Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109, 2033 (2008)	1-Jun-2022

Q(β^-)=−6509 *19*; S(n)=8096 *20*; S(p)=3.81×10^3 *3*; Q(α)=4.29×10^3 *3* 2021Wa16

Identification: cross bombardments, excitation functions, and x-ray coincidence data for ^{36}Ar, ^{40}Ar bombardments of Cs, Ba, La, and Pr (1987ScZL).

^{169}W Levels

Cross Reference (XREF) Flags

A ^{173}Os α decay
B ^{154}Gd(^{20}Ne,5nγ)
C ^{169}Re ε decay

E(level)†	J$^\pi$‡	T$_{1/2}$	XREF	Comments
0.0#	(5/2$^-$)	74 s *6*	A	%ε+%β^+=100 %ε+%β^+: only ε decay has been observed. %$\alpha\approx$0.01 can be estimated from extrapolation of log T$_{1/2}(\alpha)$ versus log Q(α) for ^{159}W, ^{161}W, ^{163}W. J$^\pi$: systematics for N=95 isotones strongly favor a 5/2$^-$ 5/2[523] g.s. for ^{169}W, as for ^{163}Er, ^{165}Yb, ^{167}Hf, ^{171}Os. However, the expected allowed unhindered ε decay from this state to a π 7/2[523] level in ^{169}Ta has not been identified as yet. Other low-lying orbitals are expected to Be 5/2[642] and 3/2[651] (1985Re06). T$_{1/2}$: weighted average of 55 s *10* (1987Es08, 1989Br19), 76 s *6* from 170γ(t) (1990Me12) and 80 s *6* (1992HeZV) (the unweighted average of these data is 70 s *8*).
0.0+x#	(9/2$^-$)		BC	
0.0+y@	(13/2$^+$)		B	J$^\pi$: bandhead for strongly decoupled band, similar to i$_{13/2}$ π=+ bands in other N=95 nuclei (^{163}Er, ^{165}Yb, ^{167}Hf).
145.3+x# *2*	(11/2$^-$)		BC	
208.6+y@ *3*	(17/2$^+$)		B	
327.1+x# *3*	(13/2$^-$)		B	
576.0+y@ *4*	(21/2$^+$)		B	
734.3+x# *4*	(17/2$^-$)		B	
1063.6+y@ *5*	(25/2$^+$)		B	
1176.0+x# *5*	(21/2$^-$)		B	
1422.6+y& *6*	(23/2$^-$)		B	J$^\pi$: bandhead for π=(−) side band; 23/2$^-$ for lowest-energy level observed is based on level systematics for N=95 isotones.
1615.1+x# *6*	(25/2$^-$)		B	
1639.0+y@ *6*	(29/2$^+$)		B	
1759.1+y& *6*	(27/2$^-$)		B	
2019.2+x# *7*	(29/2$^-$)		B	
2160.9+y& *7*	(31/2$^-$)		B	
2269.4+y@ *7*	(33/2$^+$)		B	
2434.5+x# *7*	(33/2$^-$)		B	
2597.8+y& *8*	(35/2$^-$)		B	
2893.4+y@ *7*	(37/2$^+$)		B	
2899.8+x# *8*	(37/2$^-$)		B	
3099.7+y& *8*	(39/2$^-$)		B	

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Adopted Levels, Gammas (continued)

^{169}W Levels (continued)

E(level)[†]	Jπ[‡]	XREF	E(level)[†]	Jπ[‡]	XREF	E(level)[†]	Jπ[‡]	XREF
3452.7+x[#] *8*	(41/2⁻)	B	4790.5+x[#] *11*	(49/2⁻)	B	6354.9+x[#] *14*	(57/2⁻)	B
3475.2+y[@] *8*	(41/2⁺)	B	4849.4+y[@] *9*	(49/2⁺)	B	6568.4+y[@] *10*	(57/2⁺)	B
3678.3+y[&] *9*	(43/2⁻)	B	5027.8+y[&] *11*	(51/2⁻)	B	6594.9+y[&] *14*	(59/2⁻)	B
4088.9+x[#] *9*	(45/2⁻)	B	5546.2+x[#] *12*	(53/2⁻)	B	7224+x?[#]	(61/2⁻)	B
4116.1+y[@] *8*	(45/2⁺)	B	5671.3+y[@] *9*	(53/2⁺)	B			
4324.7+y[&] *9*	(47/2⁻)	B	5784.0+y[&] *13*	(55/2⁻)	B			

[†] From least-squares fit to Eγ. 1985Re06 estimate the energy offset "y" to be <100 keV.
[‡] From coincidence data, rotational structure, and γ-ray multipolarities in ^{154}Gd(^{20}Ne,5nγ), except where noted.
[#] Band(A): 5/2[523] band.
[@] Band(B): $i_{13/2}$ π=+ band.
[&] Band(C): π=(−) side band.

γ(^{169}W)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[@]	Comments
145.3+x	(11/2⁻)	145.3 *2*	100	0.0+x	(9/2⁻)	(M1+E2)	1.3 *4*	E_γ: from ^{169}Re ε decay. See ^{154}Gd(^{20}Ne,5nγ) for comment regarding order of 145.3γ and 181.7γ.
208.6+y	(17/2⁺)	208.6 *3*	100	0.0+y	(13/2⁺)	(E2)	0.268	
327.1+x	(13/2⁻)	181.7 *3*	65 *27*	145.3+x	(11/2⁻)	(M1+E2)	0.65 *23*	See ^{154}Gd(^{20}Ne,5nγ) for comment regarding order of 145.3γ and 181.7γ.
		327.1 *3*	100 *40*	0.0+x	(9/2⁻)	(E2)	0.0659	
576.0+y	(21/2⁺)	367.4 *3*	100	208.6+y	(17/2⁺)	(E2)	0.0473	
734.3+x	(17/2⁻)	407.2 *3*	100	327.1+x	(13/2⁻)	(E2)	0.0357	
1063.6+y	(25/2⁺)	487.6 *3*	100	576.0+y	(21/2⁺)	(E2)	0.0224	
1176.0+x	(21/2⁻)	441.7 *3*	100	734.3+x	(17/2⁻)	(E2)	0.0288	
1422.6+y	(23/2⁻)	846.6 *6*	100	576.0+y	(21/2⁺)			
1615.1+x	(25/2⁻)	439.1 *3*	100	1176.0+x	(21/2⁻)	(E2)	0.0292	
1639.0+y	(29/2⁺)	575.4 *3*	100	1063.6+y	(25/2⁺)	(E2)	0.0149 *3*	
1759.1+y	(27/2⁻)	336.5 *3*	100 *21*	1422.6+y	(23/2⁻)	(E2)	0.0607	
		695.5 *6*	<74	1063.6+y	(25/2⁺)			
2019.2+x	(29/2⁻)	404.1 *3*	100	1615.1+x	(25/2⁻)	(E2)	0.0364	
2160.9+y	(31/2⁻)	401.8 *3*	100	1759.1+y	(27/2⁻)	(E2)	0.0370	
2269.4+y	(33/2⁺)	630.4 *3*	100	1639.0+y	(29/2⁺)	(E2)	0.0120 *7*	
2434.5+x	(33/2⁻)	415.3 *3*	100	2019.2+x	(29/2⁻)	(E2)	0.0339	
2597.8+y	(35/2⁻)	436.9 *3*	100	2160.9+y	(31/2⁻)	(E2)	0.0296	
2893.4+y	(37/2⁺)	624.0 *3*	100	2269.4+y	(33/2⁺)	(E2)	0.0123 *6*	
2899.8+x	(37/2⁻)	465.3 *3*	100	2434.5+x	(33/2⁻)	(E2)	0.0252	
3099.7+y	(39/2⁻)	501.9 *3*	100	2597.8+y	(35/2⁻)	(E2)	0.0208	
3452.7+x	(41/2⁻)	552.9 *3*	100	2899.8+x	(37/2⁻)	(E2)	0.0164 *2*	
3475.2+y	(41/2⁺)	581.8 *3*	100	2893.4+y	(37/2⁺)	(E2)	0.0145 *4*	
3678.3+y	(43/2⁻)	578.6 *3*	100	3099.7+y	(39/2⁻)	(E2)	0.0147 *3*	
4088.9+x	(45/2⁻)	636.2 *3*	100	3452.7+x	(41/2⁻)	(E2)	0.0118 *2*	
4116.1+y	(45/2⁺)	640.9 *3*	100	3475.2+y	(41/2⁺)	(E2)	0.01162	
4324.7+y	(47/2⁻)	646.4 *3*	100	3678.3+y	(43/2⁻)	(E2)	0.01140	
4790.5+x	(49/2⁻)	701.6 *6*	100	4088.9+x	(45/2⁻)	[E2]	0.00949	
4849.4+y	(49/2⁺)	733.3 *3*	100	4116.1+y	(45/2⁺)	(E2)	0.00861	
5027.8+y	(51/2⁻)	703.1 *6*	100	4324.7+y	(47/2⁻)	[E2]	0.00944	

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Adopted Levels, Gammas (continued)

$\gamma(^{169}W)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[@]
5546.2+x	(53/2$^-$)	755.7 *6*	100	4790.5+x	(49/2$^-$)	[E2]	0.00807
5671.3+y	(53/2$^+$)	821.9 *3*	100	4849.4+y	(49/2$^+$)	(E2)	0.00674
5784.0+y	(55/2$^-$)	756.2 *6*	100	5027.8+y	(51/2$^-$)	[E2]	0.00806
6354.9+x	(57/2$^-$)	808.7 *6*	100	5546.2+x	(53/2$^-$)	[E2]	0.00698
6568.4+y	(57/2$^+$)	897.1 *3*	100	5671.3+y	(53/2$^+$)	(E2)	0.00562
6594.9+y	(59/2$^-$)	810.9 *6*	100	5784.0+y	(55/2$^-$)		
7224+x?	(61/2$^-$)	869[&]	100	6354.9+x	(57/2$^-$)		

[†] From ^{154}Gd(^{20}Ne,5nγ), except as noted.
[‡] Relative photon branching from each level; intensities are from ^{154}Gd(^{20}Ne,5nγ).
[#] From $\gamma(\theta)$ in ^{154}Gd(^{20}Ne,5nγ), except as noted, assigning $\Delta\pi$=(no) for intraband transitions.
[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[&] Placement of transition in the level scheme is uncertain.

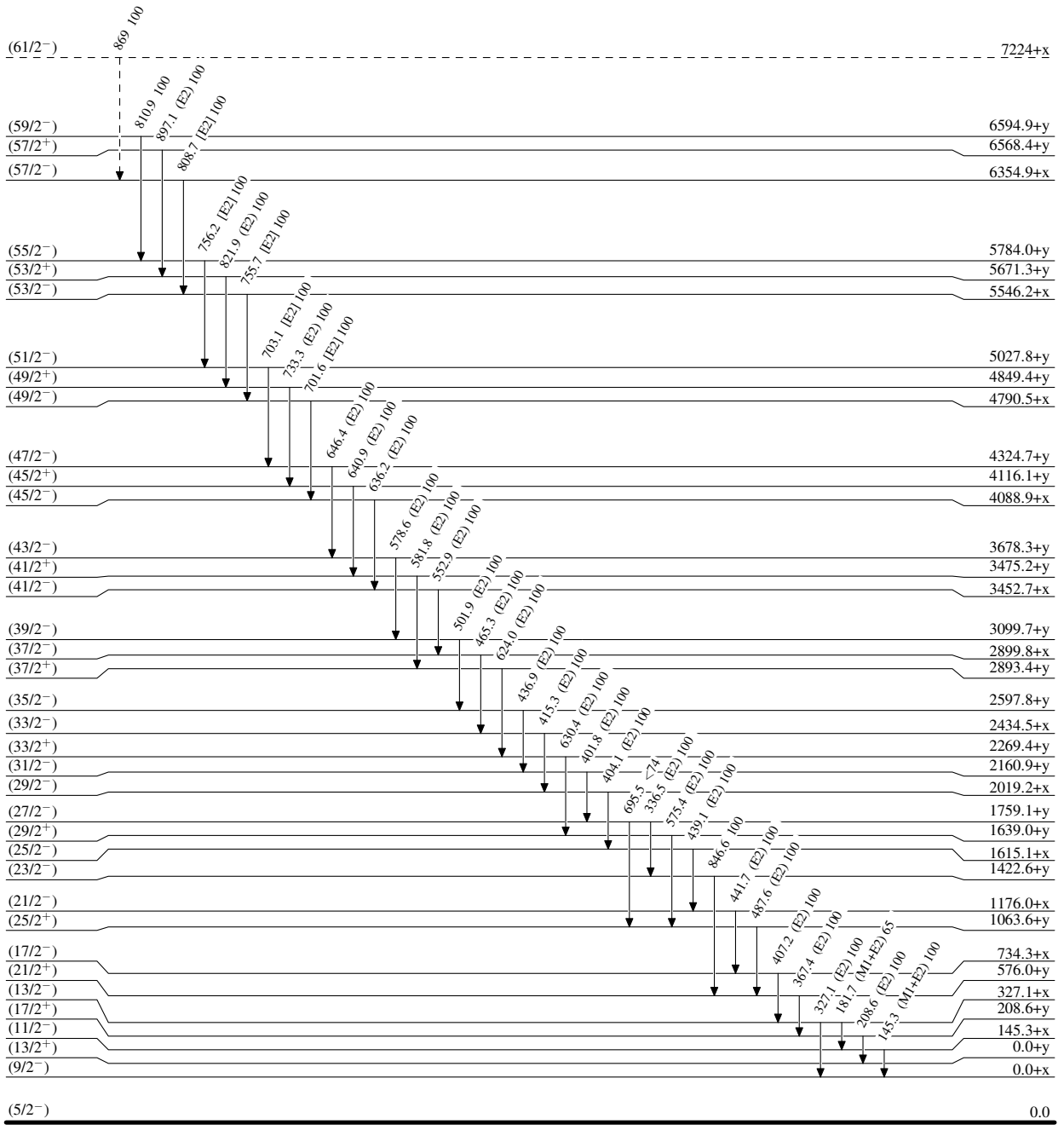
Adopted Levels, Gammas

Legend

Level Scheme

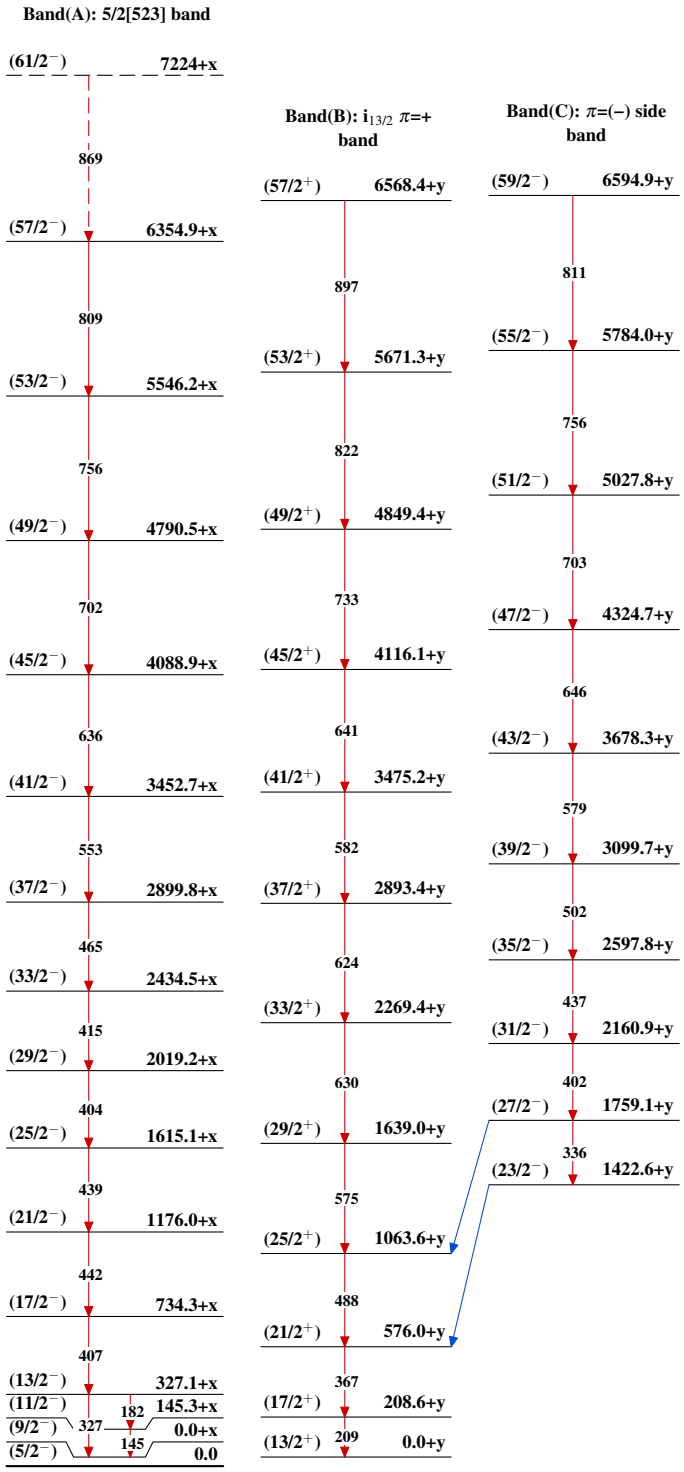
Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{169}_{74}W_{95}$

Adopted Levels, Gammas



$^{169}_{74}W_{95}$