ 75,34 h 252,1 pJ	Au-200 β+ 48,4 m 253,1 pJ	79
Pt-187 β+ 141 m 237,928 pJ	Pt-188 β+ 10,2 d 239,398 pJ	Pt-189 β+ 10,87 h 240,477 pJ	Pt-190 α 6,50E+11 a 241,905 pJ	Pt-191 β+ 67,25 h 242,937 pJ	Pt-192 stabil 244,326 pJ	Pt-193 β+ 50,03 a 245,328 pJ	Pt-194 stabil 246,667 pJ	Pt-195 stabil 247,645 pJ	Pt-196 stabil 248,915 pJ	Pt-197 β- 19,89 h 249,851 pJ	Pt-198 stabil 251,062 pJ	Pt-199 β- 30,8 m 251,952 pJ	78
Ir-186 β+ 16,64 h 237,154 pJ	Ir-187 β+ 10,5 h 238,534 pJ	Ir-188 β+ 41,5 h 239,605 pJ	Ir-189 β+ 13,2 d 240,918 pJ	Ir-190 β+ 11,78 d 241,938 pJ	Ir-191 stabil 243,224 pJ	Ir-192 β-, (β+) 73,83 d 244,217 pJ	Ir-193 stabil 245,463 pJ	Ir-194 β- 19,28 h 246,435 pJ	Ir-195 β- 150 m 247,593 pJ	Ir-196 β- 52 s 248,526 pJ	Ir-197 β- 5,8 m 249,631 pJ	Ir-198 β- 8 s 250,517 pJ	77
Os-185 β+ 93,6 d 236,569 pJ	Os-186 α 2,00E+15 a 237,892 pJ	Os-187 stabil 238,9 pJ	Os-188 stabil 240,18 pJ	Os-189 stabil 241,129 pJ	Os-190 stabil 242,377 pJ	Os-191 β- 15,4 d 243,3 pJ	Os-192 stabil 244,511 pJ	Os-193 β- 30,11 h 245,405 pJ	Os-194 β- 6,004 a 246,545 pJ	Os-195 β- 6,5 m 247,4 pJ	Os-196 β- 34,9 m 248,466 pJ		76
Re-184 β+ 38 d 235,628 pJ	Re-185 stabil 236,856 pJ	Re-186 β-, (β+) 89,24 h 237,846 pJ	Re-187 β- 4,12E+10 a 239,025 pJ	Re-188 β- 17 h 239,966 pJ	Re-189 β- 24,3 h 241,092 pJ	Re-190 β- 3,1 m 242 pJ	Re-191 β- 9,8 m 243,097 pJ	Re-192 β- 16 s 243,972 pJ	Re-193 β- 30 s 245,026 pJ	Re-194 β- 2 s 245,891 pJ			75
W-183 stabil 234,803 pJ	W-184 stabil 235,99 pJ	W-185 β- 75,1 d 236,912 pJ	W-186 stabil 238,064 pJ	W-187 β- 23,72 h 238,94 pJ	W-188 β- 69,78 d 240,035 pJ	W-189 β- 11,6 m 240,817 pJ	W-190 β- 30 m 241,92 pJ	W-191 β- 20 s 242,701 pJ	W-192 β- 10 s 243,756 pJ				74
Ta-182 β- 114,4 d 233,646 pJ	Ta-183 β- 5,1 d 234,757 pJ	Ta-184 β- 8,7 h 235,656 pJ	Ta-185 β- 49,4 m 236,718 pJ	Ta-186 β- 10,5 m 237,563 pJ	Ta-187 β- 120 s 238,577 pJ	Ta-188 β- 20 s 239,371 pJ	Ta-189 β- 3 s 240,372 pJ	Ta-190 β- 300 ms 241,156 pJ					73
Hf-181 β- 42,39 d 232,635 pJ	Hf-182 β- 9,01E+06 a 233,711 pJ	Hf-183 β- 64,02 m 234,56 pJ	Hf-184 β- 4,12 h 235,567 pJ	Hf-185 β- 3,5 m 236,351 pJ	Hf-186 β- 156 s 237,331 pJ	Hf-187 β- 30 s 238,068 pJ	Hf-188 β- 20 s 239,04 pJ						72
Lu-180 β- 5,7 m 231,351 pJ	Lu-181 β- 3,5 m 232,343 pJ	Lu-182 β- 120 s 233,16 pJ	Lu-183 β- 58 s 234,09 pJ	Lu-184 β- 20 s 234,868 pJ									71
Yb-179 β- 8 m 230,149 pJ	Yb-180 β- 144 s 231,117 pJ	Yb-181 β- 60 s 231,821 pJ											70
Tm-178 β- 30 s 228,606 pJ	Tm-179 β- 20 s 229,489 pJ												69
Er-177 β- 3 s 227,237 pJ													68
													67

Z \ N	121	122	123	124	125	126	127	128	129	130	131	132	133
98													
97													
96													
95													
94													
93												Np-225 α 3 ms 274,243 pJ	Np-226 α 35 ms 275,371 pJ
92					U-217 α 26 ms 265,448 pJ	U-218 α 6 ms 266,866 pJ	U-219 α 55 μs 267,953 pJ	U-220 α 60 ns 269,259 pJ	U-221 α 700 ns 270,305 pJ	U-222 α 1,4 μs 271,671 pJ	U-223 α 21 μs 272,705 pJ	U-224 α 940 μs 274,018 pJ	U-225 α 61 ms 275,045 pJ
91	Pa-212 α 8 ms 259,281 pJ	Pa-213 α 7 ms 260,889 pJ	Pa-214 α 17 ms 262,21 pJ	Pa-215 α 14 ms 263,763 pJ	Pa-216 α, (β+) 105 ms 265,065 pJ	Pa-217 α 3,48 ms 266,476 pJ	Pa-218 α 113 μs 267,513 pJ	Pa-219 α 53 ns 268,83 pJ	Pa-220 α 780 ns 269,826 pJ	Pa-221 α 5,9 μs 271,118 pJ	Pa-222 α 3,2 ms 272,133 pJ	Pa-223 α 5,1 ms 273,395 pJ	Pa-224 α 844 ms 274,439 pJ
90	Th-211 α 48 ms 259,349 pJ	Th-212 α 36 ms 260,933 pJ	Th-213 α 140 ms 262,224 pJ	Th-214 α 100 ms 263,741 pJ	Th-215 α 1,2 s 264,999 pJ	Th-216 α 26,8 ms 266,392 pJ	Th-217 α 240 μs 267,379 pJ	Th-218 α 109 ns 268,647 pJ	Th-219 α 1,05 μs 269,604 pJ	Th-220 α 9,7 μs 270,866 pJ	Th-221 α 1,68 ms 271,795 pJ	Th-222 α 2,05 ms 273,046 pJ	Th-223 α 600 ms 273,989 pJ
89	Ac-210 α, (β+) 350 ms 259,001 pJ	Ac-211 α 213 ms 260,549 pJ	Ac-212 α, (β+) 920 ms 261,828 pJ	Ac-213 α 731 ms 263,303 pJ	Ac-214 α, β+ 8,2 s 264,552 pJ	Ac-215 α 170 ms 265,912 pJ	Ac-216 α 440 μs 266,867 pJ	Ac-217 α, (β+) 69 ns 268,066 pJ	Ac-218 α 1,08 μs 269,017 pJ	Ac-219 α 11,8 μs 270,194 pJ	Ac-220 α 26,36 ms 271,138 pJ	Ac-221 α 52 ms 272,307 pJ	Ac-222 α, (β+) 5 s 273,264 pJ
88	Ra-209 α, β+ 4,6 s 258,944 pJ	Ra-210 α, (β+) 3,7 s 260,461 pJ	Ra-211 α, (β+) 13 s 261,694 pJ	Ra-212 α, β+ 13 s 263,152 pJ	Ra-213 α 164,4 s 264,357 pJ	Ra-214 α 2,46 s 265,691 pJ	Ra-215 α 1,55 ms 266,595 pJ	Ra-216 α 182 ns 267,767 pJ	Ra-217 α 1,63 μs 268,644 pJ	Ra-218 α 25,6 μs 269,815 pJ	Ra-219 α 10 ms 270,668 pJ	Ra-220 α 17,9 ms 271,82 pJ	Ra-221 α 28 s 272,683 pJ
87	Fr-208 α, β+ 59,1 s 258,501 pJ	Fr-209 α, β+ 50 s 259,971 pJ	Fr-210 α, β+ 3,18 m 261,196 pJ	Fr-211 α, β+ 3,1 m 262,619 pJ	Fr-212 β+, α 20 m 263,813 pJ	Fr-213 α 34,6 s 265,108 pJ	Fr-214 α 5 ms 265,986 pJ	Fr-215 α 86 ns 267,075 pJ	Fr-216 α 700 ns 267,942 pJ	Fr-217 α 16,8 μs 269,021 pJ	Fr-218 α 1 ms 269,874 pJ	Fr-219 α 20 ms 270,918 pJ	Fr-220 α 27,4 s 271,752 pJ
86	Rn-207 β+, α 9,25 m 258,289 pJ	Rn-208 α, β+ 24,35 m 259,745 pJ	Rn-209 β+, α 28,5 m 260,923 pJ	Rn-210 α 144 m 262,323 pJ	Rn-211 β+, α 14,6 h 263,481 pJ	Rn-212 α 23,9 m 264,759 pJ	Rn-213 α 19,5 ms 265,578 pJ	Rn-214 α 270 ns 266,65 pJ	Rn-215 α 2,3 μs 267,438 pJ	Rn-216 α 45 μs 268,503 pJ	Rn-217 α 540 μs 269,251 pJ	Rn-218 α 35 ms 270,295 pJ	Rn-219 α 3,96 s 271,009 pJ
85	At-206 β+ 30,6 m 257,728 pJ	At-207 β+, (α) 108 m 259,153 pJ	At-208 β+ 97,8 m 260,326 pJ	At-209 β+, (α) 5,41 h 261,681 pJ	At-210 β+ 8,1 h 262,829 pJ	At-211 β+, α 7,214 h 264,07 pJ	At-212 α 314 ms 264,879 pJ	At-213 α 125 ns 265,844 pJ	At-214 α 558 ns 266,625 pJ	At-215 α 100 μs 267,578 pJ	At-216 α 300 μs 268,308 pJ	At-217 α 32,3 ms 269,259 pJ	At-218 α 1,5 s 269,958 pJ
84	Po-205 β+ 99,6 m 257,376 pJ	Po-206 β+, (α) 8,8 d 258,776 pJ	Po-207 β+ 5,8 h 259,904 pJ	Po-208 α 2,9 a 261,249 pJ	Po-209 α 102,1 a 262,365 pJ	Po-210 α 138,4 d 263,592 pJ	Po-211 α 516 ms 264,321 pJ	Po-212 α 299 ns 265,284 pJ	Po-213 α 4,2 μs 265,982 pJ	Po-214 α 164,3 μs 266,925 pJ	Po-215 α 1,781 ms 267,589 pJ	Po-216 α 145 ms 268,509 pJ	Po-217 α, (β-) 1,47 s 269,143 pJ
83	Bi-204 β+ 11,22 h 256,714 pJ	Bi-205 β+ 15,31 d 258,07 pJ	Bi-206 β+ 6,243 d 259,198 pJ	Bi-207 β+ 32,92 a 260,495 pJ	Bi-208 β+ 3,68E+05 a 261,598 pJ	Bi-209 α 1,90E+19 a 262,794 pJ	Bi-210 β- 5,012 d 263,531 pJ	Bi-211 α 128,4 s 264,355 pJ	Bi-212 β-, α 60,55 m 265,048 pJ	Bi-213 β-, (α) 45,59 m 265,879 pJ	Bi-214 β- 19,9 m 266,526 pJ	Bi-215 β- 7,6 m 267,363 pJ	Bi-216 β- 130,2 s 267,979 pJ
82	Pb-203 β+ 51,87 h 256,206 pJ	Pb-204 stabil 257,551 pJ	Pb-205 β+ 1,53E+07 a 258,629 pJ	Pb-206 stabil 259,925 pJ	Pb-207 stabil 261,004 pJ	Pb-208 stabil 262,185 pJ	Pb-209 β- 3,253 h 262,816 pJ	Pb-210 β- 22,21 a 263,647 pJ	Pb-211 β- 36,1 m 264,261 pJ	Pb-212 β- 10,64 h 265,082 pJ	Pb-213 β- 10,2 m 265,676 pJ	Pb-214 β- 26,8 m 266,489 pJ	Pb-215 β- 36 s 267,032 pJ
81	Tl-202 β+ 12,23 d 255,23 pJ	Tl-203 stabil 256,487 pJ	Tl-204 β-, (β+) 3,783 a 257,554 pJ	Tl-205 stabil 258,763 pJ	Tl-206 β- 4,2 m 259,805 pJ	Tl-207 β- 4,77 m 260,903 pJ	Tl-208 β- 3,053 m 261,509 pJ	Tl-209 β- 129,7 s 262,304 pJ	Tl-210 β- 78 s 262,893 pJ	Tl-211 β- 60 s 263,686 pJ	Tl-212 β- 30 s 264,257 pJ		
80	Hg-201 stabil 254,331 pJ	Hg-202 stabil 255,573 pJ	Hg-203 β- 46,61 d 256,534 pJ	Hg-204 stabil 257,734 pJ	Hg-205 β- 5,2 m 258,643 pJ	Hg-206 β- 8,15 m 259,721 pJ	Hg-207 β- 174 s 260,256 pJ	Hg-208 β- 42 m 261,037 pJ	Hg-209 β- 37 s 261,589 pJ	Hg-210 β- 10 m 262,369 pJ			
79	Au-200 β- 48,4 m 253,1 pJ	Au-201 β- 26 m 254,254 pJ	Au-202 β- 28,8 s 255,225 pJ	Au-203 β- 53 s 256,319 pJ	Au-204 β- 39,8 s 257,226 pJ	Au-205 β- 31 s 258,192 pJ							
78	Pt-199 β- 30,8 m 251,952 pJ	Pt-200 β- 12,5 h 253,119 pJ	Pt-201 β- 150 s 253,953 pJ	Pt-202 β- 44 h 255,06 pJ									
77	Ir-198 β- 8 s 250,517 pJ	Ir-199 β- 20 s 251,598 pJ											
Z / N	121	122	123	124	125	126	127	128	129	130	131	132	133

134	135	136	137	138	139	140	141	142	143	144	145	146	Z / N
					Cf-237 α, SF 2,1 s 284,939 pJ	Cf-238 SF 21,1 ms 286,332 pJ	Cf-239 α 60 s 287,458 pJ	Cf-240 α, (SF) 63,6 s 288,776 pJ	Cf-241 β+, α 3,8 m 289,864 pJ	Cf-242 α 3,49 m 291,156 pJ	Cf-243 β+, α 10,7 m 292,191 pJ	Cf-244 α 19,4 m 293,399 pJ	98
				Bk-235 β+ 20 s 283,287 pJ	Bk-236 β+ 60 s 284,455 pJ	Bk-237 β+ 60 s 285,812 pJ	Bk-238 β+ 144 s 286,904 pJ	Bk-239 β+ 180 s 288,224 pJ	Bk-240 β+, α 4,8 m 289,276 pJ	Bk-241 α 4,6 m 290,52 pJ	Bk-242 β+ 7 m 291,532 pJ	Bk-243 β+ 4,5 h 292,678 pJ	97
		Cm-233 α 60 s 281,698 pJ	Cm-234 α, β+, (SF) 51 s 283,082 pJ	Cm-235 β+ 5 m 284,191 pJ	Cm-236 β+ 10 m 285,476 pJ	Cm-237 β+ 20 m 286,534 pJ	Cm-238 β+, α 144 m 287,826 pJ	Cm-239 β+ 2,9 h 288,837 pJ	Cm-240 α 27 d 290,04 pJ	Cm-241 β+, (α) 32,8 d 291,016 pJ	Cm-242 α 162,8 d 292,133 pJ		96
	Am-231 β+ 30 s 280,02 pJ	Am-232 β+, (α) 78,6 s 281,158 pJ	Am-233 β+, (α) 3,2 m 282,481 pJ	Am-234 β+ 139,2 s 283,544 pJ	Am-235 β+ 9,9 m 284,831 pJ	Am-236 β+ 30 m 285,892 pJ	Am-237 β+ 73 m 287,103 pJ	Am-238 β+ 98 m 288,108 pJ	Am-239 β+ 11,9 h 289,246 pJ	Am-240 β+ 50,8 h 290,199 pJ	Am-241 α 432,5 a 291,264 pJ		95
Pu-228 α 10 ms 277,278 pJ	Pu-229 α 120 s 278,361 pJ	Pu-230 α 102 s 279,728 pJ	Pu-231 β+, α 8,6 m 280,805 pJ	Pu-232 β+, α 33,7 m 282,085 pJ	Pu-233 β+ 20,9 m 283,109 pJ	Pu-234 β+, (α) 8,8 h 284,354 pJ	Pu-235 α 25,3 m 285,353 pJ	Pu-236 α 2,86 a 286,531 pJ	Pu-237 β+ 45,2 d 287,473 pJ	Pu-238 α 87,76 a 288,595 pJ	Pu-239 α 24130 a 289,5 pJ	Pu-240 α 6568 a 290,546 pJ	94
Np-227 α 510 ms 276,677 pJ	Np-228 β+, α 61,4 s 277,771 pJ	Np-229 α, β+ 4 m 279,067 pJ	Np-230 β+, (α) 4,6 m 280,126 pJ	Np-231 β+, (α) 48,8 m 281,357 pJ	Np-232 β+ 14,7 m 282,384 pJ	Np-233 β+ 36,2 m 283,571 pJ	Np-234 β+ 4,4 d 284,542 pJ	Np-235 β+ 396,1 d 285,661 pJ	Np-236 β+, β- 1,54E+05 a 286,58 pJ	Np-237 α 2,15E+06 a 287,634 pJ	Np-238 β- 50,81 h 288,513 pJ	Np-239 β- 56,54 h 289,509 pJ	93
U-226 α 269 ms 276,346 pJ	U-227 α 66 s 277,367 pJ	U-228 α, (β+) 9,1 m 278,628 pJ	U-229 β+, α 58 m 279,603 pJ	U-230 α 20,8 d 280,831 pJ	U-231 β+ 4,2 d 281,773 pJ	U-232 α 68,95 a 282,938 pJ	U-233 α 1,59E+05 a 283,861 pJ	U-234 α 2,46E+05 a 284,958 pJ	U-235 α 7,04E+08 a 285,806 pJ	U-236 α 2,34E+07 a 286,855 pJ	U-237 β- 6,75 d 287,676 pJ	U-238 α 4,47E+09 a 288,662 pJ	92
Pa-225 α 1,7 s 275,656 pJ	Pa-226 α, β+ 108 s 276,678 pJ	Pa-227 α, β+ 38,3 m 277,844 pJ	Pa-228 β+, (α) 22 h 278,802 pJ	Pa-229 β+ 36 h 279,939 pJ	Pa-230 β+, (β-) 17,4 d 280,867 pJ	Pa-231 α 32780 a 281,96 pJ	Pa-232 β- 31,44 h 282,849 pJ	Pa-233 β- 26,97 d 283,895 pJ	Pa-234 β- 6,7 h 284,731 pJ	Pa-235 β- 24,44 m 285,706 pJ	Pa-236 β- 9,1 m 286,516 pJ	Pa-237 β- 8,7 m 287,441 pJ	91
Th-224 α 1,05 s 275,185 pJ	Th-225 α, β+ 8,72 m 276,107 pJ	Th-226 α 30,57 m 277,258 pJ	Th-227 α 18,68 d 278,133 pJ	Th-228 α 1,913 a 279,272 pJ	Th-229 α 7345 a 280,114 pJ	Th-230 α 75430 a 281,202 pJ	Th-231 β- 25,52 h 282,022 pJ	Th-232 α 1,41E+10 a 283,054 pJ	Th-233 β- 22,3 m 283,821 pJ	Th-234 β- 24,1 d 284,813 pJ	Th-235 β- 7,2 m 285,523 pJ	Th-236 β- 37,5 m 286,459 pJ	90
Ac-223 α, (β+) 126 s 274,364 pJ	Ac-224 β+, (α), (β-) 2,78 h 275,272 pJ	Ac-225 α 10 d 276,34 pJ	Ac-226 β-, (α) 29,37 h 277,205 pJ	Ac-227 β-, (α) 21,79 a 278,251 pJ	Ac-228 β- 6,15 h 279,057 pJ	Ac-229 β- 62,7 m 280,052 pJ	Ac-230 β- 122 s 280,856 pJ	Ac-231 β- 7,5 m 281,811 pJ	Ac-232 β- 119 s 282,589 pJ	Ac-233 β- 145 s 283,489 pJ	Ac-234 β- 44 s 284,219 pJ	Ac-235 β- 40 s 285,094 pJ	89
Ra-222 α 38 s 273,758 pJ	Ra-223 α 11,43 d 274,585 pJ	Ra-224 α 87,84 h 275,623 pJ	Ra-225 β- 14,9 d 276,408 pJ	Ra-226 α 1601 a 277,433 pJ	Ra-227 β- 42,2 m 278,164 pJ	Ra-228 β- 5,754 a 279,175 pJ	Ra-229 β- 4 m 279,888 pJ	Ra-230 β- 93 m 280,868 pJ	Ra-231 β- 103 s 281,537 pJ	Ra-232 β- 4,167 m 282,459 pJ	Ra-233 β- 30 s 283,116 pJ	Ra-234 β- 30 s 283,994 pJ	88
Fr-221 α 4,9 m 272,758 pJ	Fr-222 β- 14,2 m 273,559 pJ	Fr-223 β- 22 m 274,526 pJ	Fr-224 β- 3,33 m 275,295 pJ	Fr-225 β- 4 m 276,242 pJ	Fr-226 β- 49 s 276,964 pJ	Fr-227 β- 148,2 s 277,891 pJ	Fr-228 β- 38 s 278,611 pJ	Fr-229 β- 50,2 s 279,492 pJ	Fr-230 β- 19,1 s 280,171 pJ	Fr-231 β- 17,6 s 281,019 pJ	Fr-232 β- 5 s 281,678 pJ		87
Rn-220 α 55,6 s 272,017 pJ	Rn-221 β-, α 25 m 272,692 pJ	Rn-222 α 91,76 h 273,68 pJ	Rn-223 β- 24,3 m 274,359 pJ	Rn-224 β- 107 m 275,303 pJ	Rn-225 β- 4,66 m 275,955 pJ	Rn-226 β- 7,4 m 276,855 pJ	Rn-227 β- 20,8 s 277,499 pJ	Rn-228 β- 65 s 278,392 pJ					86
At-219 α, (β-) 56 s 270,883 pJ	At-220 β-, (α) 3,71 m 271,543 pJ	At-221 β- 138 s 272,43 pJ	At-222 β- 54 s 273,094 pJ	At-223 β- 50 s 273,966 pJ									85
Po-218 α 3,1 m 270,042 pJ	Po-219 β- 120 s 270,631 pJ	Po-220 β- 40 s 271,479 pJ											84
Bi-217 β- 97 s 268,785 pJ	Bi-218 β- 33 s 269,36 pJ												83
													82
													81
													80
													79
													78
													77
134	135	136	137	138	139	140	141	142	143	144	145	146	Z \ N

Z \ N	145	146	147	148	149	150	151	152	153	154	155	156	157	
110													Ds-267 α 10 μs 309,927 pJ	
109												Mt-265 α 2 ms 308,71 pJ	Mt-266 α, (SF) 1,2 ms 309,832 pJ	
108											Hs-263 α 1 ms 307,391 pJ	Hs-264 α, SF 540 μs 308,697 pJ	Hs-265 α, (SF) 2,1 ms 309,729 pJ	
107								Bh-260 α 300 μs 304,593 pJ	Bh-261 α, SF 13 ms 305,932 pJ	Bh-262 α, SF 290 ms 307,062 pJ	Bh-263 α 200 ms 308,318 pJ	Bh-264 α 1,3 s 309,406 pJ		
106								Sg-258 SF, α 3,3 ms 303,449 pJ	Sg-259 α, SF 580 ms 304,542 pJ	Sg-260 SF, α 3,8 ms 305,86 pJ	Sg-261 α, (SF) 230 ms 306,894 pJ	Sg-262 SF, α 8 ms 308,153 pJ	Sg-263 α 1 s 309,161 pJ	
105					Db-255 α, SF 1,7 s 300,574 pJ	Db-256 α, β+ 1,9 s 301,753 pJ								
104					Rf-253 α, SF 13 ms 299,108 pJ	Rf-254 SF, (α) 23 μs 300,494 pJ	Rf-255 α, SF 1,64 s 301,595 pJ	Rf-256 SF 6,45 ms 302,917 pJ	Rf-257 α, β+, (SF) 4,7 s 303,92 pJ	Rf-258 SF, α 12 ms 305,143 pJ	Rf-259 α, (SF) 2,8 s 306,119 pJ	Rf-260 SF, (α) 21 ms 307,301 pJ	Rf-261 α, SF 5,5 s 308,248 pJ	
103			Lr-251 β+ 150 μs 297,588 pJ	Lr-252 β+, (SF) 390 ms 298,733 pJ	Lr-253 α, (SF), (β+) 580 ms 300,041 pJ	Lr-254 α, β+ 13 s 301,145 pJ	Lr-255 α, β+, (SF) 22 s 302,412 pJ	Lr-256 α, β+ 27 s 303,434 pJ	Lr-257 α 646 ms 304,578 pJ	Lr-258 α, (β+) 4,1 s 305,516 pJ	Lr-259 α, SF 6,2 s 306,658 pJ	Lr-260 α, β+ 180 s 307,551 pJ		
102		No-248 2 μs 294,985 pJ	No-249 β+ 57 μs 296,095 pJ	No-250 SF 5,7 μs 297,444 pJ	No-251 α 760 ms 298,513 pJ	No-252 α, SF 2,44 s 299,814 pJ	No-253 α, β+ 97,2 s 300,851 pJ	No-254 α, β+ 51 s 302,105 pJ	No-255 α, β+ 3,1 m 303,057 pJ	No-256 α 2,91 s 304,195 pJ	No-257 α, β+ 25 s 305,101 pJ	No-258 SF 1,2 ms 306,177 pJ	No-259 α, β+, SF 58 m 307,073 pJ	
101	Md-246 α 1 s 293,237 pJ	Md-247 SF 270 ms 294,587 pJ	Md-248 β+, α 7 s 295,7 pJ	Md-249 α 24 s 296,932 pJ	Md-250 β+, (α) 52 s 298,045 pJ	Md-251 β+ 4 m 299,277 pJ	Md-252 α, β+ 138 s 300,308 pJ	Md-253 β+ 12 m 301,5 pJ	Md-254 β+ 10 m 302,407 pJ	Md-255 β+, (α) 27 m 303,504 pJ	Md-256 β+, (α), (SF) 77 m 304,353 pJ	Md-257 β+, α, (SF) 5,52 h 305,425 pJ	Md-258 α 51,5 d 306,287 pJ	
100	Fm-245 α, (β+) 4,2 s 293,026 pJ	Fm-246 α, β+, (SF) 1,1 s 294,347 pJ	Fm-247 α, β+ 35 s 295,418 pJ	Fm-248 α, (β+) 36 s 296,65 pJ	Fm-249 β+, α 156 s 297,651 pJ	Fm-250 α, β+ 30 m 298,889 pJ	Fm-251 β+, (α) 5,3 h 299,876 pJ	Fm-252 α 25,39 h 301,036 pJ	Fm-253 β+, α 72 h 301,924 pJ	Fm-254 α 3,24 h 302,968 pJ	Fm-255 α 20,07 h 303,797 pJ	Fm-256 SF, (α) 157,6 m 304,82 pJ	Fm-257 α 100,5 d 305,616 pJ	
99	Es-244 β+, (α) 37 s 292,534 pJ	Es-245 β+, α 66 s 293,772 pJ	Es-246 β+, (α) 7,7 m 294,813 pJ	Es-247 β+, (α) 4,6 m 296,012 pJ	Es-248 β+ 27 m 297,051 pJ	Es-249 β+ 102,2 m 298,169 pJ	Es-250 β+ 8,6 h 299,166 pJ	Es-251 β+ 33 h 300,238 pJ	Es-252 α, β+ 471,7 d 301,085 pJ	Es-253 α 20,47 d 302,103 pJ	Es-254 α 275,7 d 302,919 pJ	Es-255 β-, (α) 39,8 d 303,876 pJ	Es-256 β- 25,4 m 304,665 pJ	
98	Cf-243 β+, α 10,7 m 292,191 pJ	Cf-244 α 19,4 m 293,399 pJ	Cf-245 β+, α 45 m 294,386 pJ	Cf-246 α 35,7 h 295,567 pJ	Cf-247 β+ 3,11 h 296,532 pJ	Cf-248 α 334 d 297,649 pJ	Cf-249 α 351,2 a 298,544 pJ	Cf-250 α 13,09 a 299,605 pJ	Cf-251 α 900,6 a 300,423 pJ	Cf-252 α, (SF) 2,647 a 301,412 pJ	Cf-253 β- 17,81 d 302,182 pJ	Cf-254 SF 60,5 d 303,149 pJ	Cf-255 β- 85 m 303,883 pJ	
97	Bk-242 β+ 7 m 291,532 pJ	Bk-243 β+ 4,5 h 292,678 pJ	Bk-244 β+ 4,35 h 293,647 pJ	Bk-245 β+ 4,94 d 294,764 pJ	Bk-246 β+ 43,2 h 295,712 pJ	Bk-247 α 1381 a 296,761 pJ	Bk-248 α 9,006 a 297,647 pJ	Bk-249 β- 330 d 298,649 pJ	Bk-250 β- 3,212 h 299,445 pJ	Bk-251 β- 55,6 m 300,374 pJ	Bk-252 β- 108 s 301,156 pJ	Bk-253 β- 10 m 302,027 pJ	Bk-254 β- 60 s 302,773 pJ	
96	Cm-241 β+, (α) 32,8 d 291,016 pJ	Cm-242 α 162,8 d 292,133 pJ	Cm-243 α 29,12 a 293,045 pJ	Cm-244 α 18,11 a 294,134 pJ	Cm-245 α 8506 a 295,019 pJ	Cm-246 α 4763 a 296,053 pJ	Cm-247 α 1,56E+07 a 296,879 pJ	Cm-248 α, (SF) 3,48E+05 a 297,875 pJ	Cm-249 β- 64,15 m 298,63 pJ	Cm-250 SF, α, (β-) 300,2 a 299,565 pJ	Cm-251 β- 16,8 m 300,271 pJ	Cm-252 β- 24 h 301,196 pJ		
95	Am-240 β+ 50,8 h 290,199 pJ	Am-241 α 432,5 a 291,264 pJ	Am-242 β-, β+ 16,02 h 292,151 pJ	Am-243 α 7375 a 293,171 pJ	Am-244 β- 10,1 h 294,031 pJ	Am-245 β- 123 m 295,001 pJ	Am-246 β- 39 m 295,798 pJ	Am-247 β- 23 m 296,764 pJ	Am-248 β- 180 s 297,488 pJ	Am-249 β- 60 s 298,369 pJ				
94	Pu-239 α 24130 a 289,5 pJ	Pu-240 α 6568 a 290,546 pJ	Pu-241 β- 14,36 a 291,386 pJ	Pu-242 α 3,75E+05 a 292,397 pJ	Pu-243 β- 4,956 h 293,204 pJ	Pu-244 α 8,01E+07 a 294,168 pJ	Pu-245 β- 10,5 h 294,933 pJ	Pu-246 β- 10,84 d 295,859 pJ	Pu-247 β- 54,48 h 296,566 pJ					
93	Np-238 β- 50,81 h 288,513 pJ	Np-239 β- 56,54 h 289,509 pJ	Np-240 β- 61,9 m 290,321 pJ	Np-241 β- 13,9 m 291,302 pJ	Np-242 β- 132 s 292,09 pJ	Np-243 β- 111 s 292,97 pJ	Np-244 β- 137,4 s 293,746 pJ							
92	U-237 β- 6,75 d 287,676 pJ	U-238 α 4,47E+09 a 288,662 pJ	U-239 β- 23,45 m 289,432 pJ	U-240 β- 14,1 h 290,382 pJ	U-241 β- 5 m 291,099 pJ	U-242 β- 16,8 m 292,036 pJ								
91	Pa-236 β- 9,1 m 286,516 pJ	Pa-237 β- 8,7 m 287,441 pJ	Pa-238 β- 136,2 s 288,233 pJ	Pa-239 β- 108 m 289,105 pJ	Pa-240 β- 120 s 289,853 pJ									
90	Th-235 β- 7,2 m 285,523 pJ	Th-236 β- 37,5 m 286,459 pJ	Th-237 β- 4,8 m 287,141 pJ	Th-238 β- 9,4 m 288,048 pJ										
89	Ac-234 β- 44 s 284,219 pJ	Ac-235 β- 40 s 285,094 pJ	Ac-236 β- 120 s 285,778 pJ											
Z / N	145	146	147	148	149	150	151	152	153	154	155	156	157	

158	159	160	161	162	163	164	165	166	167	168	169	170	Z / N
Ds-268 α 100 μs 311,303 pJ	Ds-269 α 230 μs 312,421 pJ	Ds-270 α 160 μs 313,756 pJ	Ds-271 α 210 ms 314,874 pJ	Ds-272 α 1 s 316,124 pJ	Ds-273 α 360 μs 317,023 pJ	Ds-274 α 2 s 318,228 pJ	Ds-275 α 2 s 319,126 pJ	Ds-276 α 5 s 320,286 pJ	Ds-277 α 5 s 321,18 pJ	Ds-278 α 10 s 322,34 pJ	Ds-279 α 10 s 323,276 pJ	Ds-280 SF 11 s 324,434 pJ	110
Mt-267 α 10 ms 311,125 pJ	Mt-268 α 53 ms 312,205 pJ	Mt-269 α 200 ms 313,456 pJ	Mt-270 α 2 s 314,491 pJ	Mt-271 α 5 s 315,743 pJ	Mt-272 α 10 s 316,646 pJ	Mt-273 α 20 s 317,723 pJ	Mt-274 α 20 s 318,667 pJ	Mt-275 α 30 s 319,786 pJ	Mt-276 α 40 s 320,684 pJ	Mt-277 α 60 s 321,801 pJ	Mt-278 α 30 m 322,741 pJ	Mt-279 α 6 m 323,812 pJ	109
Hs-266 α, (SF) 2,7 ms 311,025 pJ	Hs-267 α 32 ms 312,066 pJ	Hs-268 α 2 s 313,321 pJ	Hs-269 α 27 s 314,318 pJ	Hs-270 α 30 s 315,529 pJ	Hs-271 α 40 s 316,351 pJ	Hs-272 α 40 s 317,431 pJ	Hs-273 α 50 s 318,292 pJ	Hs-274 α 60 s 319,414 pJ	Hs-275 α 30 m 320,315 pJ	Hs-276 α 60 m 321,391 pJ	Hs-277 SF 40 m 322,29 pJ		108
Bh-265 α 500 ms 310,62 pJ	Bh-266 α 5 s 311,622 pJ	Bh-267 α 22 s 312,794 pJ	Bh-268 α 25 s 313,793 pJ	Bh-269 α 25 s 314,964 pJ	Bh-270 α 30 s 315,789 pJ	Bh-271 α 40 s 316,872 pJ	Bh-272 α 120 s 317,736 pJ	Bh-273 α 90 m 318,773 pJ	Bh-274 α 90 m 319,677 pJ	Bh-275 α 40 m 320,668 pJ			107
Sg-264 α 400 ms 310,379 pJ	Sg-265 α 8 s 311,327 pJ	Sg-266 SF, α 21 s 312,474 pJ	Sg-267 α 19 ms 313,435 pJ	Sg-268 α 30 s 314,523 pJ	Sg-269 α 35 s 315,352 pJ	Sg-270 α 10 m 316,438 pJ	Sg-271 α 120 m 317,263 pJ	Sg-272 α 60 m 318,302 pJ	Sg-273 α 60 s 319,123 pJ				106
Db-263 SF, (β+) 29 s 309,793 pJ	Db-264 α 180 s 310,717 pJ	Db-265 α 15 m 311,809 pJ	Db-266 α 20 m 312,773 pJ	Db-267 α 120 m 313,863 pJ	Db-268 α 6 h 314,695 pJ	Db-269 α 3 h 315,697 pJ	Db-270 α 60 m 316,481 pJ						105
Rf-262 SF 2,3 s 309,371 pJ	Rf-263 SF, α 11 m 310,257 pJ	Rf-264 α 60 m 311,352 pJ	Rf-265 α 13 h 312,234 pJ	Rf-266 α 10 h 313,327 pJ	Rf-267 α 5 h 314,12 pJ	Rf-268 α 60 m 315,081 pJ							104
Lr-261 SF 39 m 308,65 pJ	Lr-262 β+, SF 4 h 309,539 pJ	Lr-263 α 5 h 310,594 pJ	Lr-264 α 10 h 311,478 pJ	Lr-265 α 10 h 312,489 pJ	Lr-266 α 60 m 313,284 pJ								103
No-260 SF 106 ms 308,134 pJ	No-261 α 3 h 308,943 pJ	No-262 SF 5 ms 310 pJ	No-263 α 20 m 310,804 pJ	No-264 α 60 s 311,859 pJ									102
Md-259 SF, (α) 96 m 307,281 pJ	Md-260 SF, (α), (β+) 27,8 d 308,092 pJ	Md-261 α 40 m 309,068 pJ	Md-262 α 180 s 309,916 pJ										101
Fm-258 SF 370 μs 306,632 pJ	Fm-259 SF 1,5 s 307,364 pJ	Fm-260 α 60 s 308,384 pJ											100
Es-257 β- 7,7 d 305,608 pJ	Es-258 β- 180 s 306,384 pJ												99
Cf-256 SF 12,3 m 304,829 pJ													98
													97
													96
													95
													94
													93
													92
													91
													90
													89

Liste der Elemente

Element		Z	Element		Z	Element		Z
Actinium	Ac	89	Hassium	Hs	108	Radon	Rn	86
Aluminium	Al	13	Helium	He	2	Rhenium	Re	75
Americium	Am	95	Holmium	Ho	67	Rhodium	Rh	45
Antimon	Sb	51	Indium	In	49	Roentgenium	Rg	111
Argon	Ar	18	Iod	I	53	Rubidium	Rb	37
Arsen	As	33	Iridium	Ir	77	Ruthenium	Ru	44
Astat	At	85	Kalium	K	19	Rutherfordium	Rf	104
Barium	Ba	56	Kobalt	Co	27	Samarium	Sm	62
Berkelium	Bk	97	Kohlenstoff	C	6	Sauerstoff	O	8
Beryllium	Be	4	Krypton	Kr	36	Scandium	Sc	21
Blei	Pb	82	Kupfer	Cu	29	Schwefel	S	16
Bohrium	Bh	107	Lanthan	La	57	Seaborgium	Sg	106
Bor	B	5	Lawrencium	Lr	103	Selen	Se	34
Brom	Br	35	Lithium	Li	3	Silber	Ag	47
Cadmium	Cd	48	Lutetium	Lu	71	Silicium	Si	14
Calcium	Ca	20	Magnesium	Mg	12	Stickstoff	N	7
Californium	Cf	98	Mangan	Mn	25	Strontium	Sr	38
Cäsium	Cs	55	Meitnerium	Mt	109	Tantal	Ta	73
Cer	Ce	58	Mendelevium	Md	101	Technetium	Tc	43
Chlor	Cl	17	Molybdän	Mo	42	Tellur	Te	52
Chrom	Cr	24	Natrium	Na	11	Terbium	Tb	65
Copernicium	Cn	112	Neodym	Nd	60	Thallium	Tl	81
Curium	Cm	96	Neon	Ne	10	Thorium	Th	90
Darmstadtium	Ds	110	Neptunium	Np	93	Thulium	Tm	69
Dubnium	Db	105	Nickel	Ni	28	Titan	Ti	22
Dysprosium	Dy	66	Niob	Nb	41	Uran	U	92
Einsteinium	Es	99	Nobelium	No	102	Vanadium	V	23
Eisen	Fe	26	Osmium	Os	76	Wasserstoff	H	1
Erbium	Er	68	Palladium	Pd	46	Wismut	Bi	83
Europium	Eu	63	Phosphor	P	15	Wolfram	W	74
Fermium	Fm	100	Platin	Pt	78	Xenon	Xe	54
Fluor	F	9	Plutonium	Pu	94	Ytterbium	Yb	70
Francium	Fr	87	Polonium	Po	84	Yttrium	Y	39
Gadolinium	Gd	64	Praseodym	Pr	59	Zink	Zn	30
Gallium	Ga	31	Promethium	Pm	61	Zinn	Sn	50
Germanium	Ge	32	Protactinium	Pa	91	Zirkonium	Zr	40
Gold	Au	79	Quecksilber	Hg	80			
Hafnium	Hf	72	Radium	Ra	88			

Zusammengestellt von Dr. Christian Rupp,
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Datenquelle:

G. Audi, O. Bersillon, J. Blachot and A.H. Wapstra,
"The Nubase evaluation of nuclear and decay properties", Nucl. Phys. A **729** (2003) 3.

G. Audi, A.H. Wapstra and C. Thibault,
"The Ame2003 atomic mass evaluation (II). Tables, graphs and references", Nucl. Phys. A **729** (2002) 337.