Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. W. Reich	NDS 112,2497 (2011)	1-Jun-2011

Q(β^-)=−1.07×10^4 *syst*; S(n)=1.20×10^4 *syst*; S(p)=−1197 *6*; Q(α)=6328 *7* 2012Wa38
Note: Current evaluation has used the following Q record 12287 syst −1197 *5* 6328 *7* 2009AuZZ.
S(n): ΔS(n)=452 (2009AuZZ).
2003Au03 list S(n)=12290 *450*, from systematics, and the same values as given here for S(p) and Q(α).
Additional information 1.
Experimental studies include: 2006La16; 1997Ir01; 1996Pa01; 1979Ho10.

^{161}Re Levels

Cross Reference (XREF) Flags

A ^{106}Cd(^{58}Ni,p2nγ)
B ^{165}Ir α decay (0.30 ms)

E(level)	J$^\pi$[†]	$T_{1/2}$	XREF	Comments
0[‡]	1/2$^+$	0.44 ms *1*	A	%p=100; %α≤1.4 %p: From 1997Ir01 and 2006La16. %α: From 2006La16. $T_{1/2}$: from p(t) in ^{106}Cd(^{58}Ni,p2nγ) (2006La16). Other: 0.37 ms 4 from 1997Ir01, p(t). Note that a weighted average of the two values yields essentially the same result as that adopted here. J$^\pi$: from the decay characteristics of the p transition to the ^{160}W g.s. (J$^\pi$=0$^+$). Probable configuration=$\pi s_{1/2}$.
123.8 *13*	11/2$^-$	14.7 ms *3*	AB	%p=7.0 *3*; %α=93.0 *3* %p: From 2006La16. Other: %p=4.8 *6* (1997Ir01). Note that a weighted average of these two values yields essentially the same result as the value adopted here. %α: Value assumes the contribution from %ε+%β^+ decay is negligible. E(level): from the energy difference of proton peaks (1997Ir01). J$^\pi$: member of a sequence of (presumably) favored α transitions headed by an 11/2$^-$ level in ^{177}Tl (1999Po09). Probable configuration=$\pi h_{11/2}$. $T_{1/2}$: from 2006La16. Others: 14 ms 2 (α(t), 1996Pa01); 16 ms 1 (α(t), 1997Ir01). Note that a weighted average of these three values yields essentially the same result as the value adopted here. Note also the following: 15.4 ms +17−14 (p(t), 1997Ir01); and 10 ms +15−5 (α(t), 1979Ho10).
681.8?[‡] *2*	(5/2$^+$)		A	
761.20[#] *10*	15/2$^-$		A	
1363.6?[‡] *3*	(9/2$^+$)		A	
1447.30[#] *14*	19/2$^-$		A	
1478.40? *14*			A	
1865.60[@] *15*			A	
1975.7?[‡] *5*	(13/2$^+$)		A	
2022.30[#] *17*	23/2$^-$		A	
2177.0[#] *3*	27/2$^-$		A	
2453.4?[‡] *5*	(17/2$^+$)		A	
2589.91?[@] *18*			A	
2647.4[#] *3*	(31/2$^-$)		A	
2903.11[@] *20*			A	

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Adopted Levels, Gammas (continued)

^{161}Re Levels (continued)

E(level)	J$^{\pi}$[†]	XREF	E(level)	J$^{\pi}$[†]	XREF	E(level)	XREF
2942.9[&] *3*	(31/2$^-$)	A	3630.0[&] *3*	(35/2$^-$)	A	4075.91?[@] *25*	A
3117.9[#] *3*		A	3668.91?[@] *23*		A	4183.7 *4*	A
3308.6[&] *3*	(33/2$^-$)	A	3798.2[&] *4*	(37/2$^-$)	A	4400.8?[&] *5*	A
3331.1[#] *3*		A	3929.0[#] *4*		A		

[†] For the levels populated in the heavy-ion-induced reaction only, the values are those proposed by 2006La16 and are based on the usual considerations of band structure. See the comments in the high-spin data set.
[‡] Band(A): Proposed g.s. band. Probable configuration is $\pi s_{1/2}$.
[#] Band(B): band based on $\pi h_{11/2}$.
[@] Band(C): possible $\pi h_{11/2} \otimes (\nu h_{9/2})^2$ band.
[&] Band(D): level sequence based on (31/2$^-$).

γ(^{161}Re)

All data on the γ radiation are from the ^{106}Cd(^{58}Ni,p2nγ) data set (2006La16).

E$_i$(level)	J$_i^{\pi}$	E$_\gamma$	I$_\gamma$	E$_f$	J$_f^{\pi}$	Mult.
681.8?	(5/2$^+$)	681.8[‡#] *2*	100[‡] *8*	0	1/2$^+$	(E2)
761.20	15/2$^-$	637.4 *1*	100.0 *14*	123.8	11/2$^-$	E2
1363.6?	(9/2$^+$)	681.8[‡#] *2*	100[‡] *8*	681.8?	(5/2$^+$)	(E2)
1447.30	19/2$^-$	686.1 *1*	100.0 *16*	761.20	15/2$^-$	E2
1478.40?		717.0 *1*	100 *8*	761.20	15/2$^-$	E2
1865.60		387.4 *1*	100 *5*	1478.40?		(E2)
		418.3 *1*	84 *4*	1447.30	19/2$^-$	
1975.7?	(13/2$^+$)	612.1[#] *3*	100 *12*	1363.6?	(9/2$^+$)	(E2)
2022.30	23/2$^-$	575.0 *1*	100.0 *18*	1447.30	19/2$^-$	E2
2177.0	27/2$^-$	154.7 *2*	100 *3*	2022.30	23/2$^-$	E2
2453.4?	(17/2$^+$)	477.7[#] *2*	100 *12*	1975.7?	(13/2$^+$)	(E2)
2589.91?		724.3[†] *1*	100 *6*	1865.60		E2
2647.4	(31/2$^-$)	470.5[‡] *1*	100.0[‡] *24*	2177.0	27/2$^-$	
2903.11		313.2[†] *1*	100 *4*	2589.91?		E2
2942.9	(31/2$^-$)	295.6 *1*	21.6 *11*	2647.4	(31/2$^-$)	(M1)
		765.8[‡] *1*	100[‡] *4*	2177.0	27/2$^-$	E2
3117.9		470.5[‡] *1*	100.0[‡] *24*	2647.4	(31/2$^-$)	
3308.6	(33/2$^-$)	365.6 *1*	100 *5*	2942.9	(31/2$^-$)	M1
		662.1 *5*	37 *9*	2647.4	(31/2$^-$)	(M1)
3331.1		213.2 *1*	100 *4*	3117.9		(E2)
3630.0	(35/2$^-$)	321.4 *1*	100 *7*	3308.6	(33/2$^-$)	M1
		985 *2*	36 *14*	2647.4	(31/2$^-$)	
3668.91?		765.8[‡†] *1*	100[‡] *4*	2903.11		E2
3798.2	(37/2$^-$)	168.2 *1*	100 *8*	3630.0	(35/2$^-$)	(M1)
3929.0		597.8 *1*	100 *5*	3331.1		(M1)
4075.91?		406.8[†#] *1*	100 *5*	3668.91?		(M1)
4183.7		254.5 *2*	24 *3*	3929.0		(M1)
		852.9 *2*	100 *10*	3331.1		(E2)
4400.8?		602.4[#] *3*	100 *15*	3798.2	(37/2$^-$)	

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Adopted Levels, Gammas (continued)

$\gamma(^{161}Re)$ (continued)

† The order of the four transitions in this cascade is not unambiguously determined.
‡ Multiply placed with undivided intensity.
# Placement of transition in the level scheme is uncertain.

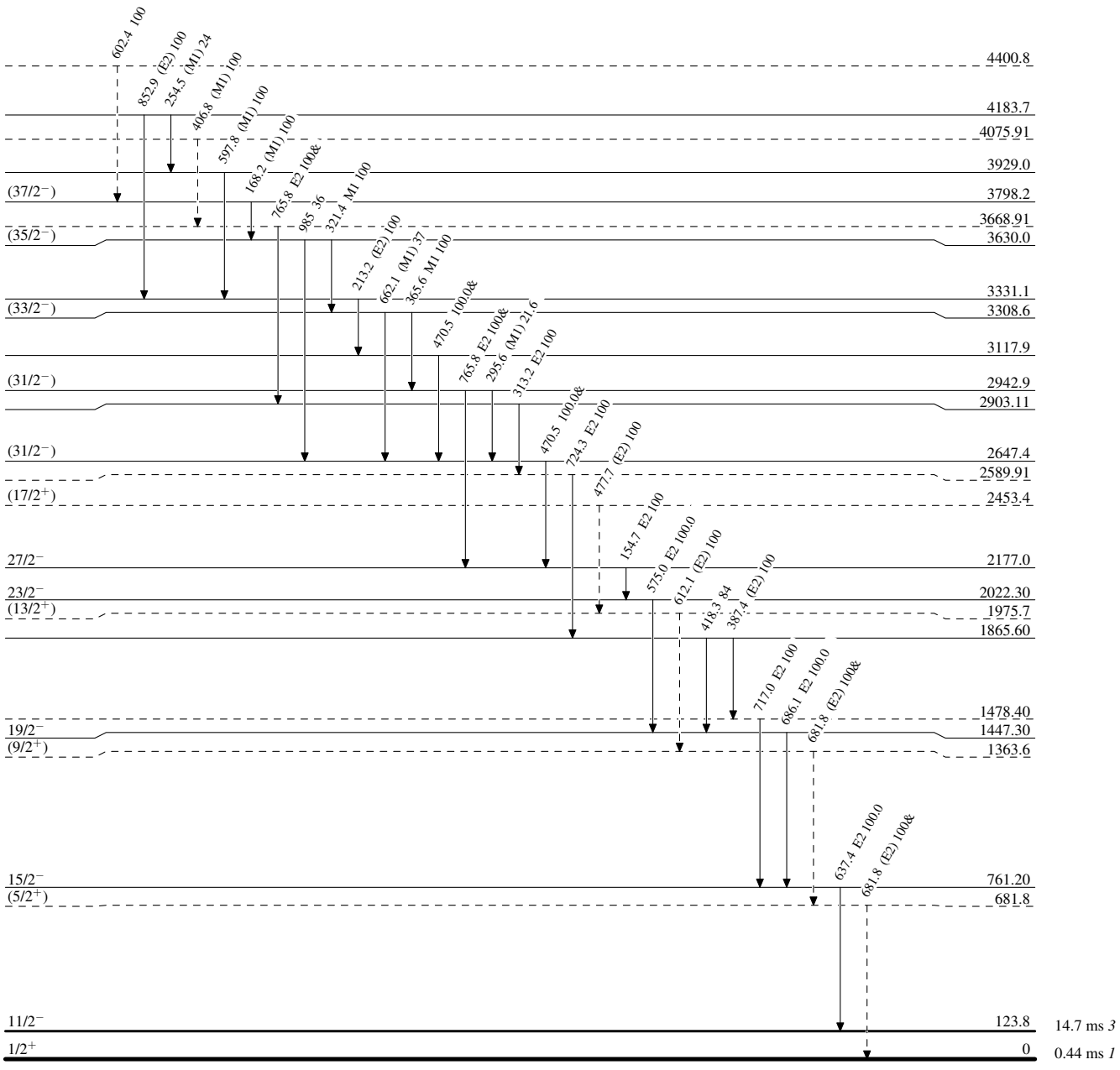
Adopted Levels, Gammas

Legend

Level Scheme

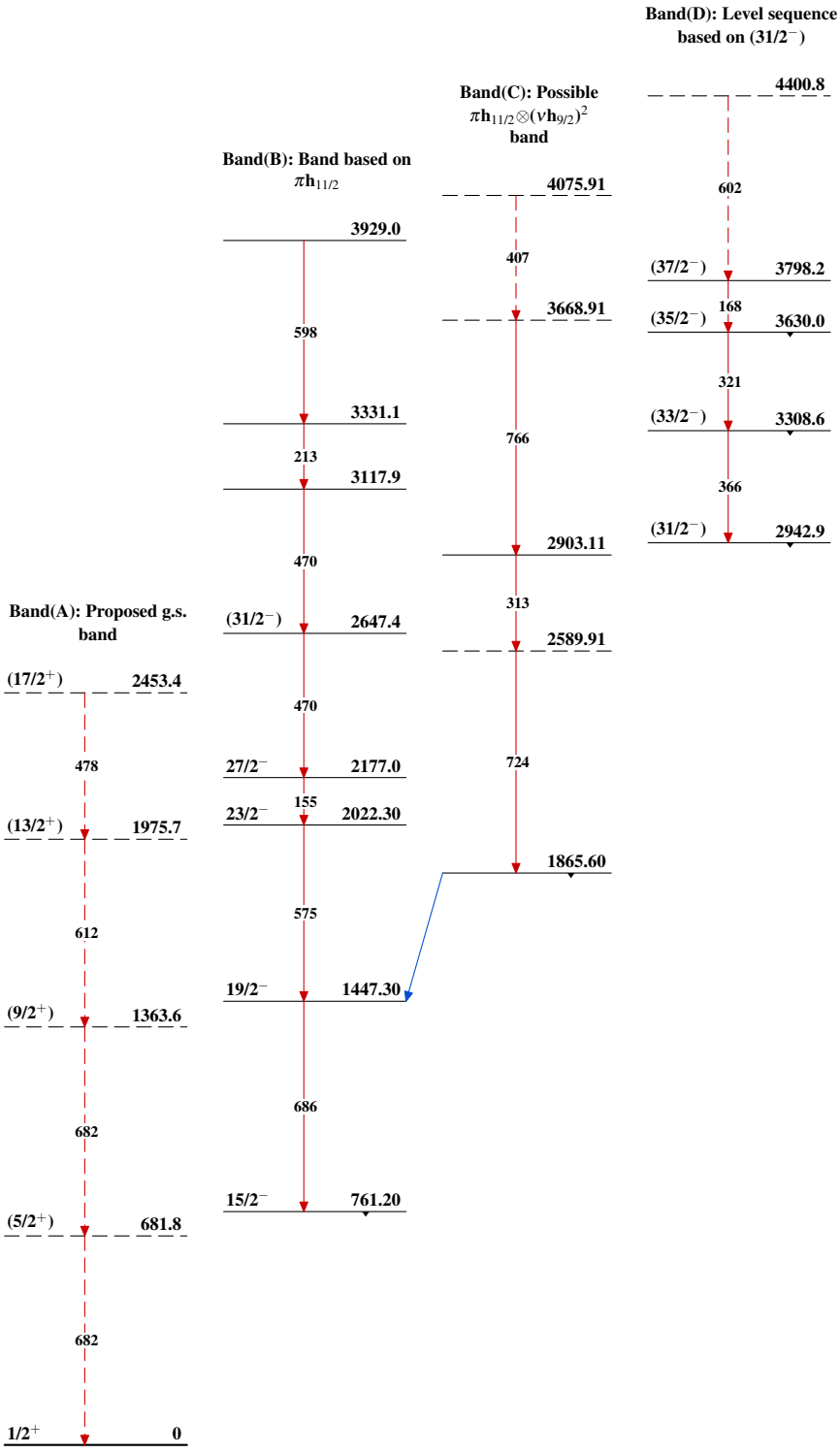
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



$^{161}_{75}Re_{86}$

Adopted Levels, Gammas



$^{161}_{75}Re_{86}$