

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen		NDS 194,460 (2024)	31-Oct-2022

Q(β^-)=-8200 30; S(n)=8697 28; S(p)=2870 40; Q(α)=5030 30 [2021Wa16](#)

Q(ϵ)=6987 29, Q(ϵp)=5670 30, S(2n)=20100 60, S(2p)=4170 40 ([2021Wa16](#)).

No information on level structure in ¹⁶⁵W is available in the literature from ¹⁶⁵Re ϵ decay (1.6 s and 1.74 s activities).

¹⁶⁵W Levels

Band assignments are from [1992Si12](#) in (⁶³Cu,p3n γ).

Cross Reference (XREF) Flags

- A ¹⁶⁵Re ϵ decay (1.6 s)
- B ¹⁶⁵Re ϵ decay (1.74 s)
- C ¹⁶⁹Os α decay (3.4 s)
- D ¹⁰⁶Pd(⁶³Cu,p3n γ)

E(level) [†]	J π^{\ddagger}	T _{1/2}	XREF	Comments
0.0	(5/2 ⁻)	5.1 s 5	C	% ϵ +% β^+ >99.8; % α <0.2 % α : from requirement HF>1 (2006Ja09). Other: <1.5% reported in 1979Ho10 based on measured T _{1/2} >300 s for α decay branch and T _{1/2} =5.1 s 5 from 1975To05 . T _{1/2} : from 1975To05 . J π : probable ν 5/2[523] (1995Hi02).
0.0+x [@]	(13/2 ⁺)		D	
43	(3/2 ⁻)		C	J π : probable ν 3/2[521] (1995Hi02).
72	(7/2 ⁻)		C	J π : probable 7/2 ⁻ member of ν 5/2[523] band (1995Hi02).
277.3+x [@] 3	(17/2 ⁺)		D	
732.3+x [@] 4	(21/2 ⁺)		D	
1032.9+x ^{&} 4	(17/2 ⁻)		D	
1304.4+x [@] 5	(25/2 ⁺)		D	
1546.6+x ^{&} 5	(21/2 ⁻)		D	
1860.3+x 5			D	
1948.9+x [#] 5	(23/2 ⁻)		D	
1952.2+x [@] 6	(29/2 ⁺)		D	
1956.3+x ^{&} 6	(25/2 ⁻)		D	
2302.7+x [#] 5	(27/2 ⁻)		D	
2445.6+x ^{&}	(29/2 ⁻)		D	
2511.2+x ^a 6	(29/2 ⁻)		D	
2602.4+x [#] 6	(31/2 ⁻)		D	
2649.5+x [@] 6	(33/2 ⁺)		D	
2860.3+x ^a 6	(33/2 ⁻)		D	
3057.4+x [#] 7	(35/2 ⁻)		D	
3341.8+x ^a 7	(37/2 ⁻)		D	
3388.1+x [@] 7	(37/2 ⁺)		D	
3633.7+x [#] 7	(39/2 ⁻)		D	
3924.5+x ^a 8	(41/2 ⁻)		D	
4164.5+x [@] 8	(41/2 ⁺)		D	

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Adopted Levels, Gammas (continued)

¹⁶⁵W Levels (continued)

E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF
4290.2+x [#] 8	(43/2 ⁻)	D	5003.8+x [#] 8	(47/2 ⁻)	D	6136.5+x ^a 9	(53/2 ⁻)	D
4601.3+x ^a 8	(45/2 ⁻)	D	5342.4+x ^a 9	(49/2 ⁻)	D	6598.5+x [#] 9	(55/2 ⁻)	D
4959.8+x [@] 8	(45/2 ⁺)	D	5774.4+x [#] 9	(51/2 ⁻)	D	7470.4+x ^{?#} 10	(59/2 ⁻)	D

[†] The 43- and 72-keV level energies are from ¹⁶⁹Os α decay and all higher energies are from a least-square fit to γ-ray energies.

[‡] The assignments for high-spin (J≥13/2) are from 1992Si12 in (⁶³Cu,p3nγ) based on the assumption of i_{13/2} for the lowest state populated in the heavy-ion induced reaction and also based on systematics of neighboring nuclei for negative-parity band heads.

For higher states, ΔJ are suggested by the DCO ratios and band associations.

[#] Band(A): Band based on (23/2⁻).

[@] Band(B): Yrast band based on (13/2⁺). This band is assumed to be the energetically favored (lower) component of the i_{13/2} band, consistent with the systematics of such bands in this mass region.

& Band(C): Band based on (17/2⁻).

^a Band(D): Band based on (29/2⁻).

							<u>γ(¹⁶⁵W)</u>		
E _i (level)	J _i ^π	E _γ [†]	I _γ [†]	E _f	J _f ^π	Mult. [#]		Comments	
43	(3/2 ⁻)	43 [‡]		0.0	(5/2 ⁻)	(M1) [@]			
72	(7/2 ⁻)	28 ^{‡b}		43	(3/2 ⁻)				
		72 [‡]		0.0	(5/2 ⁻)	(M1) [@]			
277.3+x	(17/2 ⁺)	277.3	100	0.0+x	(13/2 ⁺)	Q			
732.3+x	(21/2 ⁺)	455.0 ^a	100	277.3+x	(17/2 ⁺)	(Q)			
1032.9+x	(17/2 ⁻)	755.6	100	277.3+x	(17/2 ⁺)	D	Mult.: ΔJ=0 transition.		
1304.4+x	(25/2 ⁺)	572.1	100	732.3+x	(21/2 ⁺)	Q			
1546.6+x	(21/2 ⁻)	513.7	100 6	1032.9+x	(17/2 ⁻)	Q			
		814.2	39 7	732.3+x	(21/2 ⁺)	D	Mult.: ΔJ=0 transition.		
1860.3+x		1128.0 ^b		732.3+x	(21/2 ⁺)				
1948.9+x	(23/2 ⁻)	1216.6	100	732.3+x	(21/2 ⁺)				
1952.2+x	(29/2 ⁺)	647.8 ^{&}	100	1304.4+x	(25/2 ⁺)	Q			
1956.3+x	(25/2 ⁻)	409.7	100	1546.6+x	(21/2 ⁻)	Q			
2302.7+x	(27/2 ⁻)	353.8	37 4	1948.9+x	(23/2 ⁻)	Q			
		998.3	100 7	1304.4+x	(25/2 ⁺)	D			
2445.6+x	(29/2 ⁻)	489.4 6	100	1956.3+x	(25/2 ⁻)	Q			
2511.2+x	(29/2 ⁻)	554.9	100	1956.3+x	(25/2 ⁻)	Q			
2602.4+x	(31/2 ⁻)	299.6	100 9	2302.7+x	(27/2 ⁻)	Q			
		650.2 ^{&}	48 7	1952.2+x	(29/2 ⁺)				
2649.5+x	(33/2 ⁺)	697.3	100	1952.2+x	(29/2 ⁺)	Q			
2860.3+x	(33/2 ⁻)	349.1	93 6	2511.2+x	(29/2 ⁻)	Q			
		414.7	100 9	2445.6+x	(29/2 ⁻)	Q			
3057.4+x	(35/2 ⁻)	455.0 ^a	100	2602.4+x	(31/2 ⁻)	(Q)			
3341.8+x	(37/2 ⁻)	481.5	100	2860.3+x	(33/2 ⁻)	Q			
3388.1+x	(37/2 ⁺)	738.6	100	2649.5+x	(33/2 ⁺)	Q			
3633.7+x	(39/2 ⁻)	576.3	100	3057.4+x	(35/2 ⁻)	Q			
3924.5+x	(41/2 ⁻)	582.7	100	3341.8+x	(37/2 ⁻)	Q			
4164.5+x	(41/2 ⁺)	776.4	100	3388.1+x	(37/2 ⁺)	Q			
4290.2+x	(43/2 ⁻)	656.5	100	3633.7+x	(39/2 ⁻)	Q			
4601.3+x	(45/2 ⁻)	676.8	100	3924.5+x	(41/2 ⁻)	Q			
4959.8+x	(45/2 ⁺)	795.3	100	4164.5+x	(41/2 ⁺)	Q			
5003.8+x	(47/2 ⁻)	713.6	100	4290.2+x	(43/2 ⁻)	Q			
5342.4+x	(49/2 ⁻)	741.1	100	4601.3+x	(45/2 ⁻)				

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Adopted Levels, Gammas (continued) $\gamma(^{165}\text{W})$ (continued)

<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ^\dagger</u>	<u>I_γ^\dagger</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult. #</u>
5774.4+x	(51/2 ⁻)	770.6	100	5003.8+x	(47/2 ⁻)	Q
6136.5+x	(53/2 ⁻)	794.1	100	5342.4+x	(49/2 ⁻)	
6598.5+x	(55/2 ⁻)	824.1	100	5774.4+x	(51/2 ⁻)	
7470.4+x?	(59/2 ⁻)	872 ^b		6598.5+x	(55/2 ⁻)	

[†] From ($^{63}\text{Cu}, p3n\gamma$), unless otherwise stated.

[‡] From ^{169}Os α decay.

From DCO ratios in $^{106}\text{Pd}(^{63}\text{Cu}, p3n\gamma)$, unless otherwise stated.

@ M1 is suggested in ^{169}Os α decay.

& 650.2 γ and 647.8 γ are unresolved.

^a Multiply placed.

^b Placement of transition in the level scheme is uncertain.

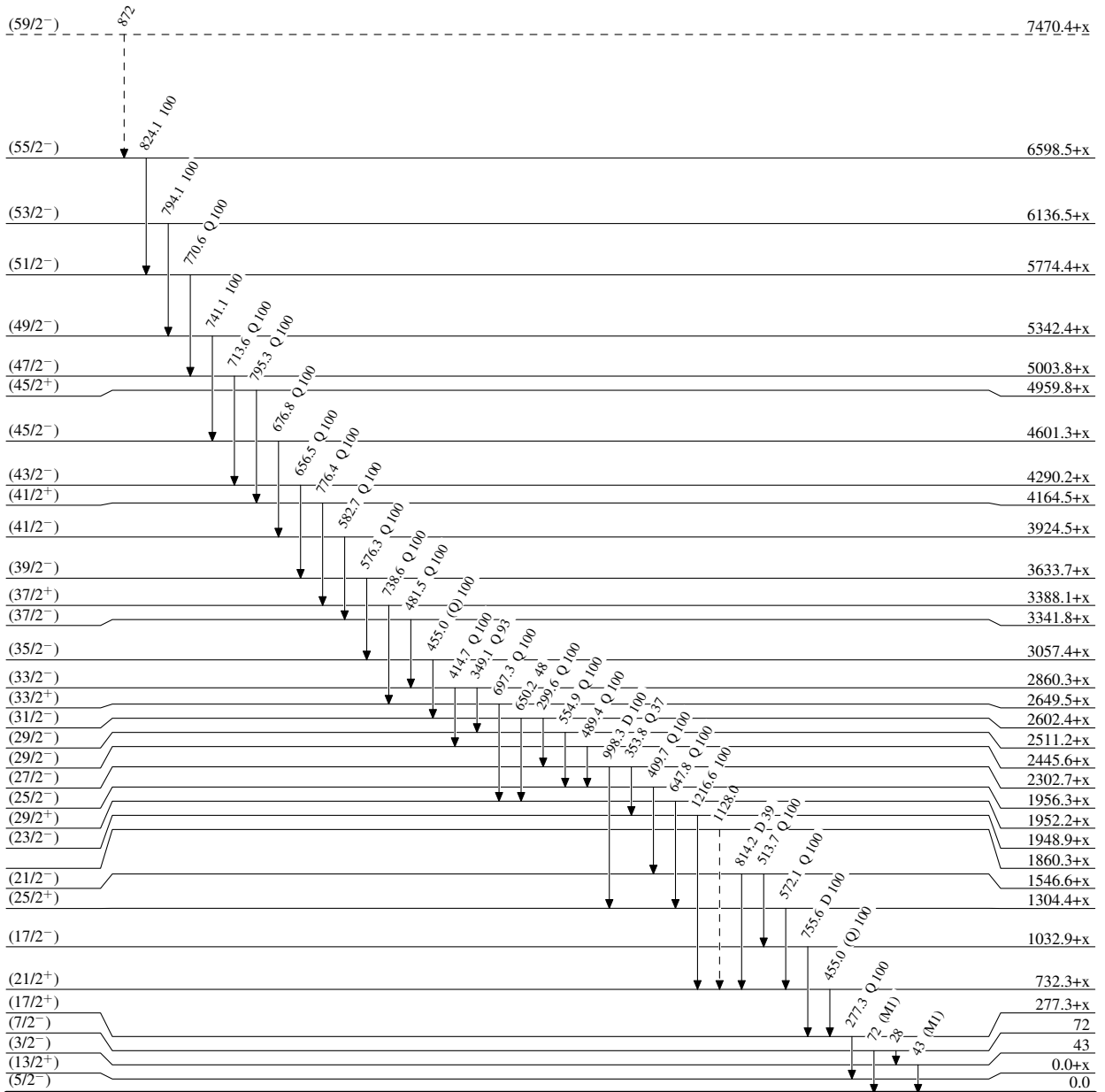
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

-----> γ Decay (Uncertain)



5.1 s 5

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