(HI,xnγ) 1995La08,1994La04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. -c. Wu	NDS 106, 619 (2005)	1-Nov-2005

1995La08: ^{154}Gd(^{35}Cl,4nγ), E=166 MeV, ^{154}Gd(^{36}Ar,p4nγ) E=184 MeV; enriched target; CAESAR array comprised of six Compton-suppressed HPGe detectors and an unsuppressed LEPS detector. Measured Eγ, Iγ, γ(q), γγ, γγ(t), FMA-γ coin and γγ(θ)(DCO). See also, 1994La04.

^{185}Tl Levels

E(level)[†]	Jπ[b]	$T_{1/2}$[c]	Comments
0	(1/2+)[d]	19.5 s *5*	
286.0[d]	(3/2+)[d]		
454.8[@d]	(9/2−)[d]	1.93 s *8*	Additional information 1.
770.60[#] *20*	(9/2−)		
862.20[@] *20*	(11/2−)		
983.30[#] *23*	(13/2−)		
1004.50[&] *23*	(13/2+)	8.32 ns *14*	$T_{1/2}$: from γ(t) relative to the beam pulse of the gated coincidence spectra.
1011.80[‡] *20*			
1211.60[a] *25*	(17/2+)		
1286.8[#] *3*	(17/2−)		
1376.3[‡] *3*			
1481.8[a] *4*	(21/2+)		
1665.8[#] *4*	(21/2−)		
1792.6[‡] *4*			
1844.7[a] *4*	(25/2+)		
2119.0[#] *5*	(25/2−)		
2276.8[‡] *5*			
2289.6[a] *5*	(29/2+)		
2642?[#]			
2806.9[a] *5*	(33/2+)		
3388.1[a] *6*	(37/2+)		
4010.1[a] *7*	(41/2+)		
4672.4[a] *8*	(45/2+)		

[†] From least-squares fit to Eγ′s.
[‡] Band(A): Band based on 1010 level.
[#] Band(B): $h_{9/2}$ band.
[@] Band(C): 9/2[505] band.
[&] Band(D): 13/2[606] band.
[a] Band(E): Band based on 17/2+.
[b] Except as noted, J^{π}′s are from 1995La08, based on γ(q), γγ and band structures.
[c] From Adopted Levels except for the 1004.50 level.
[d] From Adopted Levels.

(HI,xnγ) 1995La08,1994La04 (continued)

$\gamma(^{185}Tl)$

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[@]	Comments
142.3 *1*	92 *5*	1004.50	(13/2$^+$)	862.20	(11/2$^-$)	E1[#]	0.179	α(K)=0.144; α(L)=0.0265; α(M)=0.00619; α(N+..)=0.00196 DCO=1.06 *13*.
207.1 *1*	77 *7*	1211.60	(17/2$^+$)	1004.50	(13/2$^+$)	Q	0.368	α(K)=0.157; α(L)=0.157; α(M)=0.0405; α(N+..)=0.0130 DCO=1.28 *9*. A_2=+0.19 *5*.
212.7 *1*	23 *8*	983.30	(13/2$^-$)	770.60	(9/2$^-$)	(Q)	0.336	α(K)=0.148; α(L)=0.140; α(M)=0.0362; α(N+..)=0.0116 DCO=1.23 *22*.
270.2 *2*	62 *8*	1481.8	(21/2$^+$)	1211.60	(17/2$^+$)	Q	0.154	α(K)=0.0829; α(L)=0.0533; α(M)=0.0136; α(N+..)=0.00438 DCO=1.34 *11*.
[x]285								
303.5 *2*	20 *8*	1286.8	(17/2$^-$)	983.30	(13/2$^-$)	(Q)	0.108	α(K)=0.0628; α(L)=0.0341; α(M)=0.0087; α(N+..)=0.00279 DCO=1.26 *21*.
315.8 *2*	29 *8*	770.60	(9/2$^-$)	454.8	(9/2$^-$)	(D+Q)	0.23 *13*	α(K)=0.17 *12*; α(L)=0.039 *10*; α(M)=0.0094 *20*; α(N+..)=0.0030 *7* DCO=1.39 *20*.
362.9 *2*	50 *6*	1844.7	(25/2$^+$)	1481.8	(21/2$^+$)	Q	0.0650	α(K)=0.0413; α(L)=0.0177; α(M)=0.00447; α(N+..)=0.00144 DCO=1.25 *13*.
364.5 *2*	20 *9*	1376.3		1011.80				
379.0 *2*	17 *8*	1665.8	(21/2$^-$)	1286.8	(17/2$^-$)	Q	0.0577	α(K)=0.0374; α(L)=0.0152; α(M)=0.00383; α(N+..)=0.00123 DCO=1.69 *33*.
407.4 *2*	100 *6*	862.20	(11/2$^-$)	454.8	(9/2$^-$)	M1[#]	0.178	α(K)=0.146; α(L)=0.0246; α(M)=0.00572; α(N+..)=0.00184 DCO=1.07 *22*.
416.3 *2*	15 *8*	1792.6		1376.3				
[x]421								
[x]428								
444.9 *2*	29 *8*	2289.6	(29/2$^+$)	1844.7	(25/2$^+$)	Q	0.0379	α(K)=0.0261; α(L)=0.0089; α(M)=0.00221; α(N+..)=0.00071 DCO=1.56 *16*.
453.2 *2*	6 *3*	2119.0	(25/2$^-$)	1665.8	(21/2$^-$)	Q	0.0362	α(K)=0.0251; α(L)=0.0084; α(M)=0.00208; α(N+..)=0.00067 DCO=1.71 *51*.
484.2 *3*	12 *6*	2276.8		1792.6				
517.3 *2*	21 *3*	2806.9	(33/2$^+$)	2289.6	(29/2$^+$)	Q	0.0262	α(K)=0.0188; α(L)=0.00552 DCO=1.57 *37*.
525[&]		2642?		2119.0	(25/2$^-$)			I_γ: weak γ ray.
550.3[&] *4*	≈9	1004.50	(13/2$^+$)	454.8	(9/2$^-$)	(Q)	0.227	α(K)=0.179; α(L)=0.0365 Mult.: Analog to the 726.4 keV M2 transition in ^{187}Tl.
557.0 *2*	26 *8*	1011.80		454.8	(9/2$^-$)			
581.2 *3*	8 *2*	3388.1	(37/2$^+$)	2806.9	(33/2$^+$)	(Q)	0.0200	α(K)=0.0147; α(L)=0.00391
622.0 *3*	6 *3*	4010.1	(41/2$^+$)	3388.1	(37/2$^+$)	(Q)	0.0171	α(K)=0.0128; α(L)=0.00323
662.3 *4*	3 *2*	4672.4	(45/2$^+$)	4010.1	(41/2$^+$)	(Q)	0.0149	α(K)=0.0113; α(L)=0.00272

[†] From 1995La08.
[‡] From angular distributions and DCO values (1995La08).

Continued on next page (footnotes at end of table)

(HI,xnγ) 1995La08,1994La04 (continued)

$\gamma(^{185}Tl)$ (continued)

From $\gamma\gamma$ spectrum gated by higher transitions, I(407)/I(142)=0.89 *8* was obtained. The intensity balance leads to $\alpha_{Tot}(407)\leq 0.181$, assuming 142 transition has E1 character.

@ 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.

x γ ray not placed in level scheme.

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Level Scheme

Intensities: Relative I_γ

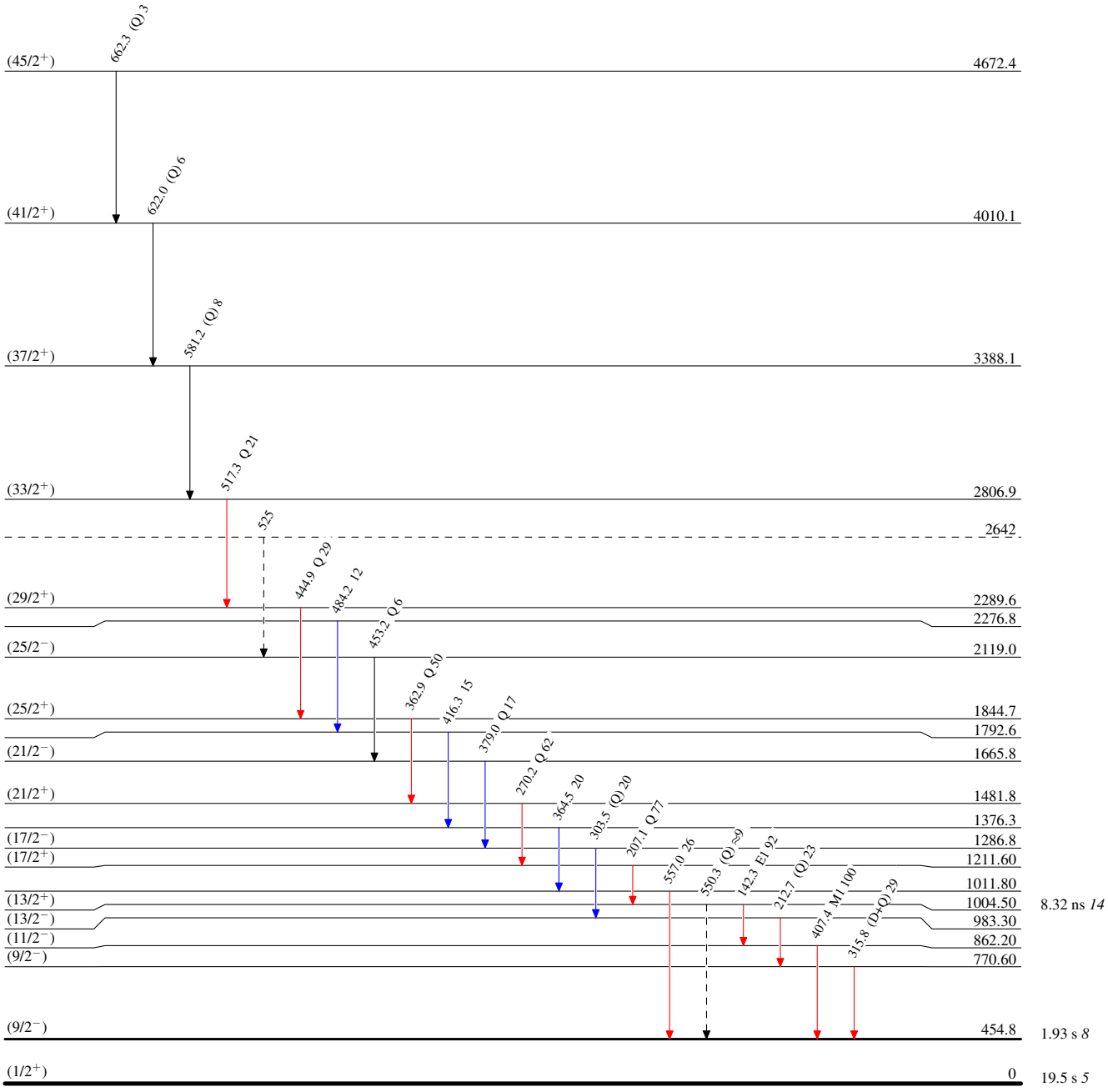
Legend

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

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

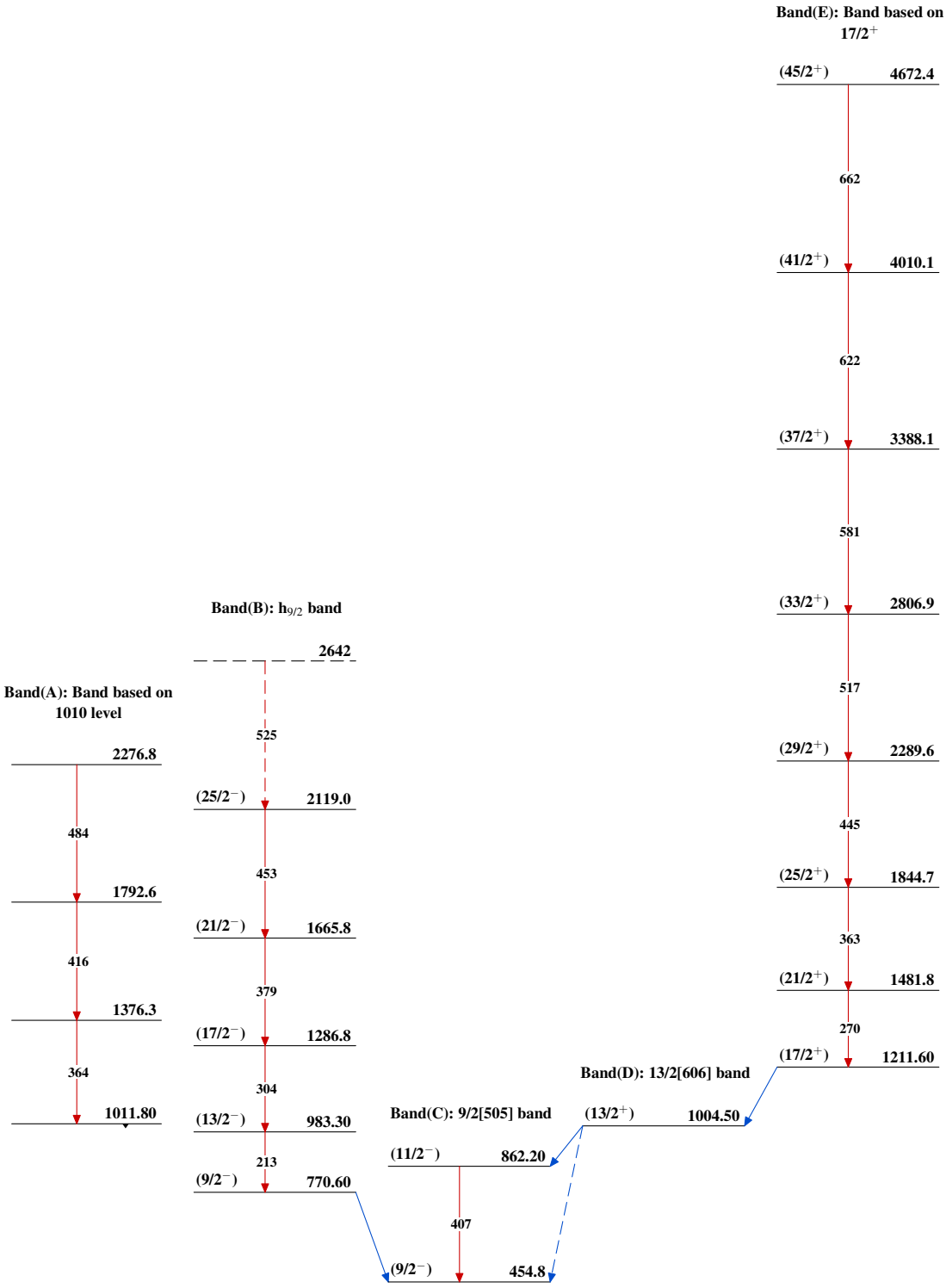
$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)



$^{185}_{81}Tl_{104}$

(HI,xnγ) 1995La08,1994La04



$^{185}_{81}Tl_{104}$