Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 154, 1 (2018)	20-Nov-2018

Q(β^-)=−7650 *SY*; S(n)=10420 *SY*; S(p)=140 *SY*; Q(α)=3340 *SY* 2017Wa10
Uncertainties based on syst are: ΔQ(β^-)=900, ΔS(n)=850, ΔS(p)=820, ΔQ(α)=820 (2017Wa10).
Q(εp)=7630 *800* (2017Wa10).
Observed ^{140}Tb delayed proton emission with εp/ε=0.0026 *13* (1991Fi03), E(p)=2200-6600 (E(p)(av)=4.2 MeV) (1986Wi15), in coincidence with 323γ (from 15/2$^-$ to 11/2$^-$) in ^{139}Eu (2003Xu04).

^{140}Tb Levels

Cross Reference (XREF) Flags

A ^{92}Mo(^{54}Fe,αpnγ)

E(level)	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0[†]	(7$^+$)	2.29 s *15*	A	%ε+%β^+=100; %εp=0.26 *13* (1991Fi03) J$^\pi$: J≥5 from (ε+β^+)-delayed proton to (15/2$^-$) in ^{139}Eu (2003Xu04); ΔJ$^\pi$=0,1;no from log *ft*=5.3 *3* to 1464, 6$^+$, and 2140, 8$^+$ in ^{140}Gd; this assignment is in agreement with predictions (1997Mo25), and is composed of ν9/2$^-$ and π5/2$^-$ quasi-particle with ε_2=0.208. T$_{1/2}$: weighted average of: 2.0 s *5* (2006Xu03), 2.1 s *4* (2000Xu08), 2.4 s *2* (1991Fi03), 2.0 s *5* (1988WiZN), 2.4 s *4* (1986Wi15).
x[@]	(8$^+$)[‡]		A	
118.7+x[#] *3*	(9$^+$)[‡]		A	
292.4+x[@] *4*	(10$^+$)[‡]		A	
551.9+x[#] *4*	(11$^+$)[‡]		A	
805.4+x[@] *5*	(12$^+$)[‡]		A	
1137.2+x[#] *5*	(13$^+$)[‡]		A	
1454.7+x[@] *5*	(14$^+$)[‡]		A	
1837.1+x[#] *5*	(15$^+$)[‡]		A	
2217.9+x[@] *5*	(16$^+$)[‡]		A	
2623.0+x[#] *6*	(17$^+$)[‡]		A	
3042.9+x[@] *6*	(18$^+$)[‡]		A	

[†] The lowest-observed state in ^{140}Tb has J$^\pi$=(7$^+$) (2003Xu04, 2000Xu08) and T$_{1/2}$=2.4 s *2* (1991Fi03). 1991Fi03 consider it either g.s. or isomer in less than 50 keV from g.s. and state that based on systematics of heavier odd-odd Tb isotopes one should expect 1$^+$ g.s. and T$_{1/2}$ considerably shorter than 1 s, which is not confirmed by newer data shown here. With this caveat we adopt this state as g.s.
[‡] Modified values based on ^{92}Mo(^{54}Fe,αpnγ) (2000Ri13). 2000Ri13 find band structure based on J$^\pi$=(7$^+$) state from systematics of less heavy isotones and comment that based on 1996Li13 all spins may differ by one unit, which can not be confirmed or overruled by 2000Ri13. The newer ENSDF files (Adopted Levels, Gammas) for ^{132}La (2005), ^{136}Pm (2002) and ^{138}Eu (2003) confirm a shift of +1 in spin, and consequently the signature inversion, for the band of 2000Ri13, which were adopted here.
[#] Band(A): πh$_{11/2}\nu$h$_{11/2}$, α=1. Inverted signature as in ^{92}Mo(^{54}Fe,αpnγ) (2000Ri13), based on shift of +1 in spin.
[@] Band(a): πh$_{11/2}\nu$h$_{11/2}$, α=0. Inverted signature as in ^{92}Mo(^{54}Fe,αpnγ) (2000Ri13), based on shift of +1 in spin.

Adopted Levels, Gammas (continued)

γ(^{140}Tb)

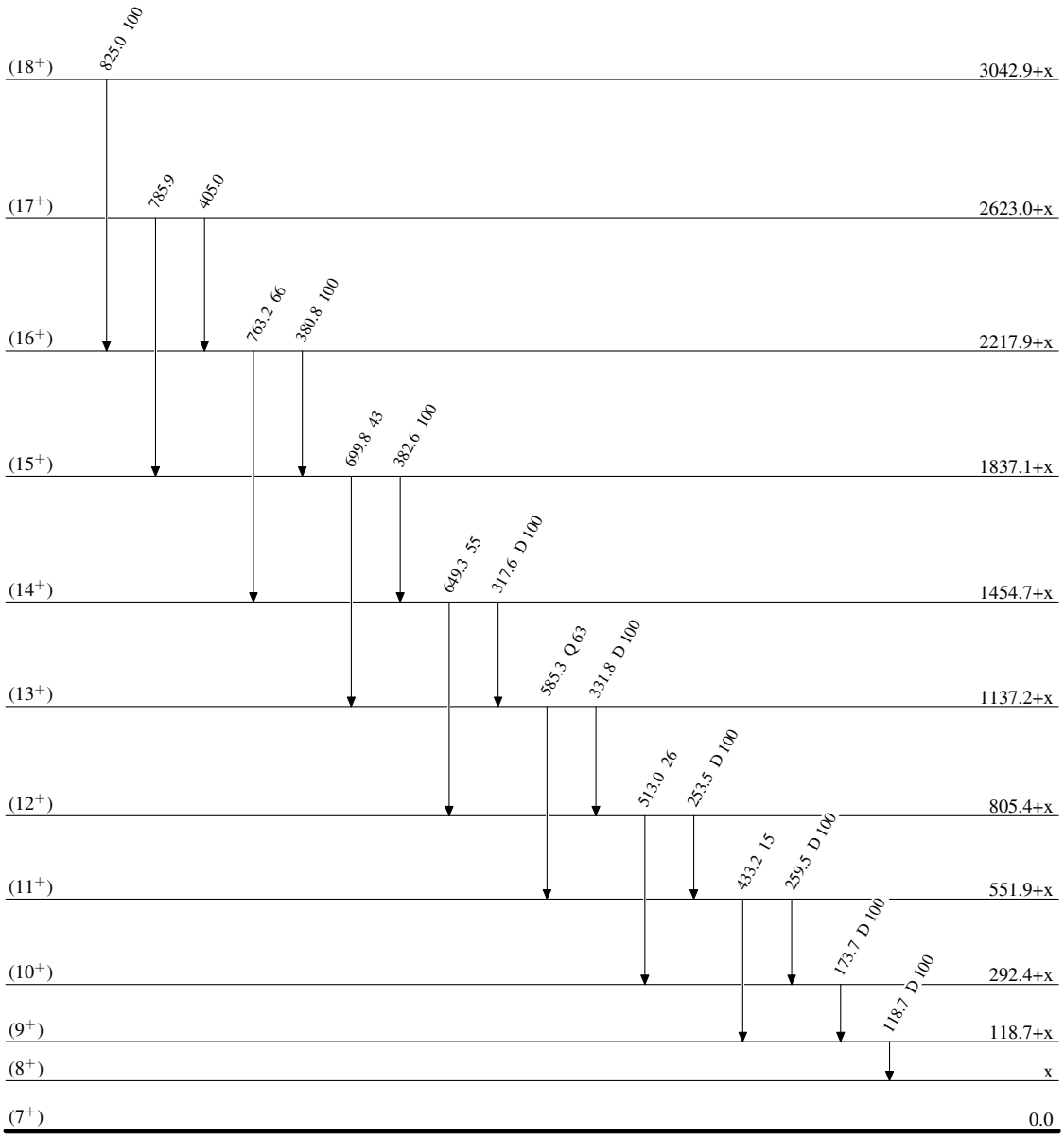
E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult. †
118.7+x	(9^+)	118.7	100	x	(8^+)	D
292.4+x	(10^+)	173.7	100	118.7+x	(9^+)	D
551.9+x	(11^+)	259.5	100	292.4+x	(10^+)	D
		433.2	15	118.7+x	(9^+)	
805.4+x	(12^+)	253.5	100	551.9+x	(11^+)	D
		513.0	26	292.4+x	(10^+)	
1137.2+x	(13^+)	331.8	100	805.4+x	(12^+)	D
		585.3	63	551.9+x	(11^+)	Q
1454.7+x	(14^+)	317.6	100	1137.2+x	(13^+)	D
		649.3	55	805.4+x	(12^+)	
1837.1+x	(15^+)	382.6	100	1454.7+x	(14^+)	
		699.8	43	1137.2+x	(13^+)	
2217.9+x	(16^+)	380.8	100	1837.1+x	(15^+)	
		763.2	66	1454.7+x	(14^+)	
2623.0+x	(17^+)	405.0		2217.9+x	(16^+)	
		785.9		1837.1+x	(15^+)	
3042.9+x	(18^+)	825.0	100	2217.9+x	(16^+)	

† From 2000Ri13 (^{92}Mo(^{54}Fe,αpnγ) dataset).

Adopted Levels, Gammas

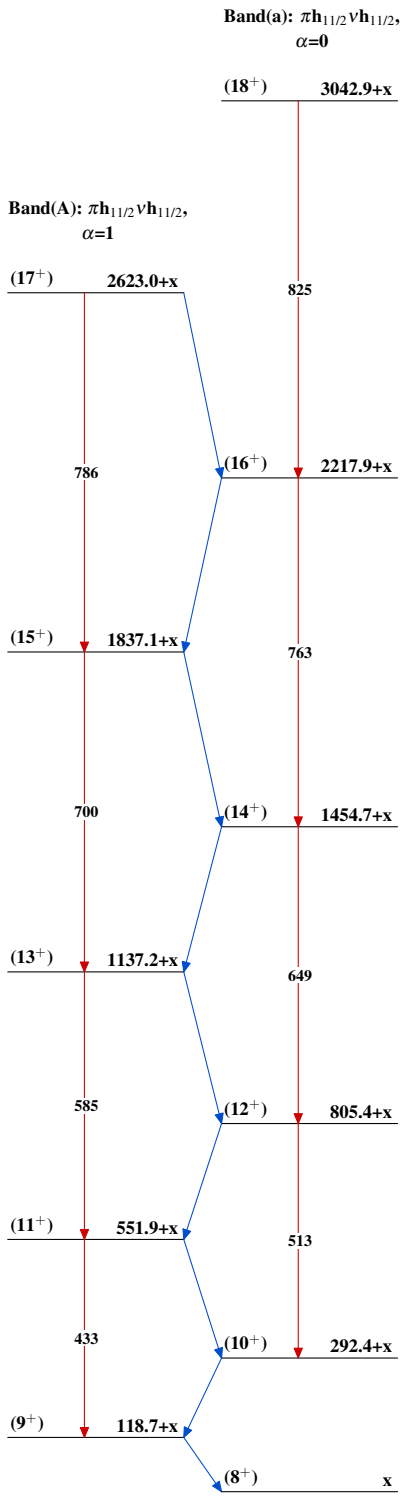
Level Scheme

Intensities: Relative photon branching from each level



$^{140}_{65}Tb_{75}$

Adopted Levels, Gammas



$^{140}_{65}Tb_{75}$