

Adopted Levels, Gammas

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Balraj Singh	ENSDF	10-Jun-2015

$Q(\beta^-) = -9620$ SY; $S(n) = 11580$ SY; $S(p) = -704$ 6; $Q(\alpha) = 6012$ 8 (2012Wa38)

Estimated uncertainties (2012Wa38): 300 for $Q(\beta^-)$, 200 for $S(n)$.

$S(2n) = 21260$ 160, $S(2p) = 1880$ 30, $Q(\epsilon p) = 6480$ 50 (2012Wa38).

^{163}Re produced and identified by a number of groups using a variety of heavy-ion-induced fusion evaporation reactions, as well as measurements of α -decay chains.

 ^{163}Re LevelsCross Reference (XREF) Flags

- A** ^{167}Ir α decay (30.0 ms)
B ^{167}Ir α decay (28.2 ms)
C $^{106}\text{Cd}(^{60}\text{Ni}, p2n\gamma)$

E(level) [†]	J^π	$T_{1/2}$	XREF	Comments
0.0	$1/2^+$	390 ms 72	A	$\% \alpha = 32$ 3; $\% \epsilon + \% \beta^+ = 68$ 3 J^π : fed by the favored α decay of ^{167}Ir ($J^\pi = 1/2^+$) (2001Da31). Assigned as the $\pi s_{1/2}$ orbital. $T_{1/2}, \% \alpha$: from 1997Da07, from time-correlated events of the recoil nuclei and decay products in double-sided Si strip detectors.
115 [‡] 4	$11/2^-$	214 ms 5	BC	$\% \alpha = 66$ 4; $\% \epsilon + \% \beta^+ = 34$ 4 Additional information 1. E(level): from the energetics of the α and p decays of the two ^{167}Ir activities (2001Da31). J^π : fed by the favored α decay of the ^{167}Ir isomer ($J^\pi = 11/2^-$) (2001Da31). Assigned as the $\pi h_{11/2}$ orbital. $T_{1/2}$: from 1997Da07. Others: 219 ms 23 (1996Pa01); and 260 ms 40 (1979Ho10). $\% \alpha$: From 1997Da07. Method: same as given above for the g.s.. Others: 64 18 (1981Ho10; 82 11 (1996Pa01). Both from parent-daughter correlations.
581.0 [#] 8	(13/2 ⁻)		C	
692.0 [‡] 8	(15/2 ⁻)		C	
1218.0 [#] 10	(17/2 ⁻)		C	
1380.0 [‡] 11	(19/2 ⁻)		C	
1534.0 10			C	
1802.0 13			C	
1828.0 13			C	
1886.0 [#] 12	(21/2 ⁻)		C	
1951.0 15			C	
2069.0 15			C	
2113.0 [‡] 13	(23/2 ⁻)		C	
2172.0 [@] 13			C	
2187.0 15			C	
2269.0 [@] 13			C	
2402.0 15			C	
2461.0 [@] 14			C	
2676.0 18			C	
2845.0 [@] 15			C	
3276.0 [@] 18			C	
x ^{&}			C	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{163}Re Levels (continued)

<u>E(level)[†]</u>	<u>XREF</u>
227.0+x & 10	C
478.0+x & 15	C
738.0+x & 18	C
1087.0+x & 20	C

[†] From least-squares fit to E_γ data, assuming 1 keV uncertainty for each γ ray.

[‡] Band(A): $\pi h_{11/2}$ band, $\alpha = -1/2$.

Band(a): $\pi h_{11/2}$ band, $\alpha = +1/2$.

@ Band(B): Possible 3-qp band.

& Band(C): Possible 3-qp band.

 $\gamma(^{163}\text{Re})$

<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ[†]</u>	<u>E_f</u>	<u>J_f^π</u>	<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ[†]</u>	<u>E_f</u>	<u>J_f^π</u>
581.0	(13/2 ⁻)	466	115	11/2 ⁻	2172.0		792	1380.0	(19/2 ⁻)
692.0	(15/2 ⁻)	111	581.0	(13/2 ⁻)	2187.0		807	1380.0	(19/2 ⁻)
		577	115	11/2 ⁻	2269.0		97	2172.0	
1218.0	(17/2 ⁻)	526	692.0	(15/2 ⁻)			156	2113.0	(23/2 ⁻)
		637	581.0	(13/2 ⁻)			383	1886.0	(21/2 ⁻)
1380.0	(19/2 ⁻)	162	1218.0	(17/2 ⁻)	2402.0		1022	1380.0	(19/2 ⁻)
		688	692.0	(15/2 ⁻)	2461.0		192	2269.0	
1534.0		842	692.0	(15/2 ⁻)			348	2113.0	(23/2 ⁻)
		953	581.0	(13/2 ⁻)	2676.0		274	2402.0	
1802.0		1110	692.0	(15/2 ⁻)	2845.0		384	2461.0	
1828.0		1247	581.0	(13/2 ⁻)			576	2269.0	
1886.0	(21/2 ⁻)	506	1380.0	(19/2 ⁻)	3276.0		431	2845.0	
		668	1218.0	(17/2 ⁻)	227.0+x		227	x	
1951.0		417	1534.0		478.0+x		251	227.0+x	
		572 [‡]	1380.0	(19/2 ⁻)	738.0+x		260	478.0+x	
2069.0		689	1380.0	(19/2 ⁻)	1087.0+x		349	738.0+x	
2113.0	(23/2 ⁻)	733	1380.0	(19/2 ⁻)					

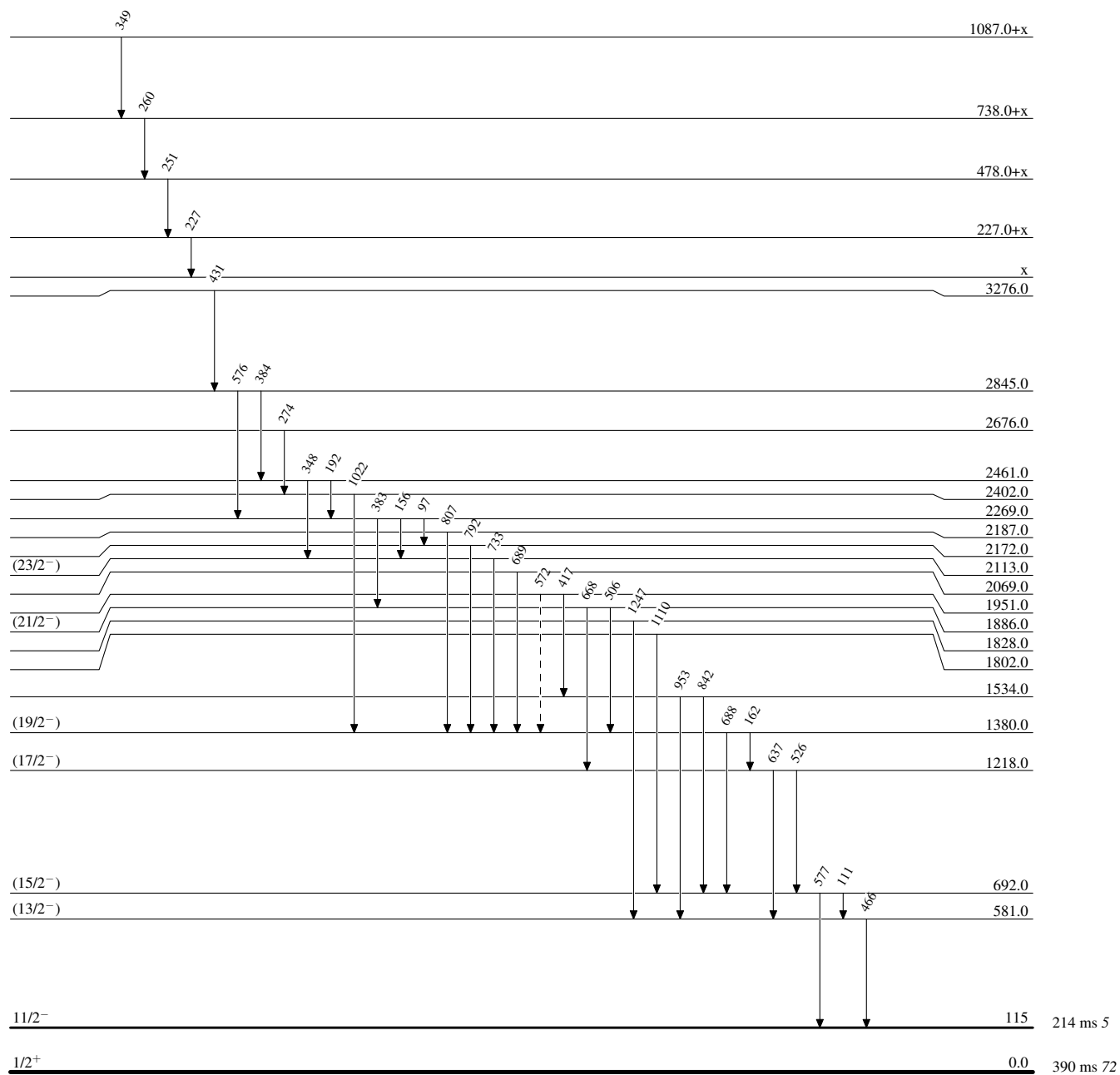
[†] From $^{106}\text{Cd}(^{60}\text{Ni}, p2n\gamma)$.

[‡] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

-----► γ Decay (Uncertain)


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