

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109,1103 (2008)	1-Mar-2008

Q(β⁻)=-4.21×10³ 3; S(n)=8.32×10³ 4; S(p)=1.75×10³ 4; Q(α)=4.31×10³ 8 [2012Wa38](#)

Note: Current evaluation has used the following Q record -4206 30 8310 30 1750 40 4310 80 [2003Au03](#).

¹⁶⁶Ta Levels

Cross Reference (XREF) Flags

- A ¹⁶⁶W ε decay
- B ¹⁴¹Pr(²⁸Si,3nγ)

E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments
0.0	(2) ⁺	34.4 s 5	A	%ε+%β ⁺ =100 Assignment: ¹⁵⁹ Tb(¹⁶ O,9n), E(¹⁶ O)=147 MeV, excit (1977Le08). T _{1/2} : from 1982Li17 . Other: 32 s 3 (1977Le08). J ^π : M1+E2 126γ from 1 ⁺ 126; allowed ε decay to 2 ⁺ 159 in ¹⁶⁶ Hf. The adopted J ^π =(2) ⁺ is in conflict with a previous assignment of (2 ⁻) based, in part, on apparent ε+β ⁺ feeding to 4 ⁺ and (0 ⁺) levels. The ¹⁶⁶ Ta ε+β ⁺ decay scheme is probably incomplete (large Q value), so the above feedings might be accounted for by as yet unobserved transitions; the strongest ε+β ⁺ branches feed 2 ⁺ levels.
0.0+x [@]	(9 ⁻)		B	
53.6+x [#] 8	(10 ⁻)		B	
125.79 18	1 ⁺		A	J ^π : allowed (log ft=4.0) ε decay from 0 ⁺ . The apparently unhindered allowed ε decay to this state and the probable (ν 5/2[523]) g.s. for ¹⁶⁵ W suggest that the configuration for the ¹⁶⁶ Ta(126 level) includes the (π 7/2[523]) orbital.
147.6+x [@] 8	(11 ⁻)		B	
298.3 3			A	J ^π : γ to 1 ⁺ 126.
320.1+x [#] 10	(12 ⁻)		B	
350.34 25			A	E(level): relative order of the 45.8 and 224.6 transitions is not established. The reverse order would define a level at 171.6. J ^π : γ to 1 ⁺ 126.
395.93 20	1 ⁺		A	J ^π : allowed (log ft=4.9) ε decay from 0 ⁺ .
495.0+x [@] 11	(13 ⁻)		B	
754.6+x [#] 12	(14 ⁻)		B	
992.2+x [@] 13	(15 ⁻)		B	
1309.2+x [#] 13	(16 ⁻)		B	
1597.8+x [@] 14	(17 ⁻)		B	
1946.3+x [#] 15	(18 ⁻)		B	
2273.2+x [@] 15	(19 ⁻)		B	
2626.7+x [#] 16	(20 ⁻)		B	
2972.1+x [@] 17	(21 ⁻)		B	
3304.9+x [#] 17	(22 ⁻)		B	
3653.9+x [@] 18	(23 ⁻)		B	
3972.1+x [#] 19	(24 ⁻)		B	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{166}Ta Levels (continued)

† From least-squares fit to E_γ .

‡ Values given without comment are from $^{141}\text{Pr}(^{28}\text{Si},3n\gamma)$. Bandhead J assumes smooth energy variation with Z for levels with assigned configuration in neighboring isotones. J for higher-energy levels is based on observed band structure.

Band(A): $(\nu i_{13/2}) \otimes (\pi h_{11/2})$, $\alpha=0$ band. Configuration assignment is based on yrast band configurations of $(\nu i_{13/2})$ and $(\pi h_{11/2})$, respectively, for yrast bands in ^{165}Hf and ^{165}Ta (1997Zh11).

@ Band(a): $(\nu i_{13/2}) \otimes (\pi h_{11/2})$, $\alpha=1$ band. See comment on signature-partner band.

$\gamma(^{166}\text{Ta})$									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult.	δ	$\alpha^@$	Comments
53.6+x	(10 ⁻)	53.6	100	0.0+x	(9 ⁻)				
125.79	1 ⁺	125.8# 2	100	0.0	(2) ⁺	M1+E2	0.8 +8-5	1.98 24	Mult., δ : from $\alpha(\text{K})\text{exp}$ in ε decay.
147.6+x	(11 ⁻)	94.0		53.6+x	(10 ⁻)				
		147.6		0.0+x	(9 ⁻)				
298.3		172.5# 3	100	125.79	1 ⁺	[M1,E2]		0.71 22	
320.1+x	(12 ⁻)	172.5		147.6+x	(11 ⁻)				
		266.5		53.6+x	(10 ⁻)				
350.34		224.6# 2	100	125.79	1 ⁺	[M1,E2]		0.32 13	
395.93	1 ⁺	45.8# 4	26 8	350.34		[M1]		7.21 22	
		97.6# 4	35 4	298.3		[M1,E2]		4.4 4	
		270.1# 2	43 4	125.79	1 ⁺	[M1,E2]		0.19 8	
		395.9# 3	100 2	0.0	(2) ⁺	[M1,E2]		0.07 3	
495.0+x	(13 ⁻)	174.9		320.1+x	(12 ⁻)				
		347.4		147.6+x	(11 ⁻)				
754.6+x	(14 ⁻)	259.6		495.0+x	(13 ⁻)				
		434.5		320.1+x	(12 ⁻)				
992.2+x	(15 ⁻)	237.6		754.6+x	(14 ⁻)				
		497.3		495.0+x	(13 ⁻)				
1309.2+x	(16 ⁻)	317.0		992.2+x	(15 ⁻)				
		554.6		754.6+x	(14 ⁻)				
1597.8+x	(17 ⁻)	288.6		1309.2+x	(16 ⁻)				
		605.6		992.2+x	(15 ⁻)				
1946.3+x	(18 ⁻)	348.5		1597.8+x	(17 ⁻)				
		637.1		1309.2+x	(16 ⁻)				
2273.2+x	(19 ⁻)	326.9		1946.3+x	(18 ⁻)				
		675.4		1597.8+x	(17 ⁻)				
2626.7+x	(20 ⁻)	353.5		2273.2+x	(19 ⁻)				
		680.4		1946.3+x	(18 ⁻)				
2972.1+x	(21 ⁻)	345.3		2626.7+x	(20 ⁻)				
		698.8		2273.2+x	(19 ⁻)				
3304.9+x	(22 ⁻)	332.8		2972.1+x	(21 ⁻)				
		678.2		2626.7+x	(20 ⁻)				
3653.9+x	(23 ⁻)	349.0		3304.9+x	(22 ⁻)				
		681.8		2972.1+x	(21 ⁻)				
3972.1+x	(24 ⁻)	318.2		3653.9+x	(23 ⁻)				
		667.2		3304.9+x	(22 ⁻)				

† From $^{141}\text{Pr}(^{28}\text{Si},3n\gamma)$, except as noted. Authors did not state uncertainty.

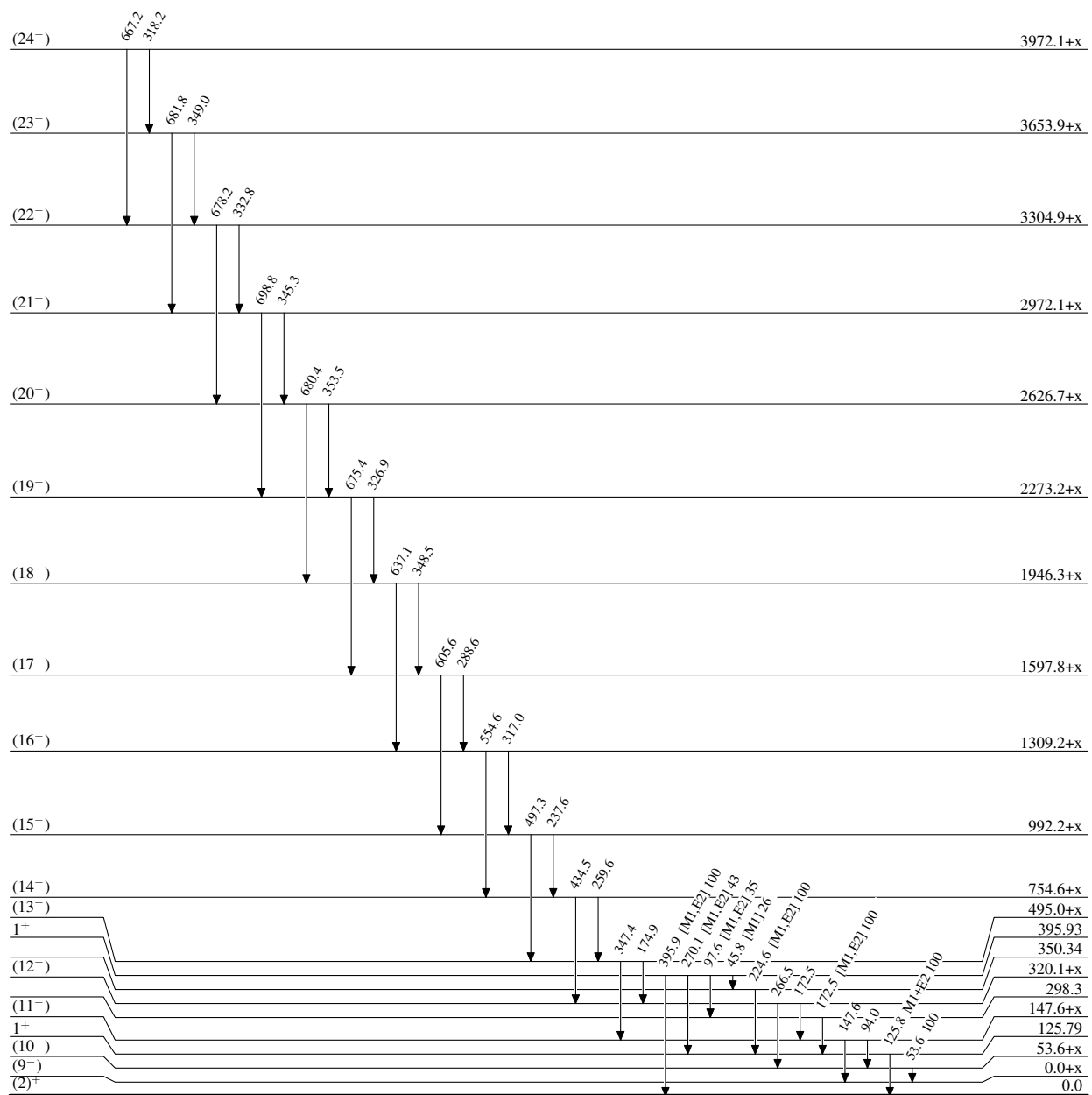
‡ Relative photon intensity normalized to 100 at strongest photon deexciting each level. From ^{166}W ε decay.

From ^{166}W ε decay.

@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

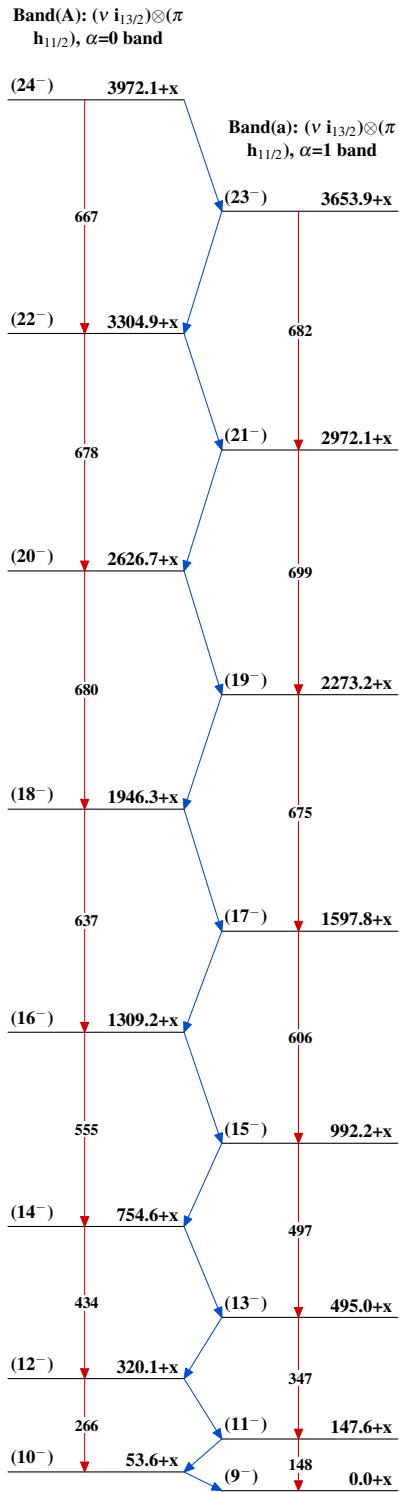
Adopted Levels, Gammas**Level Scheme**

Intensities: Relative photon branching from each level



34.4 s 5

 $^{166}_{73}\text{Ta}_{93}$

Adopted Levels, Gammas $^{166}_{73}\text{Ta}_{93}$