Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	A. M. Mattera, S. Zhu, A. B. Hayes, E. A. Mccutchan	NDS 172, 543 (2021)	1-Jan-2021

Q(β^-)=−5866 *SY*; S(n)=8049 *SY*; S(p)=3384 *21*; Q(α)=8549 *5* 2017Wa10
ΔQ(β^-)=238, ΔS(n)=115 (2017Wa10).
2001Ma74: A 26 d *7*, E_α=5.53 MeV *4* transition has been observed in Lr-No fraction in 24-GeV p on W at CERN. Assignment to ^{252}No or ^{254}Lr isomer is suggested. Calculations for various scenarios for such transitions are given.

^{252}No Levels

Cross Reference (XREF) Flags

A ^{206}Pb(^{48}Ca,2nγ)
B ^{256}Rf α decay
C ^{252}No IT decay (109 ms)

E(level)[†‡]	J$^\pi$[#]	$T_{1/2}$	XREF	Comments
0[@]	0$^+$	2.46 s *2*	ABC	%α=65.3 *5*; %ε+%β^+=1.7 *9*; %SF=33.0 *8* $T_{1/2}$: weighted average of 2.44 *4* (2001Og08), 2.46 *5* (2006Le29), 2.42 *6* (2007Su19) and 2.47 *2* (2011Ga19). Other measured values: 2.3 *1* (2012Sv02), 2.43 *13* (2012He01), 2.38 s *+26−22* (2003Be18), 2.4 s *3* (2002He01), 2.4 s *3* (2001Ju05), 2.44 s *12* (1994Wi17), 2.25 s *+18−16* (1989La07), 2.30 s *22* (1977Be09), 2.3 s (1976Fl13), 2.4 s *2* (1970Og05), 4.5 s *15* (1967Mi03), 2.3 s *3* (1967Gh01). %SF: weighted average of 26.9 *19* (1977Be09), 32.2 *5* (2001Og08), 32 *3* (2003Be18), 29.3 *9* (2011Ga19), 33.9 *3* (2012Su22). Other results: 21.6 *42* (1993An10), %SF/%α=0.5 (1967Gh01), %α/%SF=3.3 *8* (2006Le29). The result %SF=29 *2* (2007Su19) was not included in the calculation: not clear from the publication whether the value is a new result by the authors. %ε+%β^+: deduced from the measured %α and %SF. Compatible with the limit (ε+β^+)/α<1.6% *5* set by 2002He01. Other results: %ε+%β^+<10 (68% confidence level) estimated by 2001Og08. %α: from 2012Su22. Other results: %α=71 *3* (2007Su19), not included in the calculation (see %SF). $\delta<r^2>^{254,252}$=−0.105 fm^2 *7* (stat) *7* (syst) (2018Ra11).
46.4[@] *10*	(2$^+$)		A C	
153.6[@] *13*	(4$^+$)		A C	
320.6[@] *13*	(6$^+$)		A C	
544.4[@] *13*	(8$^+$)		A C	
821.6[@] *13*	(10$^+$)		A C	
929.1[&] *13*	(2$^-$)		A C	
966.4[&] *13*	(3$^-$)		A C	
1014.9[&] *13*	(4$^-$)		A C	
1073.4[&] *13*	(5$^-$)		A C	
1147.9[&] *13*	(6$^-$)		A C	
1150.0[@] *13*	(12$^+$)		A C	
1229.8[&] *14*	(7$^-$)		A C	
1254.6[a] *15*	(8$^-$)	109 ms *3*	A C	%IT≈100 $T_{1/2}$: from (ce)(ER) correlation (2012Su22).
1360.6[b] *17*	(9$^-$)		A	
1478.6[a] *17*	(10$^-$)		A	

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Adopted Levels, Gammas (continued)

^{252}No Levels (continued)

E(level)†‡	Jπ#	XREF	E(level)†‡	Jπ#	XREF	E(level)†‡	Jπ#	XREF
1525.5[@] *14*	(14+)	A	2232.6[b] *19*	(15−)	A	3027.6[b] *21*	(19−)	A
1607.6[b] *17*	(11−)	A	2395.4[@] *16*	(18+)	A	3252.6[a] *22*	(20−)	A
1747.6[a] *18*	(12−)	A	2414.6[a] *20*	(16−)	A	3480.6[b] *22*	(21−)	A
1898.6[b] *18*	(13−)	A	2607.6[b] *20*	(17−)	A	3719.6[a] *23*	(22−)	A
1942.2[@] *14*	(16+)	A	2816.6[a] *21*	(18−)	A			
2060.6[a] *19*	(14−)	A	2879.1[@] *18*	(20+)	A			

† From a least-square fit to Eγ data, assuming 1 keV uncertainty where none was available.
‡ From ^{206}Pb(^{48}Ca,2nγ).
# from band assignment.
@ Band(A): g.s. band.
& Band(B): Possible octupole band.
a Band(C): ν7/2[624]⊗ν9/2[734],α=0 (2012Su22). Configuration=π9/2[624]⊗π7/2[514] ruled out from consideration of g_K value.
b Band(c): ν7/2[624]⊗ν9/2[734],α=1 (2012Su22).

γ(^{252}No)

E_i(level)	J_i^π	E_γ†	I_γ†	E_f	J_f^π	Mult.	α@	Comments
46.4	(2+)	(46.4 *10*)		0	0+			E_γ: estimated from extrapolation of spin vs. ω expansion in 2002He01.
153.6	(4+)	107		46.4	(2+)			
320.6	(6+)	166.9 *3*	100	153.6	(4+)	(E2)‡	3.09	α(K)=0.125 *4*; α(L)=2.30 *7*; α(M)=0.666 *20*; α(N+..)=0.220 *7*
544.4	(8+)	223.8 *2*	100	320.6	(6+)	(E2)‡	0.97	α(K)=0.124 *4*; α(L)=0.660 *20*; α(M)=0.190 *6*; α(N+..)=0.0626 *19*
821.6	(10+)	277.2 *2*	100	544.4	(8+)			
929.1	(2−)	883		46.4	(2+)			
966.4	(3−)	920		46.4	(2+)			
1014.9	(4−)	86		929.1	(2−)			
		861		153.6	(4+)			
1073.4	(5−)	107		966.4	(3−)			
		920		153.6	(4+)			
1147.9	(6−)	75		1073.4	(5−)			
		133		1014.9	(4−)			
		827		320.6	(6+)			
1150.0	(12+)	328.4 *3*	100	821.6	(10+)			
1229.8	(7−)	156		1073.4	(5−)			
		685		544.4	(8+)			
		910		320.6	(6+)	(E1)		Mult.: from intensity balance in IT decay (109 ms).
1254.6	(8−)	107#		1147.9	(6−)			E_γ: from ^{252}No IT decay.
		710		544.4	(8+)			
1360.6	(9−)	106#		1254.6	(8−)			
1478.6	(10−)	118#		1360.6	(9−)			
		224		1254.6	(8−)			
1525.5	(14+)	375.5 *4*	100	1150.0	(12+)			
1607.6	(11−)	129#		1478.6	(10−)			
		247		1360.6	(9−)			
1747.6	(12−)	140#		1607.6	(11−)			

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Adopted Levels, Gammas (continued)

γ(^{252}No) (continued)

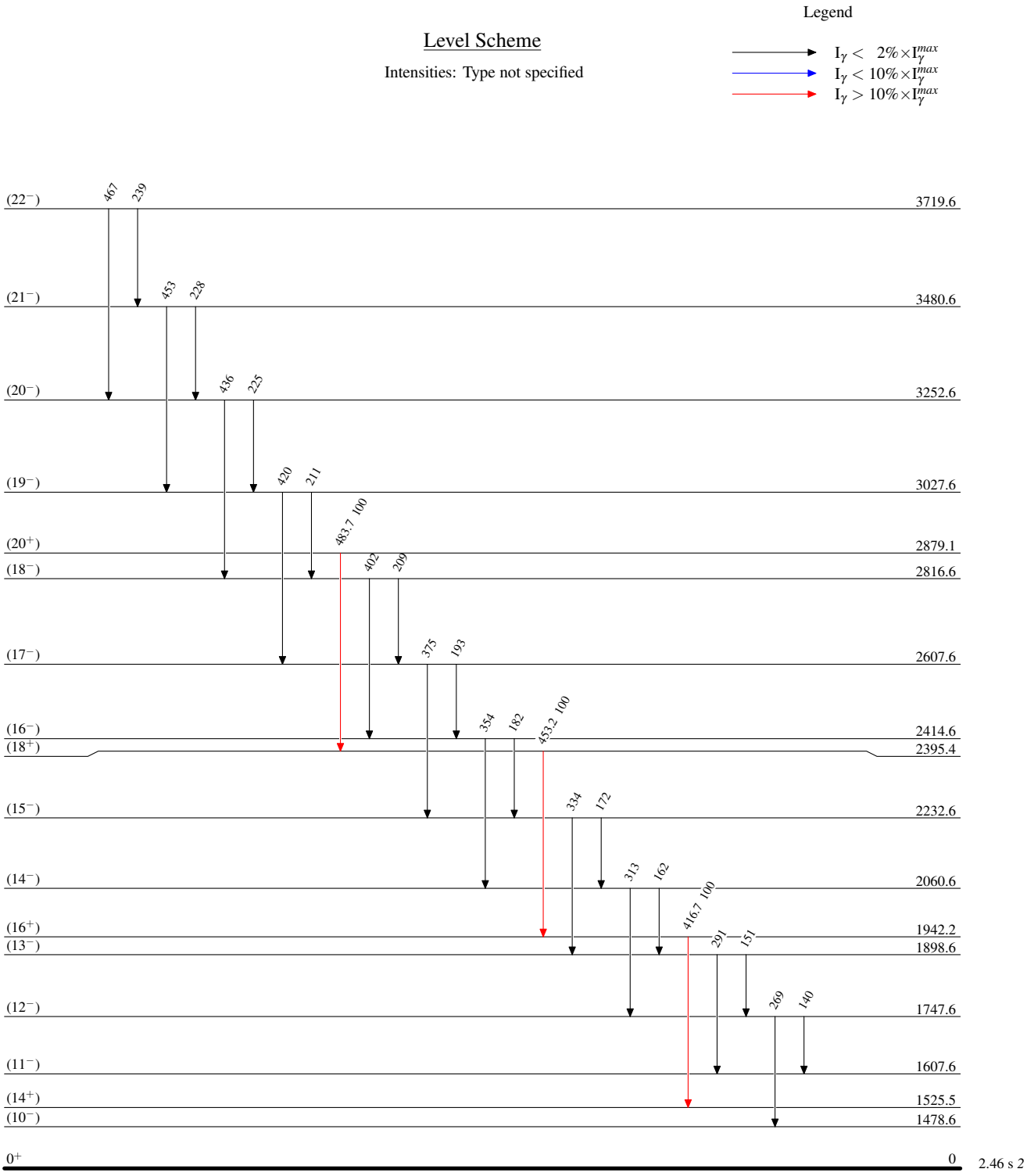
E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
1747.6	(12$^-$)	269		1478.6	(10$^-$)	2607.6	(17$^-$)	375		2232.6	(15$^-$)
1898.6	(13$^-$)	151#		1747.6	(12$^-$)	2816.6	(18$^-$)	209		2607.6	(17$^-$)
		291		1607.6	(11$^-$)			402		2414.6	(16$^-$)
1942.2	(16$^+$)	416.7 *4*	100	1525.5	(14$^+$)	2879.1	(20$^+$)	483.7 *7*	100	2395.4	(18$^+$)
2060.6	(14$^-$)	162		1898.6	(13$^-$)	3027.6	(19$^-$)	211		2816.6	(18$^-$)
		313		1747.6	(12$^-$)			420		2607.6	(17$^-$)
2232.6	(15$^-$)	172		2060.6	(14$^-$)	3252.6	(20$^-$)	225		3027.6	(19$^-$)
		334		1898.6	(13$^-$)			436		2816.6	(18$^-$)
2395.4	(18$^+$)	453.2 *7*	100	1942.2	(16$^+$)	3480.6	(21$^-$)	228#		3252.6	(20$^-$)
2414.6	(16$^-$)	182		2232.6	(15$^-$)			453		3027.6	(19$^-$)
		354		2060.6	(14$^-$)	3719.6	(22$^-$)	239#		3480.6	(21$^-$)
2607.6	(17$^-$)	193		2414.6	(16$^-$)			467		3252.6	(20$^-$)

† From ^{206}Pb(^{48}Ca,2nγ).
‡ From comparison of expected and observed transition intensities in the band.
# Weak 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.

Adopted Levels, Gammas

Level Scheme

Intensities: Type not specified

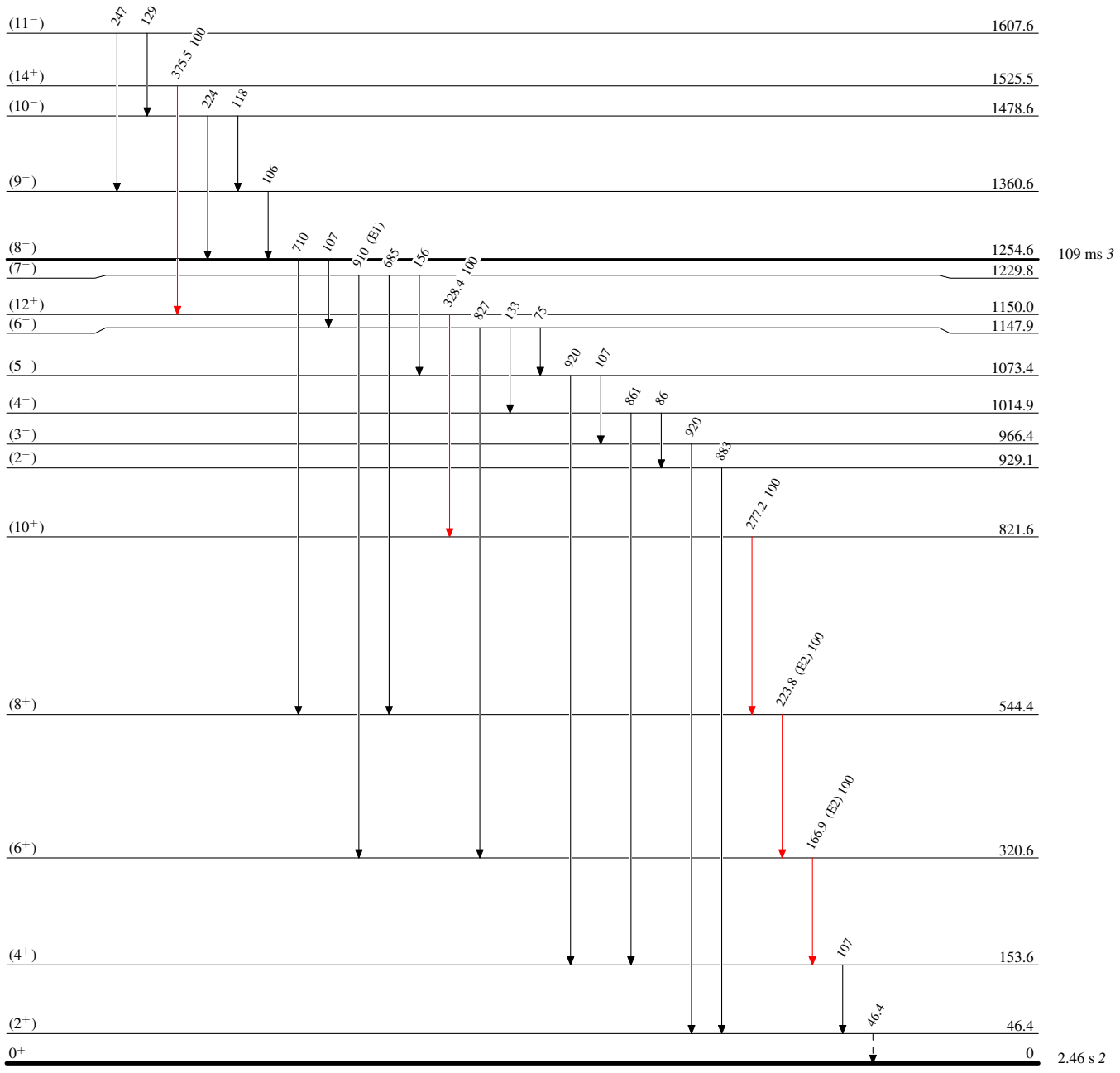


$^{252}_{102}No_{150}$

Adopted Levels, Gammas

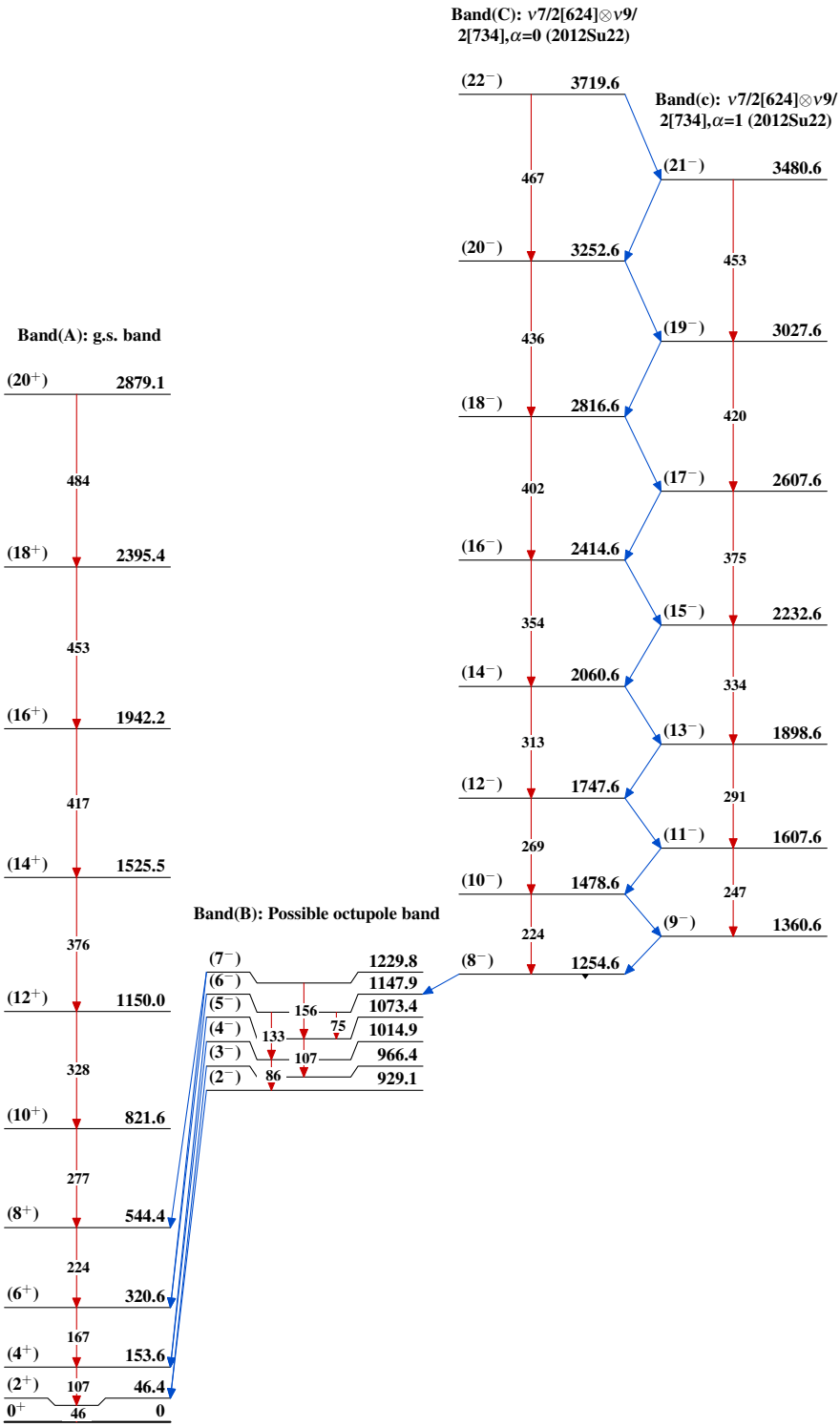
Level Scheme (continued)

Intensities: Type not specified



$^{252}_{102}No_{150}$

Adopted Levels, Gammas



$^{252}_{102}No_{150}$