



Fig. 1: Known experimental values for heavy particle emission of the even-Z $T_z = +3$ nuclei.

Last updated 3/21/23

Table 1

Observed and predicted β -delayed particle emission from the even- Z , $T_z = +3$ nuclei. Unless otherwise stated, all Q-values are taken from [2021Wa16] or deduced from values therein.

Nuclide	J^π	$T_{1/2}$	Q_ε	$Q_{\varepsilon p}$	$BR_{\beta p}$	$Q_{\varepsilon 2p}$	$Q_{\varepsilon \alpha}$	Experimental
⁹⁸ Pd	0 ⁺	17.7(4) m	1.854(13)	-2.489(5)	—	-10.077(7)	0.412(6)	[1972Ga12]
¹⁰² Cd	0 ⁺	5.5(5) m	2.587(8)	-1.517(5)	—	-8.647(18)	1.091(12)	[1969Ha03]
¹⁰⁶ Sn	0 ⁺	115(5) s	3.254(13)	-0.309(5)	—	-6.816(6)	2.468(10)	[1988Ba10]
¹¹⁰ Te	0 ⁺	18.4(8) s	5.220(9)	3.111(10)	—	5.953(14)	5.953(14)	[1977Ki11]
¹¹⁴ Xe	0 ⁺	10.0(4) s	5.553(23)	3.970(30)	—	7.939(13)	7.939(13)	[1977Ki11]
¹¹⁸ Ba	0 ⁺	5.5(2) s	6.21(20)#	4.70(20)#	—	8.01(20)#	8.01(20)#	[1997Ja12]
¹²² Ce			6.67(50)#	5.58(43)#	—	8.1140)#	8.11(40)#	
¹²⁶ Nd	0 ⁺	> 200 ns	6.94(36)#	5.99(36)#	—	8.74(42)#	8.74(42)#	[2000So11]
¹³⁰ Sm			7.77(45)#	7.39(45)#	—	10.20(45)#	10.20(44)#	
¹³⁴ Gd			8.27(50)#	8.41(50)#	—	11.52(45)#	11.52(44)#	
¹³⁸ Dy			8.67(59)#	8.99(59)#	—	12.45(58)#	12.45(58)#	
¹⁴² Er			9.32(64)#	10.16(58)#	—	13.25(58)#	13.25(58)#	

Table 2

Particle emission from the even- Z , $T_z = +3$ nuclei. Unless otherwise stated, all Q-values and separation energies are taken from [2021Wa16] or deduced from values therein.

Nuclide	S_p	S_{2p}	Q_α	BR_α	Experimental
⁹⁸ Pd	6.012(36)	9.819(5)	-1.162(6)	—	
¹⁰² Cd	5.614(5)	9.025(18)	-0.764(5)	—	
¹⁰⁶ Sn	5.002(11)	7.963(5)	-0.119(5)	—	
¹¹⁰ Te	3.268(8)	4.738(8)	2.723(15)*	$\approx 0.00076\%$	[1981Sc17, 1977Ki11, 2000De11]
¹¹⁴ Xe	3.255(14)	4.096(14)	2.719(13)	—	
¹¹⁸ Ba	3.00(21)#	3.73(20)#	2.46(20)#	—	
¹²² Ce	2.97(50)#	3.56(50)#	1.90(45)#	—	
¹²⁶ Nd	2.60(42)#	3.04(42)#	2.07(50)#	—	
¹³⁰ Sm	1.81(50)#	1.75(45)#	3.26(50)#	—	
¹³⁴ Gd	1.58(50)#	0.97(50)#	3.75(57)#	—	
¹³⁸ Dy	1.25(64)#	0.42(59)#	4.17(64)#	—	
¹⁴² Er	0.86(64)#	-0.32(64)#	4.58(71)#	—	

* Deduced from α energy, 2.699(8) MeV in [2021Wa16].

Table 3

direct α emission from ¹¹⁰Te*, $J^\pi = 0^+$, $T_{1/2} = 18.4(8)$ s, $BR_\alpha \approx 0.00076\%$.

E_α (c.m.)	E_α (lab)	I_α (abs)	J_f^π	$E_{daughter}$ (¹⁰⁶ Sn)	coincident γ -rays	R_0 (fm)	HF
2.723(15)	2.624(15)	0.00076%	0 ⁺	0.0	—	1.64(11)	≈ 2.5

* All values from [1981Sc17].

References used in the Tables

- [1] **1969Ha03** P. G. Hansen, P. Hornshoj, H. L. Nielsen, K. Wilsky, H. Kugler, G. Astner, E. Hagebo, J. Hudis, A. Kjelberg, F. Munnich, P. Patzelt, M. Alpsten, G. Andersson, A. Appelqvist, B. Bengtsson, R. A. Naumann, O. B. Nielsen, E. Beck, R. Foucher, J. P. Husson, J. Jastrzebski, A. Johnson, J. Alstad, T. Jahnsen, A. C. Pappas, T. Tunaal, R. Henck, P. Siffert, G. Rudstam, Phys. Lett. **28B**, 415 (1969); Erratum Phys. Lett. **28B**, 663 (1969). [https://doi.org/10.1016/0370-2693\(69\)90337-2](https://doi.org/10.1016/0370-2693(69)90337-2)
- [2] **1972Ga12** E. Gadioli, I. Iori, N. Molho, L. Zetta, Lett. Nuovo Cim. **3**, 677 (1972). <https://doi.org/10.1007/BF02767395>
- [3] **1977Ki11** R. Kirchner, O. Klepper, G. Nyman, W. Reisdorf, E. Roeckl, D. Schardt, N. Kaffrell, P. Peuser, K. Schneeweiss, Phys. Lett. **70B**, 150 (1977). [https://doi.org/10.1016/0370-2693\(77\)90508-1](https://doi.org/10.1016/0370-2693(77)90508-1)
- [4] **1981Sc17** D. Schardt, T. Batsch, R. Kirchner, O. Klepper, W. Kurcewicz, E. Roeckl, P. Tidemand-Petersson, Nucl.Phys. **A368**, 153 (1981). [https://doi.org/10.1016/0375-9474\(81\)90737-5](https://doi.org/10.1016/0375-9474(81)90737-5)
- [5] **1988Ba10** R. Barden, R. Kirchner, O. Klepper, A. Plochocki, G. -E. Rathke, E. Roeckl, K. Rykaczewski, D. Schardt, J. Zylicz, Z. Phys. **A329**, 319 (1988).

- [6] **1997Ja12** Z. Janas, A. Plochocki, J. Szerypo, R. Collatz, Z. Hu, H. Keller, R. Kirchner, O. Klepper, E. Roeckl, K. Schmidt, R. Bonetti, A. Guglielmetti, G. Poli, A. PiechaCzek, **627**, 119 (1997). [https://doi.org/10.1016/S0375-9474\(97\)00505-8](https://doi.org/10.1016/S0375-9474(97)00505-8)
- [7] **2000De11** D. De Frenne, E. Jacobs, Nucl. Data Sheets **89**, 481 (2000). <https://doi.org/10.1006/ndsh.2000.0004>
- [8] **2000So11** G. A. Souliotis, Phys. Scr. **T88**, 153 (2000). <https://doi.org/10.1238/Physica.Topical.088a00153>
- [9] **2021Wa16** M. Wang, W. J. Huang, F. G. Kondev, G. Audi, S. Naimi, Chin. Phys. C **45**, 030003 (2021). <https://doi.org/10.1088/1674-1137/abddaf>