Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 132, 1 (2016)	4-Dec-2015

Q(β^-)=−9310 (syst) *247*; S(n)=9158 (syst) *246*; S(p)=2493 (syst) *203*; Q(α)=5880 *3* 2017Wa10
Q(ε)=7537 (syst) *196*; S(2n)=20876 (syst) *246*; S(2p)=2979 (syst) *203*; Q(εp)=7074 (syst) *196* 2017Wa10
Additional information 1.
2014Ca03 found 6.1 μs *1*, 2668 keV isomer in ^{158}Ta. According to 2014Ca03 that searched for proton emission, no proton-decay branch from this isomer was identified, despite the isomer being unbound to proton emission.
All data for excited levels and γ's are from (HI,xnγ).

^{157}Hf Levels

Cross Reference (XREF) Flags

A ^{161}W α decay
B (HI,xnγ)

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	XREF	Comments
0.0[#]	(7/2$^-$)	115 ms *1*	AB	%α=94 *4*; %ε+%β^+=14 *9* %α: Weighted average of 95 *5* (1996Pa01) and 91 *7* (1979Ho10); other: 72 *11* (1989Wo02). E(level): Evaluator assumes that the α decay half-life is associated with the ground state. J$^\pi$: From 1991Sa31 based on level energy systematics of the even-Z, N=85 isotones and expected configurarion. $T_{1/2}$: Weighted average of 115 ms *1* (1996Pa01) and 110 ms *6* (1979Ho10); other: 120 ms *30* (1965Ma14).
111.0[@]	(9/2$^-$)		B	
954.1[@]	(13/2$^-$)		B	
1589.9[@]	(17/2$^-$)		B	
1859.7[@]	(21/2$^-$)		B	
2294.4[&]	(23/2$^-$)		B	
2682.3[a]	(23/2$^-$)		B	
2705.9[@]	(25/2$^-$)		B	
2796.8			B	
2805.1[a]	(27/2$^-$)		B	
2875.4[b]	(29/2$^+$)	52 ns *12*	B	$T_{1/2}$: from $\gamma\gamma$(t) (1995Sa31).
3292.4[@]	(29/2$^-$)		B	
3561.4[a]	(31/2$^-$)		B	
3660.9	(31/2$^-$)		B	
3938.4[@]	(33/2$^-$)		B	
4185.8[b]	(33/2$^+$)		B	
4216.9[a]	(35/2$^-$)		B	
4224.9[@]	(37/2$^-$)		B	
4757.5[@]	(39/2)		B	J$^\pi$: Band assignment assumes π=−.
4798.0[b]	(37/2$^+$)		B	
5020.2[b]	(41/2$^+$)		B	
5416.0[c]	(43/2)		B	
5815.1[c]	(47/2)		B	

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Adopted Levels, Gammas (continued)

^{157}Hf Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	XREF
6106.9[c]	(49/2)	B
6499.4[c]	(51/2)	B

[†] From least-squares fit to γ energies with equal uncertainties for each measured E_γ. No uncertainties are given here for the level energies, but they are given in (HI,xnγ) on the assumption that the uncertainties in the E_γ are 0.3 keV.

[‡] From (HI,xnγ) data and based on $\gamma(\theta)$ measurements and expected bandstructure, with the difference that because the J^π value of the ground state adopted here is tentative, all the other J^π values are also tentative. See the (HI,xnγ) dataset for authors' J^π values (1995Sa31).

[#] Band(A): 7/2$^-$ state with configuration $\nu f^3_{7/2}$.

[@] Band(B): band based on 9/2$^-$ state with configuration $\nu f^2_{7/2}\nu h_{9/2}$.

[&] Band(C): 23/2$^-$ state with configuration $\nu f_{7/2}\nu h^2_{9/2}$.

[a] Band(D): band based on 23/2$^-$ level.

[b] Band(E): band based on 29/2$^+$ state with configuration $\nu f_{7/2}\nu h_{9/2}\nu i_{13/2}\pi h^8_{11/2}$.

[c] Band(F): band based on 43/2 level.

$\gamma(^{157}$Hf)

E_i(level)	J^π_i	E_γ	E_f	J^π_f	Mult.[†]	α[‡]	Comments
111.0	(9/2$^-$)	111.0	0.0	(7/2$^-$)	M1	2.97	α(K)=2.47 *4*; α(L)=0.386 *6*; α(M)=0.0871 *13* α(N)=0.0207 *3*; α(O)=0.00317 *5*; α(P)=0.000210 *3*
954.1	(13/2$^-$)	843.1	111.0	(9/2$^-$)			
1589.9	(17/2$^-$)	635.8	954.1	(13/2$^-$)			
1859.7	(21/2$^-$)	269.8	1589.9	(17/2$^-$)	E2	0.1095	α(K)=0.0732 *11*; α(L)=0.0278 *4*; α(M)=0.00673 *10* α(N)=0.001570 *22*; α(O)=0.000211 *3*; α(P)=5.12×10^{-6} *8*
2294.4	(23/2$^-$)	434.7	1859.7	(21/2$^-$)			
2682.3	(23/2$^-$)	387.9	2294.4	(23/2$^-$)			
2705.9	(25/2$^-$)	411.4	2294.4	(23/2$^-$)			
		846.2	1859.7	(21/2$^-$)			
2796.8		114.5	2682.3	(23/2$^-$)	M1	2.72	α(K)=2.26 *4*; α(L)=0.353 *5*; α(M)=0.0797 *12* α(N)=0.0189 *3*; α(O)=0.00290 *4*; α(P)=0.000192 *3*
2805.1	(27/2$^-$)	(8.3)	2796.8				E_γ: γ not observed, but presence deduced from $\gamma\gamma$ coincidences.
		99.3	2705.9	(25/2$^-$)	M1	4.09	α(K)=3.40 *5*; α(L)=0.531 *8*; α(M)=0.1201 *17* α(N)=0.0285 *4*; α(O)=0.00437 *7*; α(P)=0.000290 *4*
2875.4	(29/2$^+$)	70.3	2805.1	(27/2$^-$)	E1	0.885	α(K)=0.715 *10*; α(L)=0.1322 *19*; α(M)=0.0300 *5* α(N)=0.00694 *10*; α(O)=0.000959 *14*; α(P)=4.17×10^{-5} *6*
3292.4	(29/2$^-$)	586.5	2705.9	(25/2$^-$)			
3561.4	(31/2$^-$)	756.3	2805.1	(27/2$^-$)			
3660.9	(31/2$^-$)	368.5	3292.4	(29/2$^-$)			
3938.4	(33/2$^-$)	277.4	3660.9	(31/2$^-$)			
		377.0	3561.4	(31/2$^-$)			
		646.0	3292.4	(29/2$^-$)			
4185.8	(33/2$^+$)	1310.4	2875.4	(29/2$^+$)			
4216.9	(35/2$^-$)	278.5	3938.4	(33/2$^-$)			
		655.6	3561.4	(31/2$^-$)			
4224.9	(37/2$^-$)	(8.0)	4216.9	(35/2$^-$)			E_γ: γ not observed, but presence deduced from $\gamma\gamma$ coincidences.
		286.5	3938.4	(33/2$^-$)			
4757.5	(39/2)	532.7	4224.9	(37/2$^-$)			
4798.0	(37/2$^+$)	612.2	4185.8	(33/2$^+$)			

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Adopted Levels, Gammas (continued)

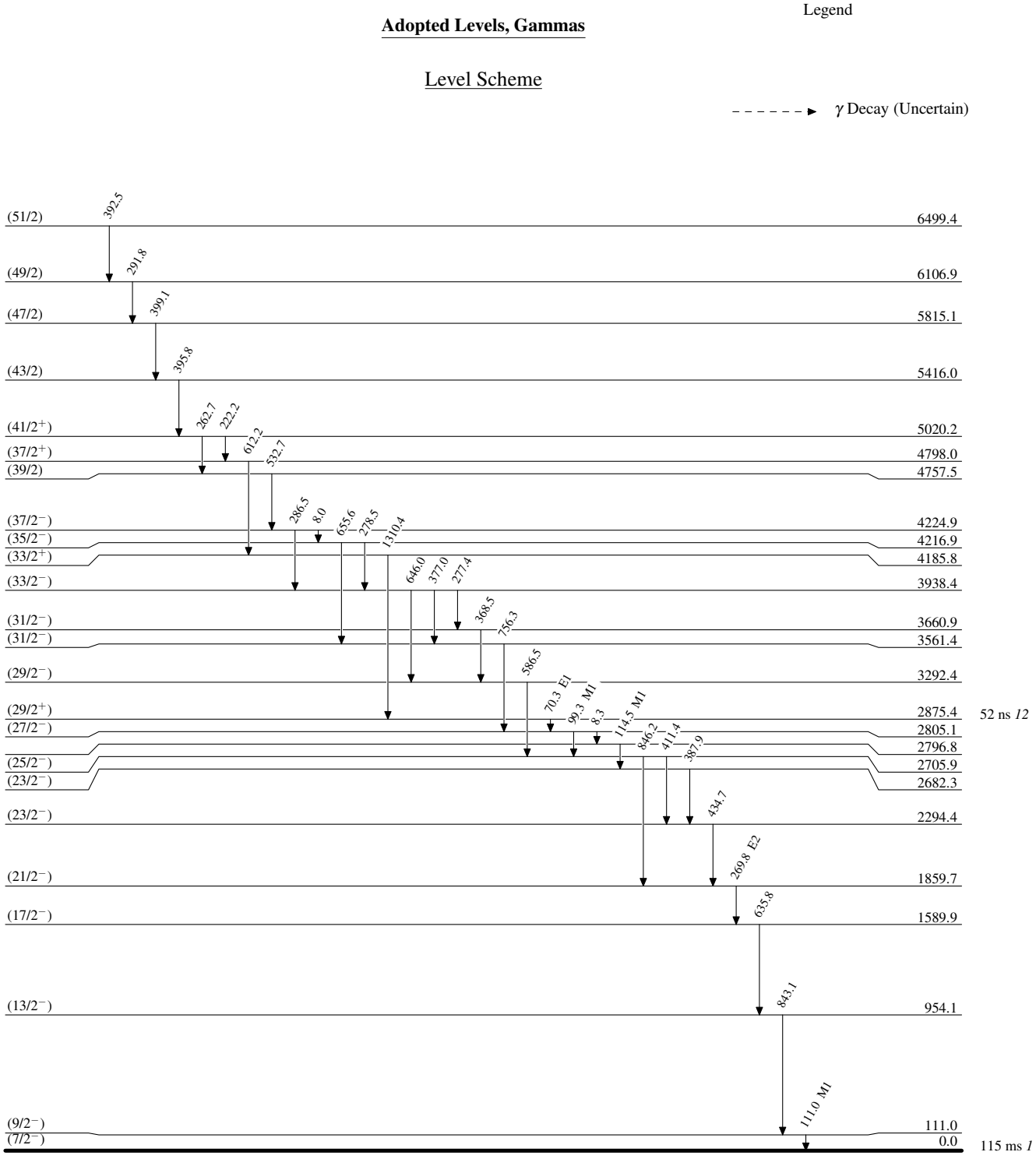
$\gamma(^{157}Hf)$ (continued)

E_i(level)	J_i^π	E_γ	E_f	J_f^π
5020.2	$(41/2^+)$	222.2	4798.0	$(37/2^+)$
		262.7	4757.5	(39/2)
5416.0	(43/2)	395.8	5020.2	$(41/2^+)$
5815.1	(47/2)	399.1	5416.0	(43/2)
6106.9	(49/2)	291.8	5815.1	(47/2)
6499.4	(51/2)	392.5	6106.9	(49/2)

† From (HI,xnγ) (1995Sa31).
‡ Additional information 2.

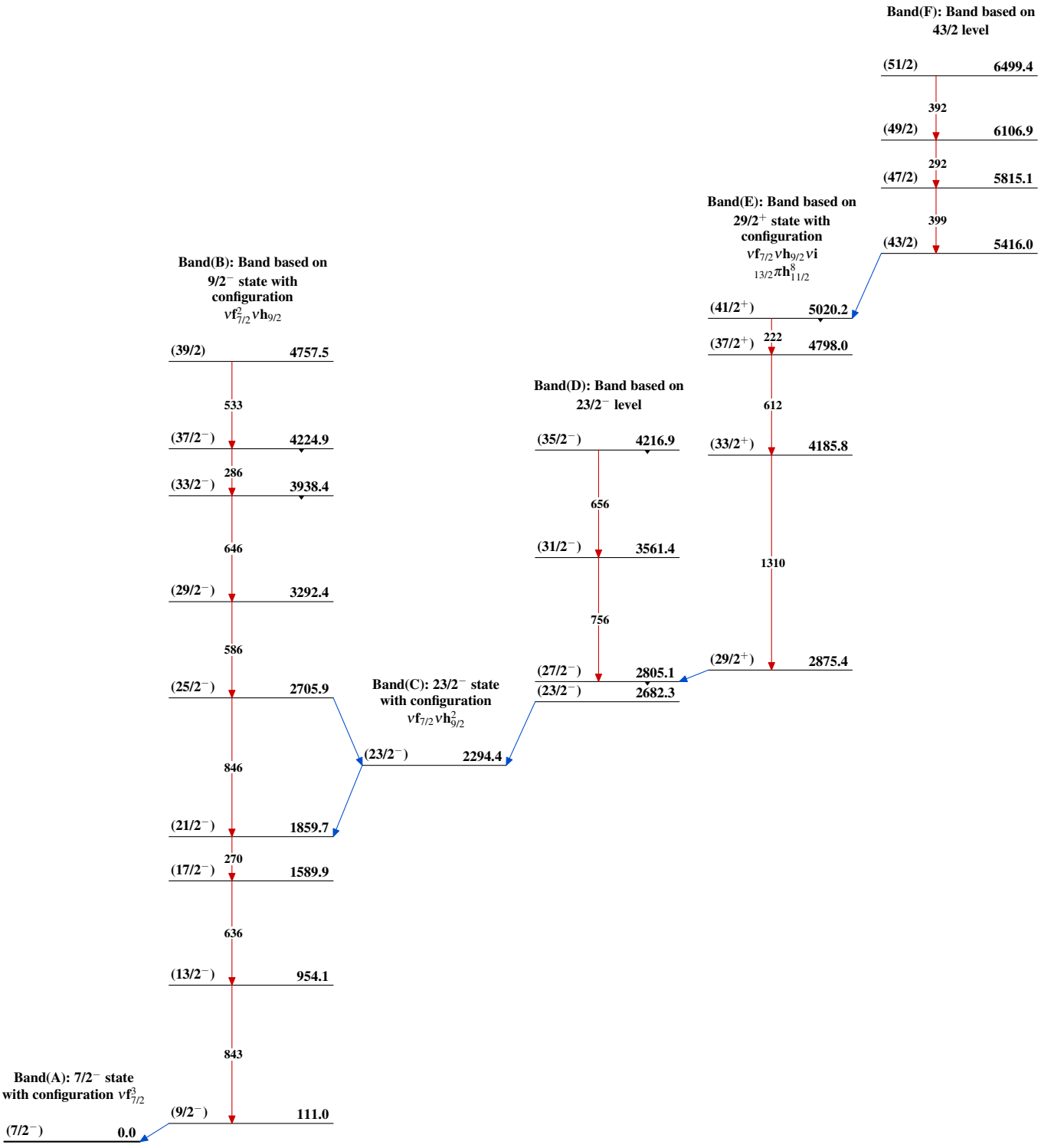
Adopted Levels, Gammas

Level Scheme



$^{157}_{72}Hf_{85}$

Adopted Levels, Gammas



$^{157}_{72}Hf_{85}$