^{116}Cd(^{19}F,5nγ),^{124}Te(^{10}B,4nγ) 1987Pa27,2001Ko30

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93, 33 (2001)	11-May-2001

1987Pa27: ^{116}Cd(^{19}F,5nγ) E=76 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$.

2001Ko30: ^{124}Te(^{10}B,4nγ) E=51 MeV. Measured Eγ, $\gamma\gamma$, $\gamma\gamma(\theta)$ using Compton-suppressed HPGe detector array positioned At three angles. Deduced Chiral doublet of bands based on $\pi h_{11/2}\nu h_{11/2}$ configuration.

Additional information 1.

^{130}La Levels

E(level)	J$^\pi$@	E(level)	J$^\pi$@	E(level)	J$^\pi$@	E(level)	J$^\pi$@
0.0+x†		802.3+x[b] 6	(11$^+$)	1777.5+x[#d]	(13$^+$)	3098.6+x[b] 10	(17$^+$)
88.4+x†[a] 7	(6$^-$)	947.0+x[&] 4	(11$^-$)	1970.9+x[a] 4	(14$^-$)	3291.9+x[&] 5	(17$^-$)
113.9+x† 4		1048.4+x[c] 7	(12$^+$)	2162.3+x[#e]	(14$^+$)	3544.4+x[c] 7	(18$^+$)
160.4+x[&]	(7$^-$)	1077.5+x[#d]	(11$^+$)	2195.4+x[b] 7	(15$^+$)	3773.3+x[a] 5	(18$^-$)
278.5+x[a] 4	(8$^-$)	1250.3+x[a] 4	(12$^-$)	2386.2+x[&] 5	(15$^-$)	4295.5+x?[&] 6	(19$^-$)
385.4+x[b] 4	(9$^+$)	1423.2+x[b] 7	(13$^+$)	2588.7+x[c] 7	(16$^+$)	4595+x?[c] 1	(20$^+$)
456.2+x[&] 4	(9$^-$)	1434.3+x[#e]	(12$^+$)	2589.5+x[#d]	(15$^+$)	4824.5+x?‡[a] 6	(20$^-$)‡
522.5+x[c] 6	(10$^+$)	1598.0+x[&] 4	(13$^-$)	2819.4+x[a] 5	(16$^-$)	5371+x?‡[&] 1	(21$^-$)‡
677.3+x[a] 4	(10$^-$)	1749.3+x[c] 7	(14$^+$)	2960.3+x[#e]	(16$^+$)		

† From Adopted Levels.

‡ Uncertain level from 1987Pa27, not given in Adopted Levels.

Level from 2001Ko30, As a part of Chiral doublet structure of $\pi h_{11/2}\nu h_{11/2}$ configuration.

@ Based on band assignments of 1987Pa27 and 2001Ko30. The assignment of J$^\pi$=(9$^+$) to the bandhead of $\pi h_{11/2}\nu h_{11/2}$ configuration is based on detailed systematics analysis by 1996Li13 for odd-odd nuclides In α=130 region. IT should Be noted that J$^\pi$ assignments given by 1989Go04 and 1989Go06 are lower by 3 units of spin for $\pi h_{11/2}\nu h_{11/2}$ and $\pi h_{11/2}\nu g_{7/2}$ configurations.

& Band(A): $\pi h_{11/2}\nu g_{7/2}$, α=1.

a Band(a): $\pi h_{11/2}\nu g_{7/2}$, α=0.

b Band(B): $\pi h_{11/2}\nu h_{11/2}$, α=1. Bandhead is assigned (8$^+$) In 1987Pa27, revised to (9$^+$) In 2001Ko30 and 1996Li13.

c Band(b): $\pi h_{11/2}\nu h_{11/2}$, α=0.

d Band(C): doublet (Chiral) partner of $\pi h_{11/2}\nu h_{11/2}$, α=1 (2001Ko30).

e Band(c): doublet (Chiral) partner of $\pi h_{11/2}\nu h_{11/2}$, α=0 (2001Ko30).

$\gamma(^{130}$La)

E$_\gamma$†	I$_\gamma$†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.#	Comments
72.0@ 5		160.4+x	(7$^-$)	88.4+x	(6$^-$)		
113.9@ 5		113.9+x		0.0+x			
118.1 2	72.6 9	278.5+x	(8$^-$)	160.4+x	(7$^-$)	D+Q	A$_2$=−0.31 3, A$_4$=−0.12 3. Note that negative A$_4$ is not allowed for a ΔJ=1 transition (evaluator).
137.1 2	100.0 10	522.5+x	(10$^+$)	385.4+x	(9$^+$)	D+Q	A$_2$=−0.30 3, A$_4$=−0.07 3. Note that negative A$_4$ is not allowed for a ΔJ=1 transition (evaluator).
177.7 2	33.6 6	456.2+x	(9$^-$)	278.5+x	(8$^-$)	D+Q	A$_2$=−0.47 4, A$_4$=+0.08 4.
221.1 2	19.1 5	677.3+x	(10$^-$)	456.2+x	(9$^-$)	D+Q	A$_2$=−0.35 4, A$_4$=−0.06 4. Note that negative A$_4$ is not allowed for a ΔJ=1 transition (evaluator).
246.1 2	46.7 7	1048.4+x	(12$^+$)	802.3+x	(11$^+$)	D	A$_2$=−0.29 4, A$_4$=+0.01 4.

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^{116}Cd(^{19}F,5nγ),^{124}Te(^{10}B,4nγ) 1987Pa27,2001Ko30 (continued)

γ(^{130}La) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
269.7 *2*	12.3[&] *8*	947.0+x	(11$^-$)	677.3+x	(10$^-$)	D+Q	A_2=−0.17 *3*, A_4=−0.12 *3*. Note that negative A_4 is not allowed for a ΔJ=1 transition (evaluator).
272.1		385.4+x	(9$^+$)	113.9+x			
279.8 *2*	71.7 *9*	802.3+x	(11$^+$)	522.5+x	(10$^+$)	D+Q	A_2=−0.17 *3*, A_4=+0.05 *4*.
295.8 *2*	2.3 *3*	456.2+x	(9$^-$)	160.4+x	(7$^-$)		
303.4 *2*	5.7 *4*	1250.3+x	(12$^-$)	947.0+x	(11$^-$)	D+Q	A_2=−0.42 *8*, A_4=+0.31 *8*.
326.1 *2*	16.0[&] *5*	1749.3+x	(14$^+$)	1423.2+x	(13$^+$)		
347.4 *2*	4.2 *4*	1598.0+x	(13$^-$)	1250.3+x	(12$^-$)		
357[‡]		1434.3+x	(12$^+$)	1077.5+x	(11$^+$)		
372[‡][a]		2960.3+x	(16$^+$)	2589.5+x	(15$^+$)		
372.6 *2*	1.7 *5*	1970.9+x	(14$^-$)	1598.0+x	(13$^-$)		
374.8 *2*	32.2[&] *7*	1423.2+x	(13$^+$)	1048.4+x	(12$^+$)		
385[‡]		2162.3+x	(14$^+$)	1777.5+x	(13$^+$)		
393.3 *2*	3.0 *4*	2588.7+x	(16$^+$)	2195.4+x	(15$^+$)		
398.8 *2*	5.8 *4*	677.3+x	(10$^-$)	278.5+x	(8$^-$)		A_2=+0.12 *5* (A_4 set to 0).
416[a]		2386.2+x	(15$^-$)	1970.9+x	(14$^-$)		
416.9 *2*	6.4[&] *5*	802.3+x	(11$^+$)	385.4+x	(9$^+$)		
426[‡][a]		2589.5+x	(15$^+$)	2162.3+x	(14$^+$)		
446.1 *2*	4.0 *4*	2195.4+x	(15$^+$)	1749.3+x	(14$^+$)		
490.8 *2*	6.1 *4*	947.0+x	(11$^-$)	456.2+x	(9$^-$)	(Q)	A_2=+0.25 *6* (A_4 set to 0).
510[a] *1*	<1	3098.6+x	(17$^+$)	2588.7+x	(16$^+$)		γ not given In 2001Ko30.
525.9 *2*	20.9 *7*	1048.4+x	(12$^+$)	522.5+x	(10$^+$)		A_2=+0.08 *4* (A_4 set to 0).
555[‡]		1077.5+x	(11$^+$)	522.5+x	(10$^+$)		
573.1 *2*	6.8 *5*	1250.3+x	(12$^-$)	677.3+x	(10$^-$)	(Q)	A_2=+0.35 *7* (A_4 set to 0).
620.9 *2*	10.5 *5*	1423.2+x	(13$^+$)	802.3+x	(11$^+$)		A_2=+0.012 *8* (A_4 set to 0).
632[‡]		1434.3+x	(12$^+$)	802.3+x	(11$^+$)		
650.8 *2*	6.4 *4*	1598.0+x	(13$^-$)	947.0+x	(11$^-$)	(Q)	A_2=+0.12 *5*, A_4=−0.05 *6*.
700[‡]		1777.5+x	(13$^+$)	1077.5+x	(11$^+$)		
700.9 *2*	21.3 *8*	1749.3+x	(14$^+$)	1048.4+x	(12$^+$)		A_2=+0.07 *6* (A_4 set to 0).
721.0 *2*	3.8 *4*	1970.9+x	(14$^-$)	1250.3+x	(12$^-$)	Q	A_2=+0.27 *5*, A_4=−0.08 *6*.
728[‡][a]		2162.3+x	(14$^+$)	1434.3+x	(12$^+$)		
730[‡]		1777.5+x	(13$^+$)	1048.4+x	(12$^+$)		
740[‡]		2162.3+x	(14$^+$)	1423.2+x	(13$^+$)		
767[‡][a]		2960.3+x	(16$^+$)	2195.4+x	(15$^+$)		
772.2 *2*	5.1 *5*	2195.4+x	(15$^+$)	1423.2+x	(13$^+$)		
788.2 *2*	3.1 *3*	2386.2+x	(15$^-$)	1598.0+x	(13$^-$)	(Q)	A_2=+0.50 *5* (A_4 set to 0).
798[‡]		2960.3+x	(16$^+$)	2162.3+x	(14$^+$)		
812[‡]		2589.5+x	(15$^+$)	1777.5+x	(13$^+$)		
839.4 *2*	12.7 *6*	2588.7+x	(16$^+$)	1749.3+x	(14$^+$)		
842[@]		2589.5+x	(15$^+$)	1749.3+x	(14$^+$)		
848.5 *2*	2.4 *5*	2819.4+x	(16$^-$)	1970.9+x	(14$^-$)		
903 *1*	1.5 *4*	3098.6+x	(17$^+$)	2195.4+x	(15$^+$)		
905.7 *2*	1.6 *3*	3291.9+x	(17$^-$)	2386.2+x	(15$^-$)		
953.8 *2*	1.3 *3*	3773.3+x	(18$^-$)	2819.4+x	(16$^-$)		
955.7 *2*	2.7 *4*	3544.4+x	(18$^+$)	2588.7+x	(16$^+$)		
1003.6[a] *2*	1.8 *4*	4295.5+x?	(19$^-$)	3291.9+x	(17$^-$)		E_γ: placement treated as uncertain (evaluator) since no such γ reported by 1989Go04 from this band.
1051[‡][a]		4595+x?	(20$^+$)	3544.4+x	(18$^+$)		E_γ: 1041 *1*, Iγ<1 (1987Pa27).
1051.2[a] *2*	1.0 *2*	4824.5+x?	(20$^-$)	3773.3+x	(18$^-$)		
1076[a] *1*	<1	5371+x?	(21$^-$)	4295.5+x?	(19$^-$)		

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^{116}Cd(^{19}F,5nγ),^{124}Te(^{10}B,4nγ) 1987Pa27,2001Ko30 (continued)

γ(^{130}La) (continued)

† From 1987Pa27 unless otherwise stated.
‡ From 2001Ko30.
# From $\gamma(\theta)$.
@ From adopted gammas.
& Doublet.
a Placement of transition in the level scheme is uncertain.

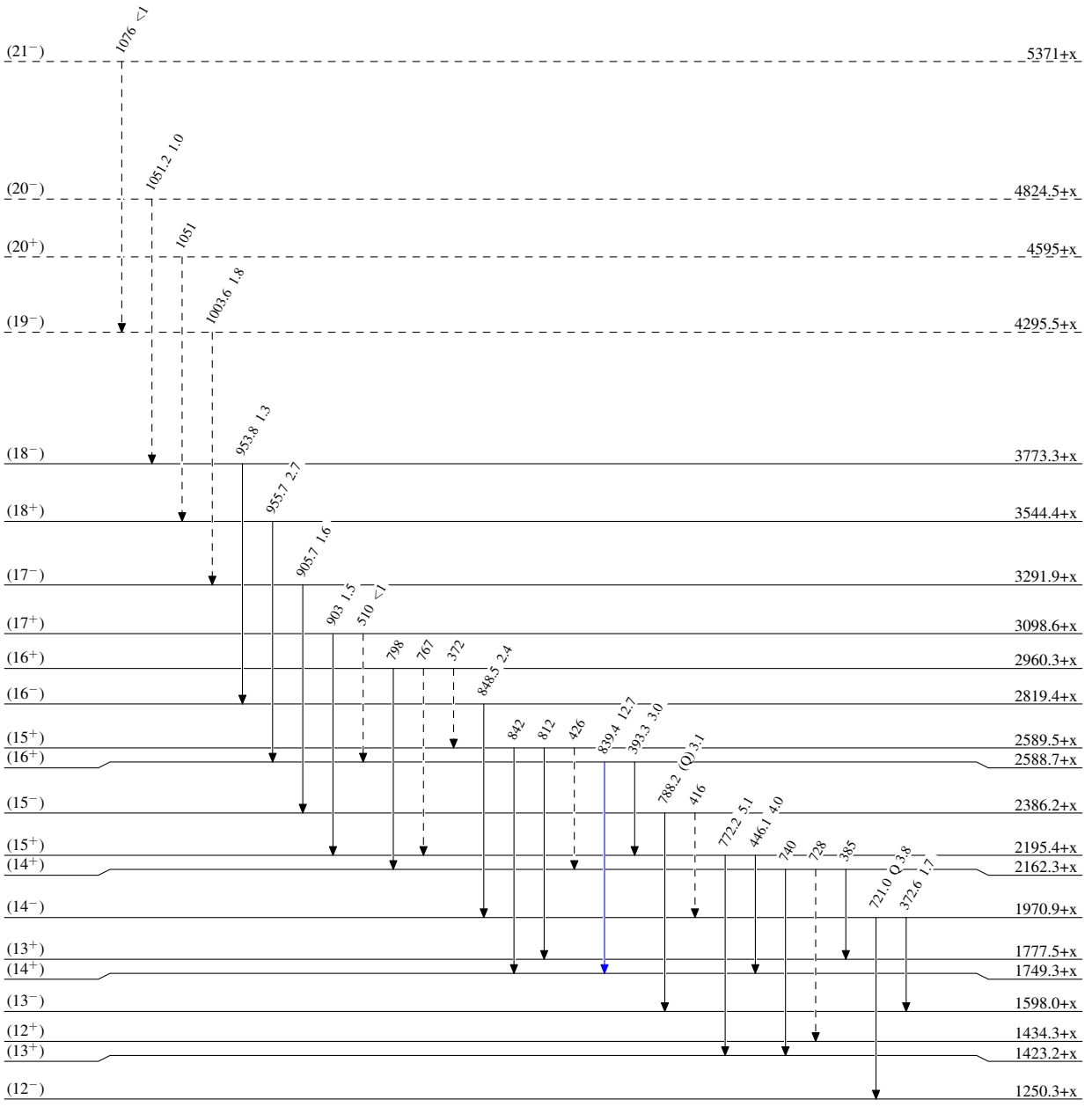
^{116}Cd(^{19}F,5nγ),^{124}Te(^{10}B,4nγ) 1987Pa27,2001Ko30

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)

Level Scheme

Intensities: Relative I_γ



$^{130}_{57}La_{73}$

^{116}Cd(^{19}F,5nγ),^{124}Te(^{10}B,4nγ) 1987Pa27,2001Ko30

Level Scheme (continued)

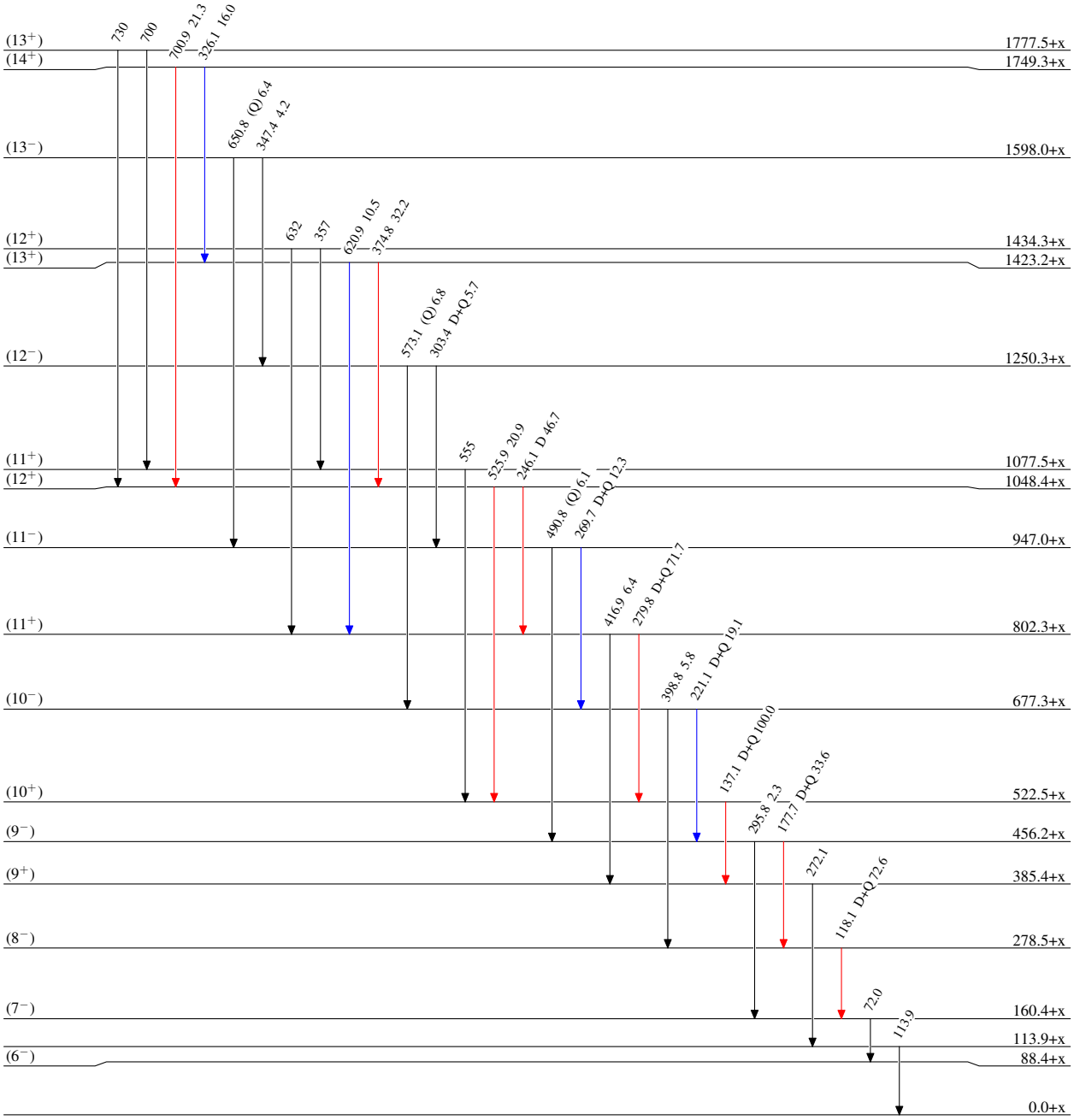
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

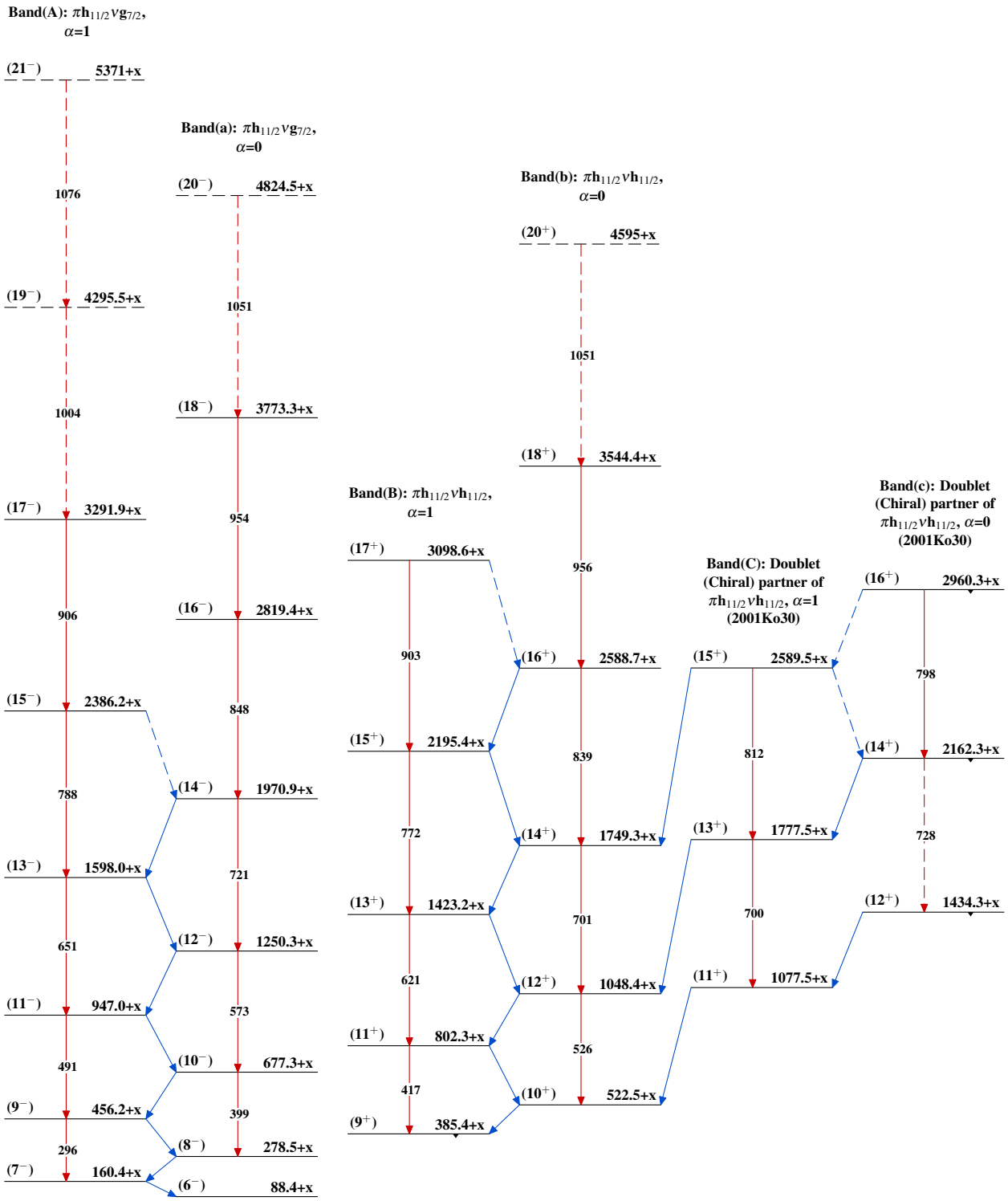
$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{130}_{57}La_{73}$

^{116}Cd(^{19}F,5nγ),^{124}Te(^{10}B,4nγ) 1987Pa27,2001Ko30



$^{130}_{57}La_{73}$