

$^{160}\text{Gd}(^{37}\text{Cl},5n\gamma)$ 1996RiZZ

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 113, 1871 (2012)	15-Jun-2012

Please see the $^{160}\text{Gd}(^{37}\text{Cl},5n\gamma)$: SD dataset for data from this reaction involving superdeformed states.

1996RiZZ: GAMMASPHERE array; measured DCO ratios (not reported) and $E\gamma$ in conjunction with superdeformed-band measurements published by 1996Fi02.

 ^{192}Tl Levels

E(level) [†]	J ^π [‡]	T _{1/2}	Comments
0.0+x [@]	(7 ⁺)		E(level): see comment on E(237+x level). J ^π : from Adopted Levels. Additional information 1.
138	(7 ⁺)	10.8 min 2	%ε+%β ⁺ =100 E(level),J ^π : from Adopted Levels. E(level): level energy held fixed in least-squares adjustment; it has a 45 keV uncertainty that has not been included here.
237.4+x ¹⁷	(8 ⁻)		No deexcitation γ reported.
320.5+x ^{# 16}	(9 ⁻)		
388	(8 ⁻)	296 ns 5	%IT=100 E(level),T _{1/2} : from Adopted Levels (217+x level, with x=171; ΔE=45). E(level): since the 251γ from the 8 ⁻ isomer is in cascade with most transitions reported by 1996RiZZ, it is clear that the isomer has been strongly populated even though No direct link to the isomer was identified.
445.0+x ^{@ 8}	(8 ⁺)		
596.3+x ^{# 16}	(10 ⁻)		
674.0+x ¹⁸	(8 ⁺)		
794.0+x ^{@ 8}	(9 ⁺)		
858.3+x ^{# 17}	(11 ⁻)		
1168.0+x ^{@ 10}	(10 ⁺)		
1254.3+x ^{# 17}	(12 ⁻)		
1303.0+x ¹⁵	(10 ⁺)		
1432.2+x ¹⁶	(11 ⁺)		
1563.4+x ^{# 18}	(13 ⁻)		
1683.2+x ^{@ 18}	(12 ⁺)		
1729.3+x ^{& 17}	(12 ⁺)		
1874.2+x ^{& 19}	(13 ⁺)		
2021.3+x ^{# 18}	(14 ⁻)		
2043.2+x ^{& 20}	(14 ⁺)		
2202.2+x ^{& 20}	(15 ⁺)		
2336.6+x ^{a 19}	(15 ⁻)		
2493.2+x ^{& 21}	(16 ⁺)		
2512.3+x ^{# 19}	(15 ⁻)		
2636.0+x ^{a 19}	(16 ⁻)		
2716.8+x ^{a 20}	(17 ⁻)		
2789.2+x ^{& 21}	(17 ⁺)		
2848.3+x ^{# 21}	(16 ⁻)		
2976.9+x ^{a 20}	(18 ⁻)		
3109.4+x ^{b 20}	(16 ⁺)		
3139.6+x ^{c 21}	(17 ⁻)		

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$^{160}\text{Gd}(^{37}\text{Cl}, 5\text{n}\gamma)$ **1996RiZZ (continued)** ^{192}Tl Levels (continued)

E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]
3170.2+x ^{&} 22	(18 ⁺)	3537.2+x ^{&} 22	(19 ⁺)	3952.2+x ^{&} 23	(20 ⁺)	4702.0+x ^b 23	(22 ⁺)
3197.8+x ^a 21	(19 ⁻)	3551.8+x ^a 21	(20 ⁻)	4020.0+x ^b 22	(20 ⁺)	4717.8+x ^a 23	(23 ⁻)
3347.8+x ^b 21	(17 ⁺)	3753.6+x ^c 23	(19 ⁻)	4302.2+x ^{&} 23	(21 ⁺)	4772.2+x ^{&} 25	(22 ⁺)
3495.0+x ^b 21	(18 ⁺)	3787.9+x ^b 22	(19 ⁺)	4305.8+x ^a 22	(22 ⁻)	5099.0+x ^b 24	(23 ⁺)
3508.6+x ^c 23	(18 ⁻)	3893.8+x ^a 22	(21 ⁻)	4370.0+x ^b 23	(21 ⁺)	5155.8+x ^a 23	(24 ⁻)

[†] From least-squares fit to E_γ , allowing 1 keV uncertainty in all E_γ data and holding fixed the energies of the 138 and 0.0+x levels; note that the 138 level has a 45 keV uncertainty which has not been included here.

[‡] Authors' tentative values.

Band(A): $K^\pi=7^- \pi 9/2[505]+\nu 5/2[642]?$ band. Strongly-coupled band. Note that J=7 bandhead has not been identified and adopted J^π values are 1 unit higher than shown here for this band.

@ Band(B): $K^\pi=7^+ \pi 9/2[505]+\nu 5/2[503]$ band.

& Band(C): $\pi=(+)$ band (1) high-K band; interacts with $K^\pi=7^-$ band.

^a Band(D): $\pi 9/2[505]\otimes \nu 5/2[642]\otimes i_{13/2}^2$ band. Strongly-coupled band; crosses $\pi 9/2[505]+\nu 5/2[642]$ band At J $\approx$ 15 and $\hbar\omega\approx 0.26$ MeV with alignment gain $\approx 9\hbar$.

^b Band(E): $\pi=(+)$ band (2). Feeds into $K^\pi=7^-$ band At J=(15).

^c Band(F): band fragment.

 $\gamma(^{192}\text{Tl})$

E_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π
81	2716.8+x	(17 ⁻)	2636.0+x	(16 ⁻)	341	2976.9+x	(18 ⁻)	2636.0+x	(16 ⁻)
83	320.5+x	(9 ⁻)	237.4+x	(8 ⁻)	342	3893.8+x	(21 ⁻)	3551.8+x	(20 ⁻)
124	2636.0+x	(16 ⁻)	2512.3+x	(15 ⁻)	349	794.0+x	(9 ⁺)	445.0+x	(8 ⁺)
129	1432.2+x	(11 ⁺)	1303.0+x	(10 ⁺)	350	4302.2+x	(21 ⁺)	3952.2+x	(20 ⁺)
135 [‡]	1303.0+x	(10 ⁺)	1168.0+x	(10 ⁺)	350	4370.0+x	(21 ⁺)	4020.0+x	(20 ⁺)
145	1874.2+x	(13 ⁺)	1729.3+x	(12 ⁺)	354	3551.8+x	(20 ⁻)	3197.8+x	(19 ⁻)
147	3495.0+x	(18 ⁺)	3347.8+x	(17 ⁺)	359	596.3+x	(10 ⁻)	237.4+x	(8 ⁻)
159	2202.2+x	(15 ⁺)	2043.2+x	(14 ⁺)	367	3537.2+x	(19 ⁺)	3170.2+x	(18 ⁺)
169	2043.2+x	(14 ⁺)	1874.2+x	(13 ⁺)	369	3508.6+x	(18 ⁻)	3139.6+x	(17 ⁻)
191	1874.2+x	(13 ⁺)	1683.2+x	(12 ⁺)	374	1168.0+x	(10 ⁺)	794.0+x	(9 ⁺)
221	3197.8+x	(19 ⁻)	2976.9+x	(18 ⁻)	380	2716.8+x	(17 ⁻)	2336.6+x	(15 ⁻)
232	4020.0+x	(20 ⁺)	3787.9+x	(19 ⁺)	381	3170.2+x	(18 ⁺)	2789.2+x	(17 ⁺)
238	3347.8+x	(17 ⁺)	3109.4+x	(16 ⁺)	386	3495.0+x	(18 ⁺)	3109.4+x	(16 ⁺)
245	3753.6+x	(19 ⁻)	3508.6+x	(18 ⁻)	396	1254.3+x	(12 ⁻)	858.3+x	(11 ⁻)
250.6	388	(8 ⁻)	138	(7 ⁺)	397	5099.0+x	(23 ⁺)	4702.0+x	(22 ⁺)
251	1683.2+x	(12 ⁺)	1432.2+x	(11 ⁺)	412	4305.8+x	(22 ⁻)	3893.8+x	(21 ⁻)
260	2976.9+x	(18 ⁻)	2716.8+x	(17 ⁻)	412	4717.8+x	(23 ⁻)	4305.8+x	(22 ⁻)
262	858.3+x	(11 ⁻)	596.3+x	(10 ⁻)	415	3952.2+x	(20 ⁺)	3537.2+x	(19 ⁺)
276	596.3+x	(10 ⁻)	320.5+x	(9 ⁻)	438	5155.8+x	(24 ⁻)	4717.8+x	(23 ⁻)
291	2493.2+x	(16 ⁺)	2202.2+x	(15 ⁺)	440	3787.9+x	(19 ⁺)	3347.8+x	(17 ⁺)
293	3787.9+x	(19 ⁺)	3495.0+x	(18 ⁺)	445	445.0+x	(8 ⁺)	0.0+x	(7 ⁺)
296	2789.2+x	(17 ⁺)	2493.2+x	(16 ⁺)	450	2493.2+x	(16 ⁺)	2043.2+x	(14 ⁺)
297	1729.3+x	(12 ⁺)	1432.2+x	(11 ⁺)	458	2021.3+x	(14 ⁻)	1563.4+x	(13 ⁻)
299	2636.0+x	(16 ⁻)	2336.6+x	(15 ⁻)	481	3197.8+x	(19 ⁻)	2716.8+x	(17 ⁻)
309	1563.4+x	(13 ⁻)	1254.3+x	(12 ⁻)	491	2512.3+x	(15 ⁻)	2021.3+x	(14 ⁻)
315	2336.6+x	(15 ⁻)	2021.3+x	(14 ⁻)	525	4020.0+x	(20 ⁺)	3495.0+x	(18 ⁺)
328	2202.2+x	(15 ⁺)	1874.2+x	(13 ⁺)	538	858.3+x	(11 ⁻)	320.5+x	(9 ⁻)
332	4702.0+x	(22 ⁺)	4370.0+x	(21 ⁺)	575	3551.8+x	(20 ⁻)	2976.9+x	(18 ⁻)

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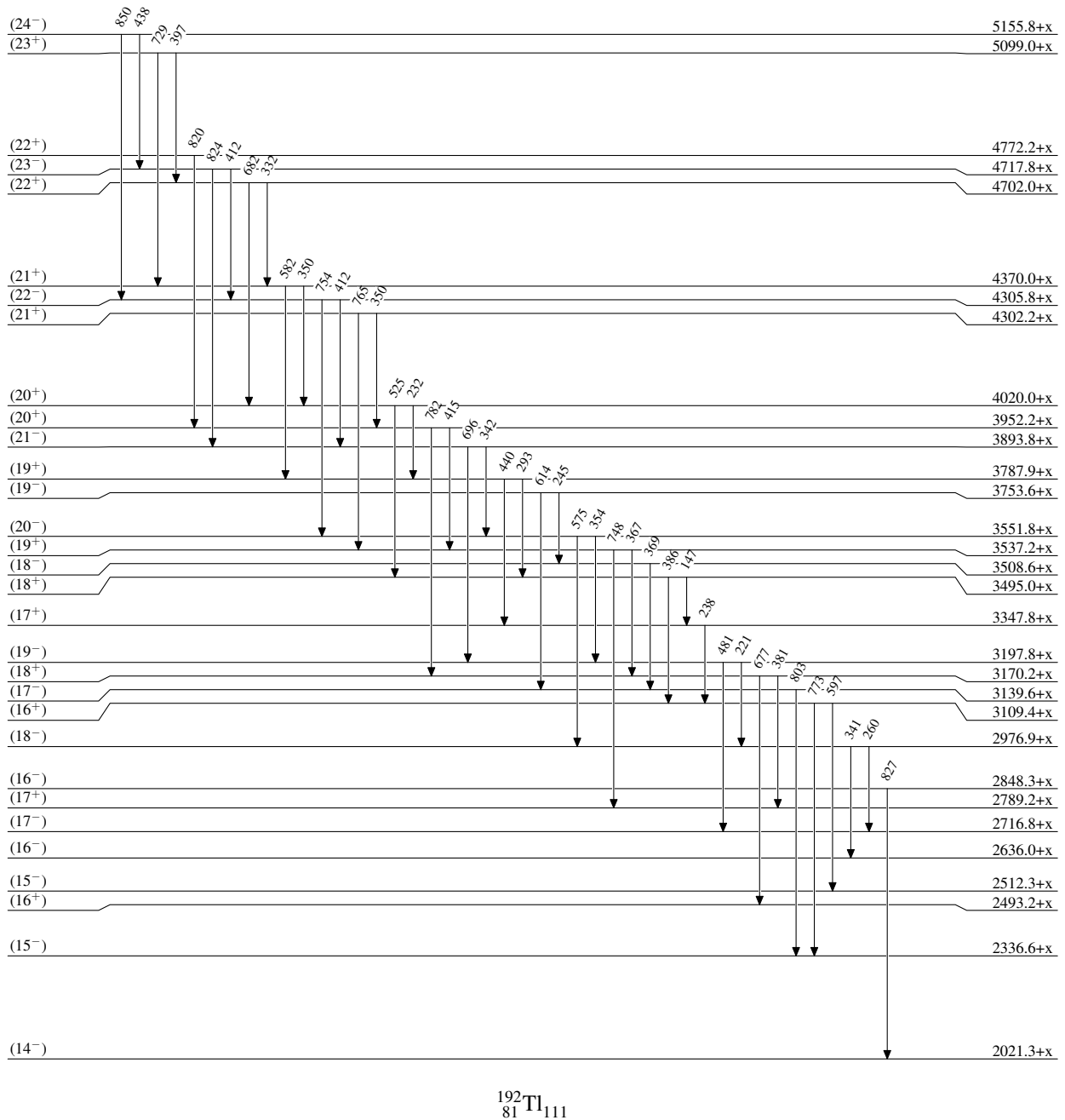
$^{160}\text{Gd}(^{37}\text{Cl},5\text{n}\gamma)$ [1996RiZZ](#) (continued) $\gamma(^{192}\text{Tl})$ (continued)

E_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π
582	4370.0+x	(21 ⁺)	3787.9+x	(19 ⁺)	765	4302.2+x	(21 ⁺)	3537.2+x	(19 ⁺)
587	2789.2+x	(17 ⁺)	2202.2+x	(15 ⁺)	767	2021.3+x	(14 ⁻)	1254.3+x	(12 ⁻)
597	3109.4+x	(16 ⁺)	2512.3+x	(15 ⁻)	773	2336.6+x	(15 ⁻)	1563.4+x	(13 ⁻)
614	3753.6+x	(19 ⁻)	3139.6+x	(17 ⁻)	773	3109.4+x	(16 ⁺)	2336.6+x	(15 ⁻)
615	2636.0+x	(16 ⁻)	2021.3+x	(14 ⁻)	782	3952.2+x	(20 ⁺)	3170.2+x	(18 ⁺)
629	1303.0+x	(10 ⁺)	674.0+x	(8 ⁺)	794	794.0+x	(9 ⁺)	0.0+x	(7 ⁺)
658	1254.3+x	(12 ⁻)	596.3+x	(10 ⁻)	803	3139.6+x	(17 ⁻)	2336.6+x	(15 ⁻)
677	3170.2+x	(18 ⁺)	2493.2+x	(16 ⁺)	820	4772.2+x	(22 ⁺)	3952.2+x	(20 ⁺)
682	4702.0+x	(22 ⁺)	4020.0+x	(20 ⁺)	824	4717.8+x	(23 ⁻)	3893.8+x	(21 ⁻)
696	3893.8+x	(21 ⁻)	3197.8+x	(19 ⁻)	827	2848.3+x	(16 ⁻)	2021.3+x	(14 ⁻)
705	1563.4+x	(13 ⁻)	858.3+x	(11 ⁻)	836	1432.2+x	(11 ⁺)	596.3+x	(10 ⁻)
707	1303.0+x	(10 ⁺)	596.3+x	(10 ⁻)	850	5155.8+x	(24 ⁻)	4305.8+x	(22 ⁻)
723	1168.0+x	(10 ⁺)	445.0+x	(8 ⁺)	871	1729.3+x	(12 ⁺)	858.3+x	(11 ⁻)
729	5099.0+x	(23 ⁺)	4370.0+x	(21 ⁺)	949	2512.3+x	(15 ⁻)	1563.4+x	(13 ⁻)
748	3537.2+x	(19 ⁺)	2789.2+x	(17 ⁺)	982	1303.0+x	(10 ⁺)	320.5+x	(9 ⁻)
754	4305.8+x	(22 ⁻)	3551.8+x	(20 ⁻)					

[†] From [1996RiZZ](#); uncertainty unstated by authors.[‡] Tentatively assigned by authors As a $\Delta J=0$ transition.

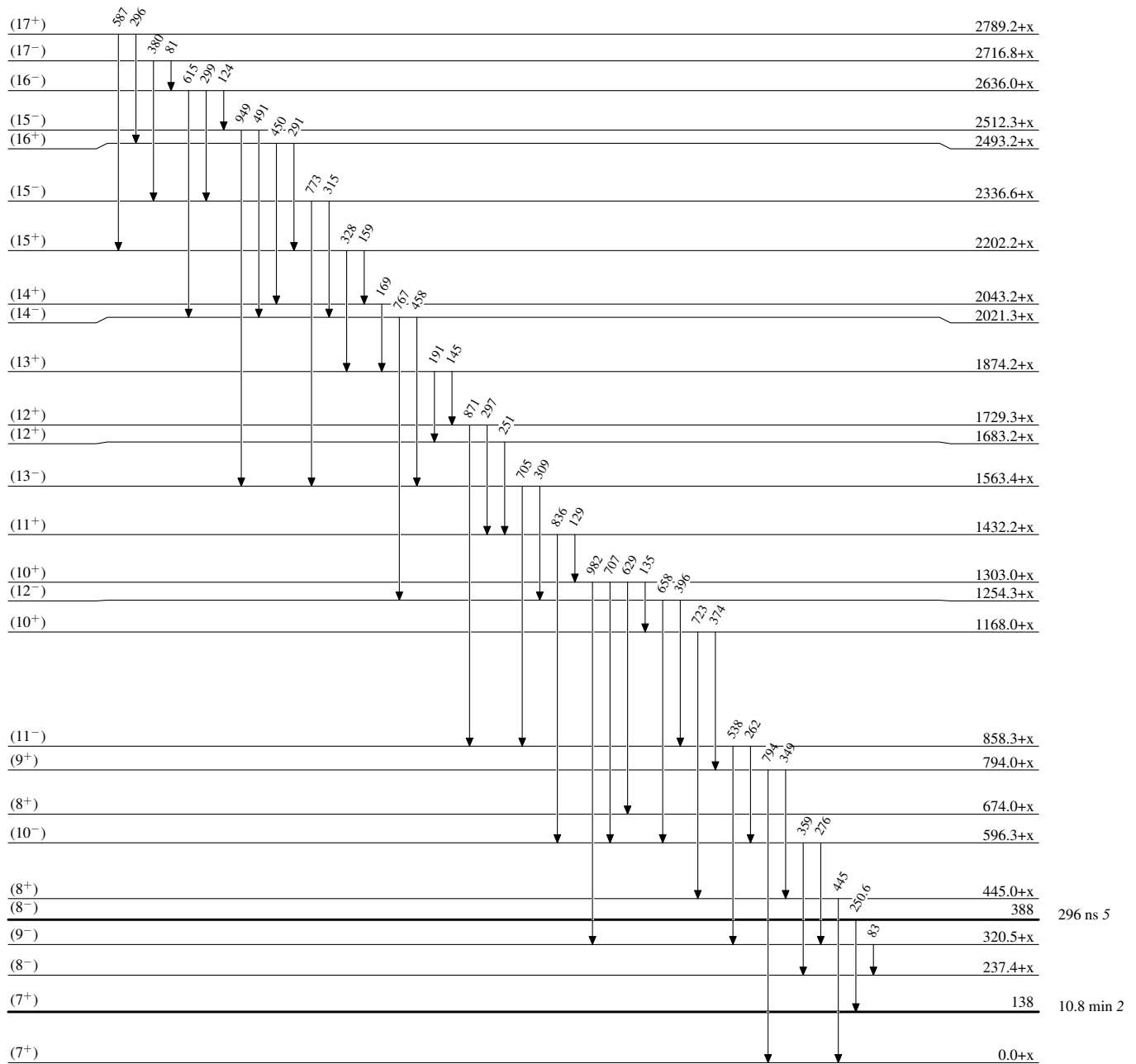
$^{160}\text{Gd}(^{37}\text{Cl},5n\gamma)$ 1996RiZZ

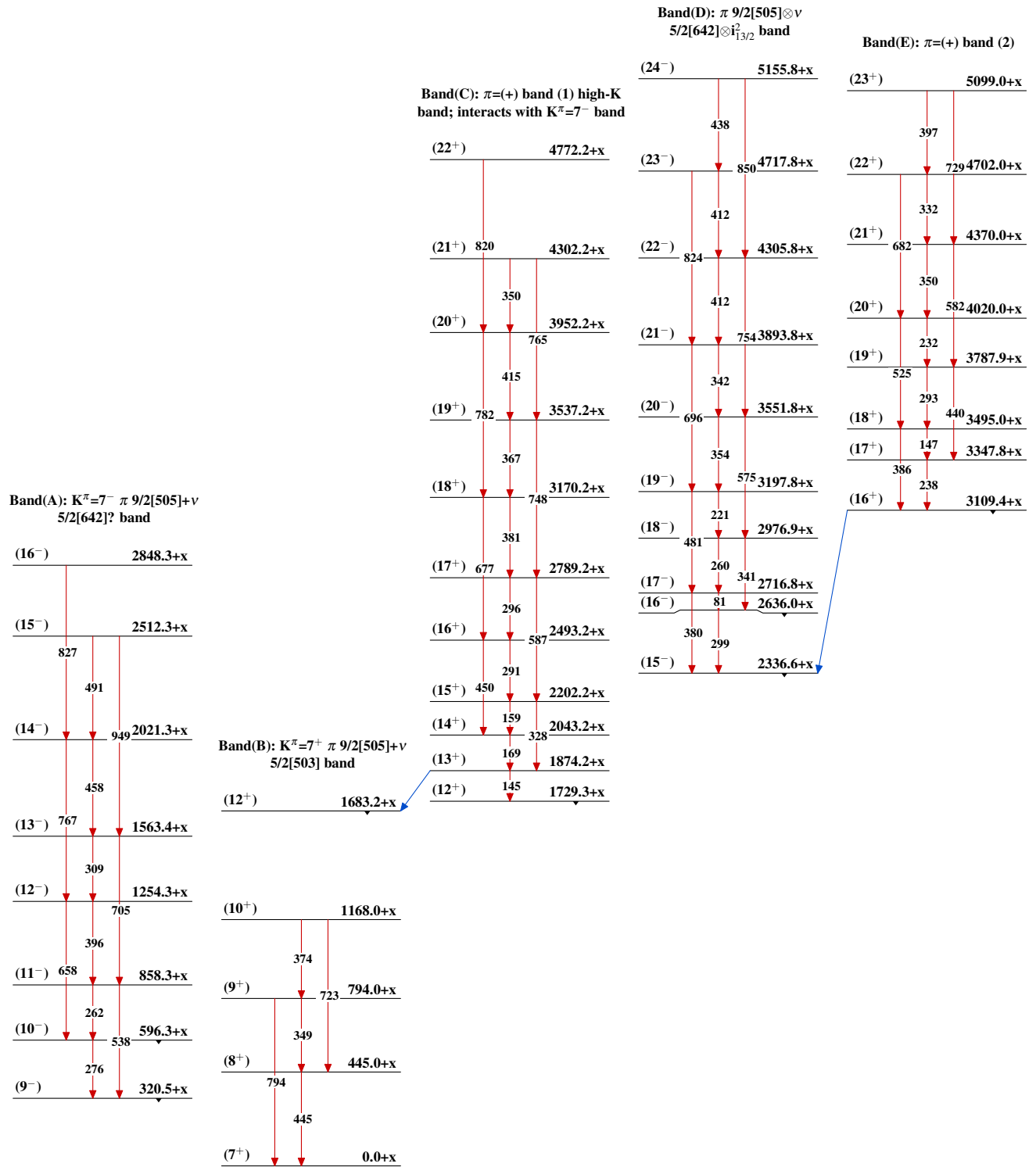
Level Scheme

 $^{192}_{81}\text{Tl}_{111}$

$^{160}\text{Gd}(^{37}\text{Cl},5\text{n}\gamma)$ 1996RiZZ

Level Scheme (continued)

 $^{192}_{81}\text{Tl}_{111}$

$^{160}\text{Gd}(^{37}\text{Cl}, 5n\gamma)$ 1996RiZZ

$^{160}\text{Gd}(^{37}\text{Cl},5n\gamma)$ **1996RiZZ (continued)**

Band(F): Band fragment

(19⁻) 3753.6+x

245

(18⁻) 3508.6+x

614

369

(17⁻) 3139.6+x

$^{192}_{81}\text{Tl}_{111}$