

**Adopted Levels, Gammas**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. Ohya	NDS 111,1619 (2010)	20-Jan-2009

Q( $\beta^-$ )=-1.05×10<sup>3</sup> 3; S(n)=9252 8; S(p)=5789 3; Q( $\alpha$ )=-3080 6 [2012Wa38](#)  
 Note: Current evaluation has used the following Q record -1054 26 9241.5 745778.5 21-3073.7 55 [2009AuZZ](#).

<sup>121</sup>Sb Levels

Cross Reference (XREF) Flags

<b>A</b>	<sup>121</sup> Sn $\beta^-$ decay (27.03 h)	<b>G</b>	<sup>176</sup> Yb( <sup>31</sup> P,X $\gamma$ )	<b>M</b>	<sup>120</sup> Sn(p,p),(pol p,p) IAS
<b>B</b>	<sup>121</sup> Sn $\beta^-$ decay (43.9 y)	<b>H</b>	<sup>122</sup> Te(t, $\alpha$ )	<b>N</b>	<sup>121</sup> Sb IT decay (179 $\mu$ s)
<b>C</b>	<sup>121</sup> Te $\epsilon$ decay (19.17 d)	<b>I</b>	<sup>123</sup> Sb(p,t)	<b>O</b>	<sup>120</sup> Sn( $\alpha$ ,t)
<b>D</b>	<sup>121</sup> Te $\epsilon$ decay (164.2 d)	<b>J</b>	<sup>120</sup> Sn( <sup>3</sup> He,d)	<b>P</b>	<sup>120</sup> Sn( <sup>7</sup> Li, $\alpha$ 2n $\gamma$ )
<b>E</b>	Coulomb excitation	<b>K</b>	<sup>121</sup> Sb(d,d'), ( $\alpha$ , $\alpha'$ )		
<b>F</b>	<sup>121</sup> Sb(n,n' $\gamma$ ), <sup>120</sup> Sn(p, $\gamma$ )	<b>L</b>	<sup>121</sup> Sb( $\gamma$ , $\gamma'$ )		

E(level) <sup>†</sup>	J <sup><math>\pi</math></sup> #	T <sub>1/2</sub>	XREF	Comments
0.0	5/2 <sup>+</sup>	stable	<b>ABCDEFGHIJKL NOP</b>	$\mu$ =+3.3634 3; Q=-0.36 4 $J^\pi$ : configuration=( $\pi$ 2d <sub>5/2</sub> ). $\mu$ : from <a href="#">2005St24</a> ; recalculated with the use of $\mu$ value of <sup>23</sup> Na standard ( <a href="#">2005St24</a> ). Q: from <a href="#">2005St24</a> ; Sternheimer or other polarization correction included ( <a href="#">2005St24</a> ). Other: -0.45 3 (AB,R) ( <a href="#">2005St24</a> ). $J^\pi$ : J=5/2 in optical spectroscopy, microwave absorption in gases ( <a href="#">1976Fu06</a> ), L=2 in ( <sup>3</sup> He,d), (t, $\alpha$ ). $\mu$ =+2.518 7; Q=-0.48 5; Configuration=( $\pi$ 1g <sub>7/2</sub> ) E(level): from ( $\gamma$ , $\gamma'$ ) ( <a href="#">2006Wi04</a> ). $J^\pi$ : M1 $\gamma$ to 5/2 <sup>+</sup> . Fed in $\epsilon$ decay and $\beta^-$ decay from 11/2 <sup>-</sup> . $\mu$ : from <a href="#">2005St24</a> ; consistent with $\mu$ value for <sup>121</sup> Sb g.s. standard. Q: from <a href="#">2005St24</a> ; consistent with Q value of <sup>121</sup> Sb g.s., Sternheimer or other polarization correction included ( <a href="#">2005St24</a> ). T <sub>1/2</sub> : from ( $\beta$ )(K x ray)(t) ( <a href="#">1982Ha31</a> ). Others: 2.96 ns 8 from (470 $\gamma$ )(37 $\gamma$ )(t), (1102 $\gamma$ )(37 $\gamma$ )(t) ( <a href="#">1973Be18</a> ); 3.5 ns 2 from (1102 $\gamma$ )(ce 37 $\gamma$ )(t) ( <a href="#">1964Ch08</a> ); 3.47 ns 39 from ( $\gamma$ , $\gamma'$ )( <a href="#">2000Ki15</a> ).
37.1298 2	7/2 <sup>+</sup>	3.46 ns 3	<b>BCDEFGHIJKL NOP</b>	$J^\pi$ : L=2 in ( <sup>3</sup> He,d), (t, $\alpha$ ); log ft=6.85 from 1/2 <sup>+</sup> . T <sub>1/2</sub> : from ( $\gamma$ , $\gamma'$ ). $J^\pi$ : L=0 in (t, $\alpha$ ). T <sub>1/2</sub> : from unweighted average of 8.5 ps 10 in ( $\gamma$ , $\gamma'$ ) and 11.6 ps 9 in Coul. ex.
507.597 8	3/2 <sup>+</sup>	1.93 ps 19	<b>C EF HIJKL</b>	XREF: H(935). $J^\pi$ : L=4 in (t, $\alpha$ ); $\gamma(\theta)$ in (n,n' $\gamma$ ). T <sub>1/2</sub> : from Coul. ex. T <sub>1/2</sub> >0.15 ps from ( $\gamma$ , $\gamma'$ ). $J^\pi$ : $\gamma(\theta)$ in (n,n' $\gamma$ ); M1+E2 $\gamma$ to 5/2 <sup>+</sup> . T <sub>1/2</sub> : weighted average of 0.18 ps 4 from ( $\gamma$ , $\gamma'$ ) and 0.14 ps 5 from Coul.ex.
573.142 9	1/2 <sup>+</sup>	10.0 ps 16	<b>C EF HIJKL</b>	$J^\pi$ : $\gamma(\theta)$ in (n,n' $\gamma$ ); M1+E2 $\gamma$ to 5/2 <sup>+</sup> . T <sub>1/2</sub> : weighted average of 0.18 ps 4 from ( $\gamma$ , $\gamma'$ ) and 0.14 ps 5 from Coul.ex.
946.989 <sup>@</sup> 14	9/2 <sup>+</sup> <sup>‡</sup>	20 ps +9-5	<b>DEFGHI L N P</b>	$J^\pi$ : $\gamma(\theta)$ in (n,n' $\gamma$ ); Coul. ex. $J^\pi$ is consistent with two-particle, one-hole calculation ( <a href="#">1975Me23</a> ). T <sub>1/2</sub> : from ( $\gamma$ , $\gamma'$ ). XREF: H(1131).
1024.0 3	7/2 <sup>+</sup>	0.16 ps 3	<b>DEF HI KL</b>	
1035.429 14	9/2 <sup>+</sup>	>0.3×10 <sup>-3</sup> ps	<b>DEFG IJ L N P</b>	
1139.287 20	9/2 <sup>+</sup> ,11/2 <sup>+</sup>		<b>D FGHIJ N P</b>	

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**Adopted Levels, Gammas (continued)**

<sup>121</sup>Sb Levels (continued)

E(level) <sup>†</sup>	J <sup>π</sup> #	T <sub>1/2</sub>	XREF	Comments
1144.66 4	9/2 <sup>+</sup>	0.46 ps +15-9	DEFG KL N P	J <sup>π</sup> : γ's to 7/2 <sup>+</sup> , 9/2 <sup>+</sup> , no γ to 5/2 <sup>+</sup> ; log ft=7.8 from 11/2 <sup>-</sup> ; L=2 in (p,t); two-particle, one-hole calculation of 1975Me23 suggests 11/2 <sup>+</sup> . J <sup>π</sup> : γ(θ) in (n,n'γ); Coul. ex. T <sub>1/2</sub> : from (γγ') (1981Ca10); other: 0.21 ps 7 (1975An16) from Doppler-shift attenuation in Coul. ex.
1321.94@ 17	(11/2 <sup>+</sup> ) <sup>‡</sup>		FG N P	J <sup>π</sup> : D γ to 9/2 <sup>+</sup> .
1385.2 3	+		EF IJKL	J <sup>π</sup> : L=2 in (p,t). T <sub>1/2</sub> : T <sub>1/2</sub> =0.0190(2J+1) ps 14 from (γ,γ).
1407.29 19	1/2 <sup>+</sup> ,3/2,5/2 <sup>+</sup>		F L	J <sup>π</sup> : γ's to 1/2 <sup>+</sup> and 5/2 <sup>+</sup> .
1426.88& 17	(11/2) <sup>-</sup>		FG IJK NOP	J <sup>π</sup> : L=3 in (p,t), D(Q2) γ to 9/2 <sup>+</sup> , no γ's to levels with J <sup>π</sup> <9/2 <sup>+</sup> .
1447.51 24	3/2 <sup>+</sup> ,5/2 <sup>+</sup> ,7/2 <sup>+</sup>		F HIJKL	J <sup>π</sup> : γ's to 3/2 <sup>+</sup> and 7/2 <sup>+</sup> , L=2 in (p,t). L=1 in (t,α) is not consistent with this assignment, but the energy resolution is only 30 keV so other levels may be contributing. L=2 in ( <sup>3</sup> He,d) confirms π=+.
1471.2 3	+		F I L	J <sup>π</sup> : L=2 in (p,t).
1474.4 6	+		F I L	J <sup>π</sup> : L=2 in (p,t).
1509.0 7	+		F I	J <sup>π</sup> : L=2 in (p,t).
1519.2 4	+		F I L	J <sup>π</sup> : L=2 in (p,t).
1590.4 4			F L	
1612.5 7	+		F I	J <sup>π</sup> : L=2 in (p,t).
1628.3 3	+		F IJ L	J <sup>π</sup> : L=2+0 in ( <sup>3</sup> He,d).
1649.78@ 20	(13/2 <sup>+</sup> ) <sup>‡</sup>		G N P	J <sup>π</sup> : D γ to (11/2 <sup>+</sup> ).
1659 10	1/2 <sup>-</sup> ,3/2 <sup>-</sup>		H	J <sup>π</sup> : L=1 in (t,α).
1736.31 20	+		F IJKL	J <sup>π</sup> : L=2 in (p,t).
1758.5 4	+		I L	J <sup>π</sup> : L=2 in (p,t).
1810.8 5	1/2 <sup>+</sup> ,3/2 <sup>+</sup>		F Ij L	XREF: j(1816). J <sup>π</sup> : L=2 in (p,t), L=0 in ( <sup>3</sup> He,d).
1822 5	1/2 <sup>+</sup> ,3/2 <sup>+</sup>		Ij	XREF: j(1816). J <sup>π</sup> : L=2 in (p,t), L=0 in ( <sup>3</sup> He,d).
1868 5	+		I	J <sup>π</sup> : L=4 in (p,t).
1883 5	+		I	J <sup>π</sup> : L=2 in (p,t).
1910.6 3			L	
1927.1 5			L	
1932 5	+		I	J <sup>π</sup> : L=2+4+6 in (p,t).
1951 5	+		I	J <sup>π</sup> : L=2 in (p,t).
1981.6 4	3/2 <sup>+</sup> ,5/2 <sup>+</sup>		J L	J <sup>π</sup> : L=2 in (p,t), L=2 in ( <sup>3</sup> He,d).
1995 5	+		I	J <sup>π</sup> : L=2 in (p,t).
1997.80@ 23	(15/2 <sup>+</sup> ) <sup>‡</sup>		G N P	J <sup>π</sup> : Dγ to (13/2 <sup>+</sup> ).
2016.5 9			L	
2025.9 6			L	
2035 5	+		I	J <sup>π</sup> : L=4 in (p,t).
2048 3			L	
2057.08 21	(13/2 <sup>+</sup> )		N P	
2063.2 4	+		I L	J <sup>π</sup> : L=4 in (p,t).
2075 5	-		I KL	J <sup>π</sup> : L=5 in (p,t).
2093.0 7	-		I L	J <sup>π</sup> : L=3 in (p,t).
2097.9 5	3/2 <sup>+</sup> ,5/2 <sup>+</sup>		J L	J <sup>π</sup> : L=2 in ( <sup>3</sup> He,d).
2104 5	-		I	J <sup>π</sup> : L=3 in (p,t).
2114.1 4	+		I L	J <sup>π</sup> : L=2 in (p,t).
2121.3 7			L	
2129 5	-		I K	J <sup>π</sup> : L=5 in (p,t).
2139.0 4	13/2 <sup>+</sup> ,15/2 <sup>+</sup>		P	J <sup>π</sup> : Q2 γ to 9/2 <sup>+</sup> ,11/2 <sup>+</sup> .

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**Adopted Levels, Gammas (continued)**

<sup>121</sup>Sb Levels (continued)

E(level) <sup>†</sup>	J <sup>π</sup> #	T <sub>1/2</sub>	XREF	Comments
2140.2 7			KL	XREF: K(2137).
2142.23 & 21	(15/2) <sup>-</sup>	1.8 ns 2	G N P	T <sub>1/2</sub> : from <sup>120</sup> Sn( <sup>7</sup> Li,α2n).
2149 5	-		IJ	J <sup>π</sup> : L=3 in (p,t).
2150.7? 6	(17/2)		N	
2159 5	-		I	J <sup>π</sup> : L=5 in (p,t).
2165 5	-		I	J <sup>π</sup> : L=1 in (p,t).
2176 5	-		I	J <sup>π</sup> : L=3 in (p,t).
2189 5	1/2 <sup>+</sup> ,3/2 <sup>+</sup>		IJ	XREF: J(2200).
2209 5	-		I K	J <sup>π</sup> : L=0 in (p,t), L=0 in ( <sup>3</sup> He,d).
2235.5 3	+		I L	J <sup>π</sup> : L=3 in (p,t).
2239 5	-		I	J <sup>π</sup> : L=0 in (p,t).
2255.2 6			KL	J <sup>π</sup> : L=5 in (p,t).
2259.1 3			KL	XREF: k(2254).
2265.9 4	+		I L	XREF: k(2254).
2280.4 5			KL	J <sup>π</sup> : L=4 in (p,t).
2289.8 4	+		I L	J <sup>π</sup> : L=4 in (p,t).
2302 5	-		I	J <sup>π</sup> : L=3 in (p,t).
2312 5	-		I	J <sup>π</sup> : L=1 in (p,t).
2323.5 4			L	
2329 3	1/2 <sup>+</sup> ,3/2 <sup>+</sup>		IJ L	XREF: J(2335).
2356.78 @ 25	(17/2 <sup>+</sup> ) <sup>‡</sup>		G N P	J <sup>π</sup> : L=0 in ( <sup>3</sup> He,d).
2362 5	+		I	J <sup>π</sup> : L=4 in (p,t).
2371 2			L	
2377 5	+		IJ	J <sup>π</sup> : L=2 in (p,t).
2398.84 22	+		I L	J <sup>π</sup> : L=4 in (p,t).
2407 5	+		I	J <sup>π</sup> : L=4 in (p,t).
2426 5	+		I	J <sup>π</sup> : L=4 in (p,t).
2434.6 & 3	(19/2) <sup>-</sup>	7.8 ns 3	G N P	T <sub>1/2</sub> : from <sup>121</sup> Sb IT decay (179 μs).
2435.89 22	+		IJ L	T <sub>1/2</sub> : weighted average of 8.5 ns 5 from <sup>121</sup> Sb IT decay (179 μs) and 7.7 ns 2 from <sup>120</sup> Sn( <sup>7</sup> Li,α2n).
2442.0 3			L	J <sup>π</sup> : L=2 in (p,t).
2447.7 4			L	
2452 5	+		I	J <sup>π</sup> : L=4 in (p,t).
2459.2 6			I L	
2477.0 4	-		I L	J <sup>π</sup> : L=3 in (p,t).
2488 5	-		I	J <sup>π</sup> : L=3 in (p,t).
2497.7 3			L	
2502 5	+		I	J <sup>π</sup> : L=0 in (p,t).
2523 5	+		I	J <sup>π</sup> : L=4 in (p,t).
2543.1 4	17/2		P	J <sup>π</sup> : D γ to (15/2) <sup>-</sup> .
2545 5	-		I	J <sup>π</sup> : L=1 in (p,t).
2551.6 4	(21/2,19/2) <sup>-</sup>		N P	
2558 10	+		IJ	J <sup>π</sup> : L=0+2 in ( <sup>3</sup> He,d).
2573.8 7			L	
2578.8 6			L	
2585.6 8	+		I L	J <sup>π</sup> : L=4 in (p,t).
2599 5	-		I	J <sup>π</sup> : L=3 in (p,t).
2607 5	-		I	J <sup>π</sup> : L=5 in (p,t).
2625 5	1/2 <sup>+</sup> ,3/2 <sup>+</sup>		I	J <sup>π</sup> : L=4 in (p,t), L=0 in ( <sup>3</sup> He,d).
2636 5	+		I	J <sup>π</sup> : L=4 in (p,t).
2639 10			J	

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**Adopted Levels, Gammas (continued)**

<sup>121</sup>Sb Levels (continued)

E(level) <sup>†</sup>	J <sup>π</sup> #	T <sub>1/2</sub>	XREF	Comments
2649.0 7	+		I L	J <sup>π</sup> : L=2 in (p,t).
2663.2 4			L	
2668.1 7			L	
2678.1 4			L	
2679.9 <sup>@</sup> 3	(19/2 <sup>+</sup> ) <sup>‡</sup>		G N P	J <sup>π</sup> : L=2 in ( <sup>3</sup> He,d).
2690.5 3	3/2 <sup>+</sup> ,5/2 <sup>+</sup>		J L	
2698.8 8			L	
2713.5 4			L	
2721.4 6			L	
2721.6 4	(21/2 <sup>+</sup> )	1.9 ns 3 179 μs 6	G N P	T <sub>1/2</sub> : from <sup>120</sup> Sn( <sup>7</sup> Li,α2n). Additional information 1.
2721.5+x	(25/2)		N	
				E(level): x<60 keV for E2, <80 keV for M2 based on typical Weisskopf estimates. T <sub>1/2</sub> : weighted average of 179 μs 6 (2009Wa02), 161 μs 20 (2008Ko03), 203 μs 50 (2008Ko03) and 200 μs 30 (2008Jo03).
2725.8 12			L	
2733.0 9			L	
2740.8 6			L	
2745.0 9			L	
2764.8 4	(19/2 <sup>+</sup> )		P	J <sup>π</sup> : D γ to (17/2 <sup>+</sup> ).
2775.1 6			J L	
2783.7 7			L	
2798.7 5			L	
2810.0 7			L	
2828.4 5			j L	XREF: j(2830).
2835.8 5			j L	XREF: j(2830).
2843.6 3			L	
2860.1 5			L	
2865.3 4			L	
2873.1 6			L	
2911.0 7			L	
2917.3 6			L	
2931.8 5			L	
2937.4 4	1/2 <sup>+</sup> ,3/2 <sup>+</sup>		J L	J <sup>π</sup> : L=0 in ( <sup>3</sup> He,d).
2948.1 9			L	
2964.0 7			L	
2973.6 3			L	
2994.1 3			L	
3024.6 6			L	
3033.1 10			L	
3050.4 3			L	
3064.1 6			L	
3072.9 5			L	
3082.7 8			L	
3098.7 3			L	
3106.0 8			L	
3115.9 6			L	
3122.9 4			L	
3132.0 7			L	
3148.8 7			L	
3151.7 8			L	
3159.5 3			L	
3183.4 5	(21/2,23/2)		P	J <sup>π</sup> : γ to (19/2 <sup>+</sup> ) in <sup>120</sup> Sn( <sup>7</sup> Li,α2nγ).
3186.9 4			L	
3193.7 4			L	

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Adopted Levels, Gammas (continued) $^{121}\text{Sb}$  Levels (continued)

E(level) <sup>†</sup>	J <sup>π</sup> #	T <sub>1/2</sub>	XREF	Comments
3206.6	4		L	
3210.1	5		L	
3232.5	3		L	
3252.2	5		L	
3259.9	7		L	
3289.7	6		L	
3302.9	4		L	
3314.1	3		L	
3345.8	7		L	
3351.7	7		L	
3363.7	4		L	
3385.0	6		L	
3451.068	4 (3/2 <sup>+</sup> ,5/2 <sup>+</sup> )	0.18 ps 4	L	J <sup>π</sup> : γ's to 1/2 <sup>+</sup> , 7/2 <sup>+</sup> . T <sub>1/2</sub> : from (γ,γ') cross section.
3474.3	4		L	
3485.9	5		L	
3495.7	8		L	
3503.3	6		L	
3512.8	11		L	
3517.4	7		L	
3521.4	5		L	
3545.0	7		L	
3570.3	13		L	
3575.1	7		L	
3580.8	4		L	
3587.7	10		L	
3614.6	6		L	
3621.5	11		L	
3642.1	7		L	
3648.6	8		L	
3672.7	11		L	
3676.6	7		L	
3706.4	7		L	
3731.6	5		L	
3749.0	5		L	
3755.9	6		L	
3759.5	9		L	
3771.9	8		L	
3781.4	5		L	
3787.4	7		L	
3792.7	6		L	
3804.4	10		L	
3812.7	5		L	
3837.9	7		L	
3844.7	8		L	
3849.2	7		L	
3854.3	7		L	
3858.2	7		L	
3863.9	6		L	
3867.1	8		L	
3870.2	8		L	
3894.1	9		L	
3899.7	10		L	
3905.3	6		L	
3909.5	11		L	
3916.1	8		L	
3923.5	7		L	

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**Adopted Levels, Gammas (continued)** $^{121}\text{Sb}$  Levels (continued)

E(level) <sup>†</sup>	J <sup>π</sup> #	T <sub>1/2</sub>	XREF	Comments
3929.2 8			L	
3933.4 9			L	
3941.0 7			L	
3972.8 11			L	
13274 15	3/2 <sup>+</sup>	39 keV	M	J <sup>π</sup> : L=2, J=3/2 is consistent with analyzing power in (pol p,p) IAR.
13349 15	1/2 <sup>+</sup>	60 keV	M	J <sup>π</sup> : L=0.
14400 15	5/2 <sup>+</sup>	53 keV	M	J <sup>π</sup> : L=2, J=5/2 is consistent with analyzing power in (pol p,p) IAR.
14703 15	5/2 <sup>+</sup>	38 keV	M	J <sup>π</sup> : L=3, J=5/2 is consistent with analyzing power in (pol p,p) IAR.
15870 20	7/2 <sup>-</sup>	28 keV	M	J <sup>π</sup> : L=3, J=7/2 is consistent with analyzing power in (pol p,p) IAR.
15952 20	7/2 <sup>-</sup>	70 keV	M	J <sup>π</sup> : L=3, J=7/2 is consistent with analyzing power in (pol p,p) IAR.
16210 20	(7/2 <sup>-</sup> )	50 keV	M	J <sup>π</sup> : L=(3), J=(7/2) is consistent with analyzing power in (pol p,p) IAR.
16302 20	(7/2 <sup>-</sup> )	42 keV	M	J <sup>π</sup> : L=(3), J=(7/2) is consistent with analyzing power in (pol p,p) IAR.
16399 20	(7/2 <sup>-</sup> )	58 keV	M	J <sup>π</sup> : L=(3), J=(7/2) is consistent with analyzing power in (pol p,p) IAR.
16595 20	(7/2 <sup>-</sup> )	78 keV	M	J <sup>π</sup> : L=(3), J=(3/2) is consistent with analyzing power in (pol p,p) IAR.
16667 20	3/2 <sup>-</sup>	107 keV	M	J <sup>π</sup> : L=1, J=3/2 is consistent with analyzing power in (pol p,p) IAR.
16795 20	3/2 <sup>-</sup>	52 keV	M	J <sup>π</sup> : L=1, J=3/2 is consistent with analyzing power in (pol p,p) IAR.
16940 20	(3/2 <sup>-</sup> )	110 keV	M	J <sup>π</sup> : L=1, J=(3/2) is consistent with analyzing power in (pol p,p) IAR.

<sup>†</sup> E(levels) with  $\gamma$  decay are from least-squares fit to  $E\gamma$ 's ; E(levels) from reactions are from ( $^3\text{He},\alpha$ ) ( $\Delta E=10$  keV), (d,d') ( $\Delta E=5, 30$  keV); In addition to the levels listed here, there are levels reported in (d,d') in low-resolution work whose association with the Adopted Levels cannot be made with certainty.

<sup>‡</sup> Monotonically increasing J sequence is suggested by cascade of coincident dipole  $\gamma$ 's forming a band built on 9/2<sup>+</sup>[404] Nilsson state in ( $^7\text{Li},\alpha 2n\gamma$ ) (1985Pi02).

<sup>#</sup> J<sup>π</sup>'s  $\geq 13/2^+$  for positive parity,  $\geq 11/2^-$  for negative parity and  $\geq (17/2)$  are based on  $\gamma\gamma(\theta)$ , multipolarities and analogy with band structures in odd Sb isotopes from  $^{121}\text{Sb}$  IT decay (179  $\mu\text{s}$ ).

@ Band(A): band based on 9/2<sup>+</sup>[404].

& Band(B): Band based on 11/2<sup>-</sup>.

**Adopted Levels, Gammas (continued)**

$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_f$	$J_f^\pi$	Mult.#	$\gamma(^{121}\text{Sb})$		Comments
							$\delta^\#$	$\alpha^@$	
37.1298	7/2 <sup>+</sup>	37.1298 2	100	0.0	5/2 <sup>+</sup>	M1		10.88	B(M1)(W.u.)=0.01047 17 $\alpha(\text{K})=9.36$ 14; $\alpha(\text{L})=1.227$ 18; $\alpha(\text{M})=0.243$ 4; $\alpha(\text{N+..})=0.0514$ 8 $\alpha(\text{N})=0.0468$ 7; $\alpha(\text{O})=0.00459$ 7 $E_\gamma$ : from $(\gamma, \gamma')$ (2006Wi04). $\delta$ : from $T_{1/2}$ and B(E2) limit gives $\delta < 0.06$ .
507.597	3/2 <sup>+</sup>	470.472 13	7.97 18	37.1298	7/2 <sup>+</sup>	(E2)		0.00924 13	B(E2)(W.u.)=26 3 $\alpha(\text{K})=0.00788$ 11; $\alpha(\text{L})=0.001098$ 16; $\alpha(\text{M})=0.000218$ 3; $\alpha(\text{N+..})=4.55 \times 10^{-5}$ 7 $\alpha(\text{N})=4.16 \times 10^{-5}$ 6; $\alpha(\text{O})=3.90 \times 10^{-6}$ 6
		507.591 11	100 2	0.0	5/2 <sup>+</sup>	M1+E2	+0.137 11	0.00831 12	B(M1)(W.u.)=0.079 9; B(E2)(W.u.)=4.2 8 $\alpha(\text{K})=0.00721$ 10; $\alpha(\text{L})=0.000887$ 13; $\alpha(\text{M})=0.0001750$ 25; $\alpha(\text{N+..})=3.72 \times 10^{-5}$ $\alpha(\text{N})=3.38 \times 10^{-5}$ 5; $\alpha(\text{O})=3.36 \times 10^{-6}$ 5 $\delta$ : deduced from adopted $T_{1/2}$ and B(E2) in Coul.ex.; other: +0.29 9 from $\gamma(\theta)$ in $(\gamma, \gamma')$ .
573.142	1/2 <sup>+</sup>	65.548 13	0.32 3	507.597	3/2 <sup>+</sup>	M1+E2	-0.18 10	2.25 23	$\alpha(\text{K})=1.87$ 11; $\alpha(\text{L})=0.30$ 10; $\alpha(\text{M})=0.061$ 20; $\alpha(\text{N+..})=0.013$ 4 $\alpha(\text{N})=0.012$ 4; $\alpha(\text{O})=0.00105$ 24 B(M1)(W.u.)=0.024 6; B(E2)(W.u.)=1.3 $\times 10^2$ +15-13 $\delta$ : from $\gamma\gamma(\theta)$ in $\varepsilon$ decay.
		573.139 11	100 2	0.0	5/2 <sup>+</sup>	E2		0.00532 8	B(E2)(W.u.)=25 5 $\alpha(\text{K})=0.00456$ 7; $\alpha(\text{L})=0.000611$ 9; $\alpha(\text{M})=0.0001213$ 17; $\alpha(\text{N+..})=2.54 \times 10^{-5}$ 4 $\alpha(\text{N})=2.32 \times 10^{-5}$ 4; $\alpha(\text{O})=2.21 \times 10^{-6}$ 3
946.989	9/2 <sup>+</sup>	909.847 18	100 2	37.1298	7/2 <sup>+</sup>	M1+E2		0.00189 21	$\alpha(\text{K})=0.00164$ 19; $\alpha(\text{L})=0.000202$ 19; $\alpha(\text{M})=4.0 \times 10^{-5}$ 4; $\alpha(\text{N+..})=8.4 \times 10^{-6}$ 8 $\alpha(\text{N})=7.7 \times 10^{-6}$ 8; $\alpha(\text{O})=7.6 \times 10^{-7}$ 8 $\delta$ : -0.23 11 or -2.4 +6-9 from $\gamma(\theta)$ in $(n, n'\gamma)$ .
1024.0	7/2 <sup>+</sup>	946.989 18 1024.00 25	11.7 3 100	0.0 0.0	5/2 <sup>+</sup> 5/2 <sup>+</sup>	M1+E2	0.45 5	0.001551 24	B(M1)(W.u.)=0.107 21; B(E2)(W.u.)=15 4 $\alpha(\text{K})=0.001349$ 21; $\alpha(\text{L})=0.0001630$ 25; $\alpha(\text{M})=3.21 \times 10^{-5}$ 5; $\alpha(\text{N+..})=6.82 \times 10^{-6}$ $\alpha(\text{N})=6.20 \times 10^{-6}$ 10; $\alpha(\text{O})=6.18 \times 10^{-7}$ 10 $\delta$ : deduced from adopted $T_{1/2}$ and B(E2) in Coul.ex.; other: -1.9 18 from $\gamma(\theta)$ in $(n, n'\gamma)$ .
1035.429	9/2 <sup>+</sup>	998.291 11	100 2	37.1298	7/2 <sup>+</sup>	M1+E2		0.00153 17	$\alpha(\text{K})=0.00133$ 15; $\alpha(\text{L})=0.000163$ 16; $\alpha(\text{M})=3.2 \times 10^{-5}$ 3; $\alpha(\text{N+..})=6.8 \times 10^{-6}$ 7 $\alpha(\text{N})=6.2 \times 10^{-6}$ 6; $\alpha(\text{O})=6.1 \times 10^{-7}$ 7 $\delta$ : -0.34 +20-24 or -1.8 +6-13 from $\gamma(\theta)$ in $(n, n'\gamma)$ .

Adopted Levels, Gammas (continued)

$\gamma(^{121}\text{Sb})$  (continued)

$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_f$	$J_f^\pi$	Mult.#	$\delta^\#$	$\alpha^@$	Comments
1035.429	9/2 <sup>+</sup>	1035.40 10	0.72 30	0.0	5/2 <sup>+</sup>				
1139.287	9/2 <sup>+</sup> , 11/2 <sup>+</sup>	103.85 8	0.034 12	1035.429	9/2 <sup>+</sup>	[M1,E2]		1.0 5	$\alpha(\text{K})=0.8$ 3; $\alpha(\text{L})=0.19$ 14; $\alpha(\text{M})=0.04$ 3; $\alpha(\text{N}+..)=0.008$ 6 $\alpha(\text{N})=0.007$ 5; $\alpha(\text{O})=0.0006$ 4
1144.66	9/2 <sup>+</sup>	1102.149 18 1107.60 18	100 2 37 15	37.1298 37.1298	7/2 <sup>+</sup> 7/2 <sup>+</sup>	M1+E2	-1.9 18	0.00115 20	B(M1)(W.u.)=0.002 +4-2; B(E2)(W.u.)=4 3 $\alpha(\text{K})=0.00100$ 18; $\alpha(\text{L})=0.000122$ 19; $\alpha(\text{M})=2.4 \times 10^{-5}$ 4; $\alpha(\text{N}+..)=5.7 \times 10^{-6}$ 8 $\alpha(\text{N})=4.6 \times 10^{-6}$ 8; $\alpha(\text{O})=4.6 \times 10^{-7}$ 8; $\alpha(\text{IPF})=5.9 \times 10^{-7}$ 6
1321.94	(11/2 <sup>+</sup> )	1144.65 4	100 4	0.0	5/2 <sup>+</sup>	D			Mult.: from $^{120}\text{Sn}(^7\text{Li}, \alpha 2n\gamma)$ .
1385.2	+	374.9 2	100	946.989	9/2 <sup>+</sup>				
1407.29	1/2 <sup>+</sup> , 3/2, 5/2 <sup>+</sup>	1385.2 3	100	0.0	5/2 <sup>+</sup>				
1426.88	(11/2) <sup>-</sup>	834.2 2	100	573.142	1/2 <sup>+</sup>				
		1406.9 5	92	0.0	5/2 <sup>+</sup>				
		282.2 3	53 7	1144.66	9/2 <sup>+</sup>	E1(+M2)	+0.01 +19-14	0.011 6	$\alpha(\text{K})=0.009$ 5; $\alpha(\text{L})=0.0011$ 8; $\alpha(\text{M})=0.00022$ 16; $\alpha(\text{N}+..)=5.E-5$ 4 $\alpha(\text{N})=4.E-5$ 3; $\alpha(\text{O})=4.E-6$ 3
		287.8 4	16 2	1139.287	9/2 <sup>+</sup> , 11/2 <sup>+</sup>				
		391.2 3	100 12	1035.429	9/2 <sup>+</sup>				
1447.51	3/2 <sup>+</sup> , 5/2 <sup>+</sup> , 7/2 <sup>+</sup>	479.4 <sup>b</sup> 4	<2	946.989	9/2 <sup>+</sup>				
		940.0 3	33	507.597	3/2 <sup>+</sup>				
1471.2	+	1410.2 4	100	37.1298	7/2 <sup>+</sup>				
		898.1 3		573.142	1/2 <sup>+</sup>				
1474.4	+	1470.8 <sup>&amp;b</sup> 6		0.0	5/2 <sup>+</sup>				
		1437.3 6		37.1298	7/2 <sup>+</sup>				
1509.0	+	1473.3 <sup>b</sup> 16		0.0	5/2 <sup>+</sup>				
		1470.8 <sup>&amp;b</sup> 6		37.1298	7/2 <sup>+</sup>				
1519.2	+	1509.0 7	100	0.0	5/2 <sup>+</sup>				
		1481.8 6	33	37.1298	7/2 <sup>+</sup>				
1590.4		1519.3 4	100	0.0	5/2 <sup>+</sup>				
		1590.4 4		0.0	5/2 <sup>+</sup>				
1612.5	+	1575.4 <sup>ab</sup> 7	100 <sup>a</sup>	37.1298	7/2 <sup>+</sup>				
1628.3	+	1628.4 3		0.0	5/2 <sup>+</sup>				
1649.78	(13/2 <sup>+</sup> )	327.8 3	100 10	1321.94	(11/2 <sup>+</sup> )	D			Mult.: from $^{120}\text{Sn}(^7\text{Li}, \alpha 2n\gamma)$ .
		702.9 3	29 3	946.989	9/2 <sup>+</sup>				
1736.31	+	1736.3 2	100	0.0	5/2 <sup>+</sup>				

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Adopted Levels, Gammas (continued)

γ(<sup>121</sup>Sb) (continued)

<u>E<sub>i</sub>(level)</u>	<u>J<sub>i</sub><sup>π</sup></u>	<u>E<sub>γ</sub><sup>†</sup></u>	<u>I<sub>γ</sub><sup>‡</sup></u>	<u>E<sub>f</sub></u>	<u>J<sub>f</sub><sup>π</sup></u>	<u>Mult. #</u>	<u>δ<sup>#</sup></u>	<u>α<sup>@</sup></u>	<u>Comments</u>
1758.5	+	1758.5 4	100	0.0	5/2 <sup>+</sup>				
1810.8	1/2 <sup>+</sup> ,3/2 <sup>+</sup>	1810.8 5	100	0.0	5/2 <sup>+</sup>				
1910.6		1910.6 3	100	0.0	5/2 <sup>+</sup>				
1927.1		1927.1 5	100	0.0	5/2 <sup>+</sup>				
1981.6	3/2 <sup>+</sup> ,5/2 <sup>+</sup>	1981.6 4	100	0.0	5/2 <sup>+</sup>				
1997.80	(15/2 <sup>+</sup> )	348.0 3	100 11	1649.78	(13/2 <sup>+</sup> )	D			Mult.: from <sup>120</sup> Sn( <sup>7</sup> Li,α2nγ).
		675.8 3	27 4	1321.94	(11/2 <sup>+</sup> )				
2016.5		2016.5 9	100	0.0	5/2 <sup>+</sup>				
2025.9		1988.9 8	92 31	37.1298	7/2 <sup>+</sup>				
		2025.7 7	100	0.0	5/2 <sup>+</sup>				
2057.08	(13/2 <sup>+</sup> )	912.7 4	40 5	1144.66	9/2 <sup>+</sup>				
		917.8 4	100 11	1139.287	9/2 <sup>+</sup> ,11/2 <sup>+</sup>				
		1021.6 5	56 8	1035.429	9/2 <sup>+</sup>				
2063.2	+	2025.7 7	94 26	37.1298	7/2 <sup>+</sup>				
		2063.4 5	100	0.0	5/2 <sup>+</sup>				
2093.0	-	2093.0 7		0.0	5/2 <sup>+</sup>				
2097.9	3/2 <sup>+</sup> ,5/2 <sup>+</sup>	2097.9 5	100	0.0	5/2 <sup>+</sup>				
2114.1	+	2114.1 4	100	0.0	5/2 <sup>+</sup>				
2121.3		2121.3 7	100	0.0	5/2 <sup>+</sup>				
2139.0	13/2 <sup>+</sup> ,15/2 <sup>+</sup>	999.9		1139.287	9/2 <sup>+</sup> ,11/2 <sup>+</sup>	Q			Mult.: from <sup>120</sup> Sn( <sup>7</sup> Li,α2nγ).
2140.2		2140.2 7		0.0	5/2 <sup>+</sup>				
2142.23	(15/2 <sup>-</sup> )	85.3 3	19.5 11	2057.08	(13/2 <sup>+</sup> )	E1		0.295	α(K)=0.255 5; α(L)=0.0330 6; α(M)=0.00649 12; α(N+...)=0.001337 24 α(N)=0.001225 22; α(O)=0.0001125 20 B(E1)(W.u.)=3.6×10 <sup>-5</sup> 5 α(exp)<0.4 from <sup>121</sup> Sb IT decay (179 μs).
		144.3 5	3.2 6	1997.80	(15/2 <sup>+</sup> )				
		492.4 4	4.1 6	1649.78	(13/2 <sup>+</sup> )				
		715.2 3	100 5	1426.88	(11/2 <sup>-</sup> )	E2(+M3)	-0.17 +19-8	0.0036 7	α(K)=0.0031 6; α(L)=0.00041 8; α(M)=8.1×10 <sup>-5</sup> 16; α(N+...)=1.7×10 <sup>-5</sup> 4 α(N)=1.5×10 <sup>-5</sup> 4; α(O)=1.5×10 <sup>-6</sup> 3 B(E2)(W.u.)=(0.035 5); B(M3)(W.u.)=(1.4×10 <sup>4</sup> +30-14) δ: other: +0.10 +8-7 from <sup>120</sup> Sn( <sup>7</sup> Li,α2nγ).
2235.5	+	2235.5 3	100	0.0	5/2 <sup>+</sup>				
2255.2		2255.2 6	100	0.0	5/2 <sup>+</sup>				
2259.1		2259.1 3	100	0.0	5/2 <sup>+</sup>				
2265.9	+	2265.9 4	100	0.0	5/2 <sup>+</sup>				
2280.4		2243.1 7	93 28	37.1298	7/2 <sup>+</sup>				
		2280.4 6	100	0.0	5/2 <sup>+</sup>				
2289.8	+	2289.8 4	100	0.0	5/2 <sup>+</sup>				

**Adopted Levels, Gammas (continued)**

$\gamma(^{121}\text{Sb})$  (continued)

$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_f$	$J_f^\pi$	Mult. #	$\delta^\#$	$\alpha^@$	Comments
2323.5		2286.3 5 2323.5 4	81 24 100	37.1298 0.0	7/2 <sup>+</sup> 5/2 <sup>+</sup>				
2356.78	(17/2 <sup>+</sup> )	359.0 3 707.1 3	100 10 27 2	1997.80 1649.78	(15/2 <sup>+</sup> ) (13/2 <sup>+</sup> )	(D)			Mult.: from <sup>120</sup> Sn( <sup>7</sup> Li, $\alpha$ 2n $\gamma$ ).
2398.84	+	2361.7 3 2398.8 3	45 4 100	37.1298 0.0	7/2 <sup>+</sup> 5/2 <sup>+</sup>				
2434.6	(19/2) <sup>-</sup>	77.9 3	4.7 5	2356.78	(17/2 <sup>+</sup> )	E1		0.381 7	$\alpha(\text{K})=0.328$ 6; $\alpha(\text{L})=0.0429$ 8; $\alpha(\text{M})=0.00843$ 16; $\alpha(\text{N}+..)=0.00173$ 3 $\alpha(\text{N})=0.00159$ 3; $\alpha(\text{O})=0.000145$ 3 $\text{B}(\text{E}1)(\text{W.u.})=3.2\times 10^{-6}$ 4 $\alpha(\text{exp})=0.2$ 4 from <sup>121</sup> Sb IT decay (179 $\mu\text{s}$ ). $\alpha(\text{K})=0.0337$ 17; $\alpha(\text{L})=0.0054$ 3; $\alpha(\text{M})=0.00108$ 7; $\alpha(\text{N}+..)=0.000221$ 13 $\alpha(\text{N})=0.000203$ 12; $\alpha(\text{O})=1.80\times 10^{-5}$ 12 $\text{B}(\text{E}2)(\text{W.u.})=(0.87$ 8); $\text{B}(\text{M}3)(\text{W.u.})=(7.\text{E}+3$ +71-7) $\delta$ : weighted average of -0.03 6 (2009Wa02) and +0.02 +9-7 from <sup>121</sup> Sb IT decay (179 $\mu\text{s}$ ).
2435.89	+	2398.8 3 2435.8 3	100 65 4	37.1298 0.0	7/2 <sup>+</sup> 5/2 <sup>+</sup>				
2442.0		2442.0 3	100	0.0	5/2 <sup>+</sup>				
2447.7		2447.7 4	100	0.0	5/2 <sup>+</sup>				
2459.2		2459.2 6	100	0.0	5/2 <sup>+</sup>				
2477.0	-	2477.0 4	100	0.0	5/2 <sup>+</sup>				
2497.7		2497.7 3	100	0.0	5/2 <sup>+</sup>				
2543.1	17/2	401.0	100	2142.23	(15/2) <sup>-</sup>	D			Mult.: from <sup>120</sup> Sn( <sup>7</sup> Li, $\alpha$ 2n $\gamma$ ).
2551.6	(21/2,19/2) <sup>-</sup>	117.4 3	43	2434.6	(19/2) <sup>-</sup>	M1(+E2)	<0.2	0.404 13	$\alpha(\text{K})=0.346$ 9; $\alpha(\text{L})=0.046$ 3; $\alpha(\text{M})=0.0092$ 6; $\alpha(\text{N}+..)=0.00194$ 12 $\alpha(\text{N})=0.00177$ 11; $\alpha(\text{O})=0.000172$ 8 $\delta$ : from $\alpha(\text{exp})=0.37$ 5 (2009Wa02). Other: <0.9 from $\alpha(\text{exp})=0.47$ 17 (2008Jo03).
		400.9 <sup>b</sup> 4	100 12	2150.7?	(17/2)				
		409.3 <sup>b</sup> 6	29 7	2142.23	(15/2) <sup>-</sup>				
2573.8		2573.8 7	100	0.0	5/2 <sup>+</sup>				
2578.8		2541.6 6 2579.2 14	98 52 100	37.1298 0.0	7/2 <sup>+</sup> 5/2 <sup>+</sup>				
2585.6	+	2585.6 8	100	0.0	5/2 <sup>+</sup>				
2649.0	+	2649.0 7	100	0.0	5/2 <sup>+</sup>				
2663.2		2626.1 5 2663.0 7	100 66 17	37.1298 0.0	7/2 <sup>+</sup> 5/2 <sup>+</sup>				
2668.1		2668.1 7	100	0.0	5/2 <sup>+</sup>				
2678.1		2678.1 4	100	0.0	5/2 <sup>+</sup>				

**Adopted Levels, Gammas (continued)**

$\gamma(^{121}\text{Sb})$  (continued)

$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_f$	$J_f^\pi$	Mult. #	$\delta^\#$	$\alpha^@$	Comments
2679.9	(19/2 <sup>+</sup> )	243		2434.6	(19/2) <sup>-</sup>				
		323.1 3	100 10	2356.78	(17/2 <sup>+</sup> )				
		682.0 3	38 3	1997.80	(15/2 <sup>+</sup> )				
2690.5	3/2 <sup>+</sup> , 5/2 <sup>+</sup>	2653.5 6	23 4	37.1298	7/2 <sup>+</sup>				
		2690.4 3	100	0.0	5/2 <sup>+</sup>				
2698.8		2698.8 8	100	0.0	5/2 <sup>+</sup>				
2713.5		2713.5 4	100	0.0	5/2 <sup>+</sup>				
2721.4		2721.4 6	100	0.0	5/2 <sup>+</sup>				
2721.6	(21/2) <sup>+</sup>	41.1 5	5.0 9	2679.9	(19/2 <sup>+</sup> )	M1+E2	0.50 15	15 4	$\alpha(\text{K})=8.1$ 7; $\alpha(\text{L})=5.3$ 22; $\alpha(\text{M})=1.1$ 5; $\alpha(\text{N+..})=0.21$ 9 $\alpha(\text{N})=0.20$ 8; $\alpha(\text{O})=0.014$ 6 B(M1)(W.u.)>0.0024; B(E2)(W.u.)<1.1×10 <sup>2</sup> $\alpha(\text{exp})=12$ 8, 15 3 from <sup>121</sup> Sb IT decay (179 $\mu\text{s}$ ). $\alpha(\text{K})=0.0365$ 6; $\alpha(\text{L})=0.00455$ 7; $\alpha(\text{M})=0.000893$ 14; $\alpha(\text{N+..})=0.000187$ 3 $\alpha(\text{N})=0.000170$ 3; $\alpha(\text{O})=1.623\times 10^{-5}$ 24 B(E1)(W.u.)=6.4×10 <sup>-7</sup> 16 Mult.: from $\alpha(\text{K})\text{exp}=0.032$ 5 (2009Wa02). $\alpha(\text{K})=0.0088$ 4; $\alpha(\text{L})=0.00108$ 5; $\alpha(\text{M})=0.000212$ 10; $\alpha(\text{N+..})=4.47\times 10^{-5}$ 20 $\alpha(\text{N})=4.07\times 10^{-5}$ 19; $\alpha(\text{O})=3.95\times 10^{-6}$ 18 B(E1)(W.u.)=(3.3×10 <sup>-6</sup> 7); B(M2)(W.u.)=(0.019 +149-19) $\delta$ : weighted average of -0.06 4 (2009Wa02) and +0.02 3 from <sup>121</sup> Sb IT decay (179 $\mu\text{s}$ ). $\alpha(\text{exp})=0.02$ 5 from <sup>121</sup> Sb IT decay (179 $\mu\text{s}$ ): $\alpha(\text{K})\text{exp}=0.013$ 2 (2009Wa02). $E_\gamma$ : x<60 keV for E2, <80 keV for M2 based on typical Weisskopf estimates.
		170.3 3	4.0 5	2551.6	(21/2,19/2) <sup>-</sup>	E1		0.0421	
		286.8 3	100	2434.6	(19/2) <sup>-</sup>	E1(+M2)	-0.01 4	0.0102 4	
2721.5+x	(25/2)	x		2721.6	(21/2) <sup>+</sup>				
2725.8		2725.8 12	100	0.0	5/2 <sup>+</sup>				
2733.0		2733.0 9	100	0.0	5/2 <sup>+</sup>				
2740.8		2703.8 6	100	37.1298	7/2 <sup>+</sup>				
		2740.4 10	44 16	0.0	5/2 <sup>+</sup>				
2745.0		2745.0 9	100	0.0	5/2 <sup>+</sup>				
2764.8	(19/2 <sup>+</sup> )	408.0		2356.78	(17/2 <sup>+</sup> )	D			Mult.: from <sup>120</sup> Sn( <sup>7</sup> Li, $\alpha$ 2n $\gamma$ ).
		766.8		1997.80	(15/2 <sup>+</sup> )				
2775.1		2775.1 6	100	0.0	5/2 <sup>+</sup>				
2783.7		2783.7 7	100	0.0	5/2 <sup>+</sup>				
2798.7		2761.2 9	63 26	37.1298	7/2 <sup>+</sup>				
		2798.8 6	100	0.0	5/2 <sup>+</sup>				
2810.0		2810.0 7	100	0.0	5/2 <sup>+</sup>				

**Adopted Levels, Gammas (continued)**

$\gamma(^{121}\text{Sb})$  (continued)

$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_f$	$J_f^\pi$	$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_f$	$J_f^\pi$
2828.4		2791.9 9	47 20	37.1298	7/2 <sup>+</sup>	3210.1		3210.1 5	100	0.0	5/2 <sup>+</sup>
		2828.2 5	100	0.0	5/2 <sup>+</sup>	3232.5		3232.5 3	100	0.0	5/2 <sup>+</sup>
2835.8		2798.8 6	100	37.1298	7/2 <sup>+</sup>	3252.2		3215.0 7	47 18	37.1298	7/2 <sup>+</sup>
		2835.6 8	83 30	0.0	5/2 <sup>+</sup>			3252.1 7	100	0.0	5/2 <sup>+</sup>
2843.6		2806.2 7	10 4	37.1298	7/2 <sup>+</sup>	3259.9		3259.9 7	100	0.0	5/2 <sup>+</sup>
		2843.6 3	100	0.0	5/2 <sup>+</sup>	3289.7		3252.1 7	55 14	37.1298	7/2 <sup>+</sup>
2860.1		2860.1 5	100	0.0	5/2 <sup>+</sup>			3290.3 9	100	0.0	5/2 <sup>+</sup>
2865.3		2828.2 5	100	37.1298	7/2 <sup>+</sup>	3302.9		3265.9 5	100	37.1298	7/2 <sup>+</sup>
		2865.2 6	24 9	0.0	5/2 <sup>+</sup>			3302.7 6	73 40	0.0	5/2 <sup>+</sup>
2873.1		2835.6 8	100	37.1298	7/2 <sup>+</sup>	3314.1		3277.1 3	100	37.1298	7/2 <sup>+</sup>
		2873.4 9	60 28	0.0	5/2 <sup>+</sup>			3313.7 5	18 6	0.0	5/2 <sup>+</sup>
2911.0		2873.4 9	100	37.1298	7/2 <sup>+</sup>	3345.8		3308.5 12	59 29	37.1298	7/2 <sup>+</sup>
		2911.6 11	68 36	0.0	5/2 <sup>+</sup>			3345.8 8	100	0.0	5/2 <sup>+</sup>
2917.3		2917.3 6	100	0.0	5/2 <sup>+</sup>	3351.7		3351.7 7	100	0.0	5/2 <sup>+</sup>
2931.8		2895.2 9	33 15	37.1298	7/2 <sup>+</sup>	3363.7		3363.6 4	100	0.0	5/2 <sup>+</sup>
		2931.5 6	100	0.0	5/2 <sup>+</sup>	3385.0		3384.9 6	100	0.0	5/2 <sup>+</sup>
2937.4	1/2 <sup>+</sup> , 3/2 <sup>+</sup>	2937.4 4	100	0.0	5/2 <sup>+</sup>	3451.068	(3/2 <sup>+</sup> , 5/2 <sup>+</sup> )	1933 <sup>b</sup>	16	1519.2	<sup>+</sup>
2948.1		2911.6 11	89 54	37.1298	7/2 <sup>+</sup>			2879	21 2	573.142	1/2 <sup>+</sup>
		2947.3 12	100	0.0	5/2 <sup>+</sup>			2943	20 3	507.597	3/2 <sup>+</sup>
2964.0		2964.0 7	100	0.0	5/2 <sup>+</sup>			3414	11 2	37.1298	7/2 <sup>+</sup>
2973.6		2973.6 3	100	0.0	5/2 <sup>+</sup>			3452	100	0.0	5/2 <sup>+</sup>
2994.1		2994.1 3	100	0.0	5/2 <sup>+</sup>	3474.3		3437.1 8	23 11	37.1298	7/2 <sup>+</sup>
3024.6		3024.6 6	100	0.0	5/2 <sup>+</sup>			3474.2 4	100	0.0	5/2 <sup>+</sup>
3033.1		3033.1 10	100	0.0	5/2 <sup>+</sup>	3485.9		3485.8 5	100	0.0	5/2 <sup>+</sup>
3050.4		3050.4 3	100	0.0	5/2 <sup>+</sup>	3495.7		3495.6 8	100	0.0	5/2 <sup>+</sup>
3064.1		3064.1 6	100	0.0	5/2 <sup>+</sup>	3503.3		3503.2 6	100	0.0	5/2 <sup>+</sup>
3072.9		3072.9 5	100	0.0	5/2 <sup>+</sup>	3512.8		3512.7 11	100	0.0	5/2 <sup>+</sup>
3082.7		3082.7 8	100	0.0	5/2 <sup>+</sup>	3517.4		3480.5 9	63 29	37.1298	7/2 <sup>+</sup>
3098.7		3098.7 3	100	0.0	5/2 <sup>+</sup>			3517.0 11	100	0.0	5/2 <sup>+</sup>
3106.0		3068.9 9	100	37.1298	7/2 <sup>+</sup>	3521.4		3521.3 5	100	0.0	5/2 <sup>+</sup>
		3105.9 12	53 30	0.0	5/2 <sup>+</sup>	3545.0		3544.9 7	100	0.0	5/2 <sup>+</sup>
3115.9		3078.2 10	42 18	37.1298	7/2 <sup>+</sup>	3570.3		3570.2 13	100	0.0	5/2 <sup>+</sup>
		3116.0 6	100	0.0	5/2 <sup>+</sup>	3575.1		3575.0 7	100	0.0	5/2 <sup>+</sup>
3122.9		3122.9 4	100	0.0	5/2 <sup>+</sup>	3580.8		3580.7 4	100	0.0	5/2 <sup>+</sup>
3132.0		3132.0 7	100	0.0	5/2 <sup>+</sup>	3587.7		3587.6 10	100	0.0	5/2 <sup>+</sup>
3148.8		3148.8 7	100	0.0	5/2 <sup>+</sup>	3614.6		3614.5 6	100	0.0	5/2 <sup>+</sup>
3151.7		3151.7 8	100	0.0	5/2 <sup>+</sup>	3621.5		3621.4 11	100	0.0	5/2 <sup>+</sup>
3159.5		3159.5 3	100	0.0	5/2 <sup>+</sup>	3642.1		3642.0 7	100	0.0	5/2 <sup>+</sup>
3183.4	(21/2, 23/2)	418.6		2764.8	(19/2 <sup>+</sup> )	3648.6		3648.5 8	100	0.0	5/2 <sup>+</sup>
3186.9		3186.9 4	100	0.0	5/2 <sup>+</sup>	3672.7		3672.6 11	100	0.0	5/2 <sup>+</sup>
3193.7		3193.7 4	100	0.0	5/2 <sup>+</sup>	3676.6		3638.9 8	66 27	37.1298	7/2 <sup>+</sup>
3206.6		3206.6 4	100	0.0	5/2 <sup>+</sup>			3677.3 10	100	0.0	5/2 <sup>+</sup>

**Adopted Levels, Gammas (continued)**

γ(<sup>121</sup>Sb) (continued)

<u>E<sub>i</sub>(level)</u>	<u>J<sub>i</sub><sup>π</sup></u>	<u>E<sub>γ</sub><sup>†</sup></u>	<u>I<sub>γ</sub><sup>‡</sup></u>	<u>E<sub>f</sub></u>	<u>J<sub>f</sub><sup>π</sup></u>	<u>E<sub>i</sub>(level)</u>	<u>J<sub>i</sub><sup>π</sup></u>	<u>E<sub>γ</sub><sup>†</sup></u>	<u>I<sub>γ</sub><sup>‡</sup></u>	<u>E<sub>f</sub></u>	<u>J<sub>f</sub><sup>π</sup></u>
3706.4		3706.3 7	100	0.0	5/2 <sup>+</sup>	3844.7		3844.6 8	100	0.0	5/2 <sup>+</sup>
3731.6		3693.7 9	96 34	37.1298	7/2 <sup>+</sup>	3849.2		3849.1 7	100	0.0	5/2 <sup>+</sup>
		3731.7 5	100	0.0	5/2 <sup>+</sup>	3854.3		3854.2 7	100	0.0	5/2 <sup>+</sup>
3749.0		3712.1 9	79 32	37.1298	7/2 <sup>+</sup>	3858.2		3858.1 7	100	0.0	5/2 <sup>+</sup>
		3748.9 5	100	0.0	5/2 <sup>+</sup>	3863.9		3863.8 6	100	0.0	5/2 <sup>+</sup>
3755.9		3719.2 11	100	37.1298	7/2 <sup>+</sup>	3867.1		3867.0 8	100	0.0	5/2 <sup>+</sup>
		3755.6 7	88 49	0.0	5/2 <sup>+</sup>	3870.2		3870.1 8	100	0.0	5/2 <sup>+</sup>
3759.5		3759.4 9	100	0.0	5/2 <sup>+</sup>	3894.1		3894.0 9	100	0.0	5/2 <sup>+</sup>
3771.9		3771.8 8	100	0.0	5/2 <sup>+</sup>	3899.7		3899.6 10	100	0.0	5/2 <sup>+</sup>
3781.4		3781.3 5	100	0.0	5/2 <sup>+</sup>	3905.3		3905.2 6	100	0.0	5/2 <sup>+</sup>
3787.4		3787.3 7	100	0.0	5/2 <sup>+</sup>	3909.5		3909.4 11	100	0.0	5/2 <sup>+</sup>
3792.7		3755.6 7	68 39	37.1298	7/2 <sup>+</sup>	3916.1		3916.0 8	100	0.0	5/2 <sup>+</sup>
		3792.6 8	100	0.0	5/2 <sup>+</sup>	3923.5		3923.4 7	100	0.0	5/2 <sup>+</sup>
3804.4		3804.3 10	100	0.0	5/2 <sup>+</sup>	3929.2		3929.1 8	100	0.0	5/2 <sup>+</sup>
3812.7		3775.1 7	100	37.1298	7/2 <sup>+</sup>	3933.4		3933.3 9	100	0.0	5/2 <sup>+</sup>
		3812.9 6	61 25	0.0	5/2 <sup>+</sup>	3941.0		3940.9 7	100	0.0	5/2 <sup>+</sup>
3837.9		3800.4 9	100	37.1298	7/2 <sup>+</sup>	3972.8		3972.7 11	100	0.0	5/2 <sup>+</sup>
		3838.1 9	84 45	0.0	5/2 <sup>+</sup>						

† From <sup>121</sup>Te ε decay (19.16 d, 154 d); E<sub>γ</sub>'s from high spin levels (≥ 13/2<sup>+</sup> for positive parity, ≥ 11/2<sup>-</sup> for negative parity, ≥ (17/2) are from <sup>121</sup>Sb IT decay (179 μs); others from <sup>121</sup>Sb(n,n'γ), (γ,γ), Coul. ex.

‡ From <sup>121</sup>Te ε decay (19.16 d, 154 d); others from <sup>121</sup>Sb(n,n'γ), (γ,γ), Coul. ex., <sup>120</sup>Sn(<sup>7</sup>Li,α2nγ).

# From α in <sup>121</sup>Te IT decay, γ(θ) in (γ,γ'), except where noted otherwise.

@ 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.

& Multiply placed.

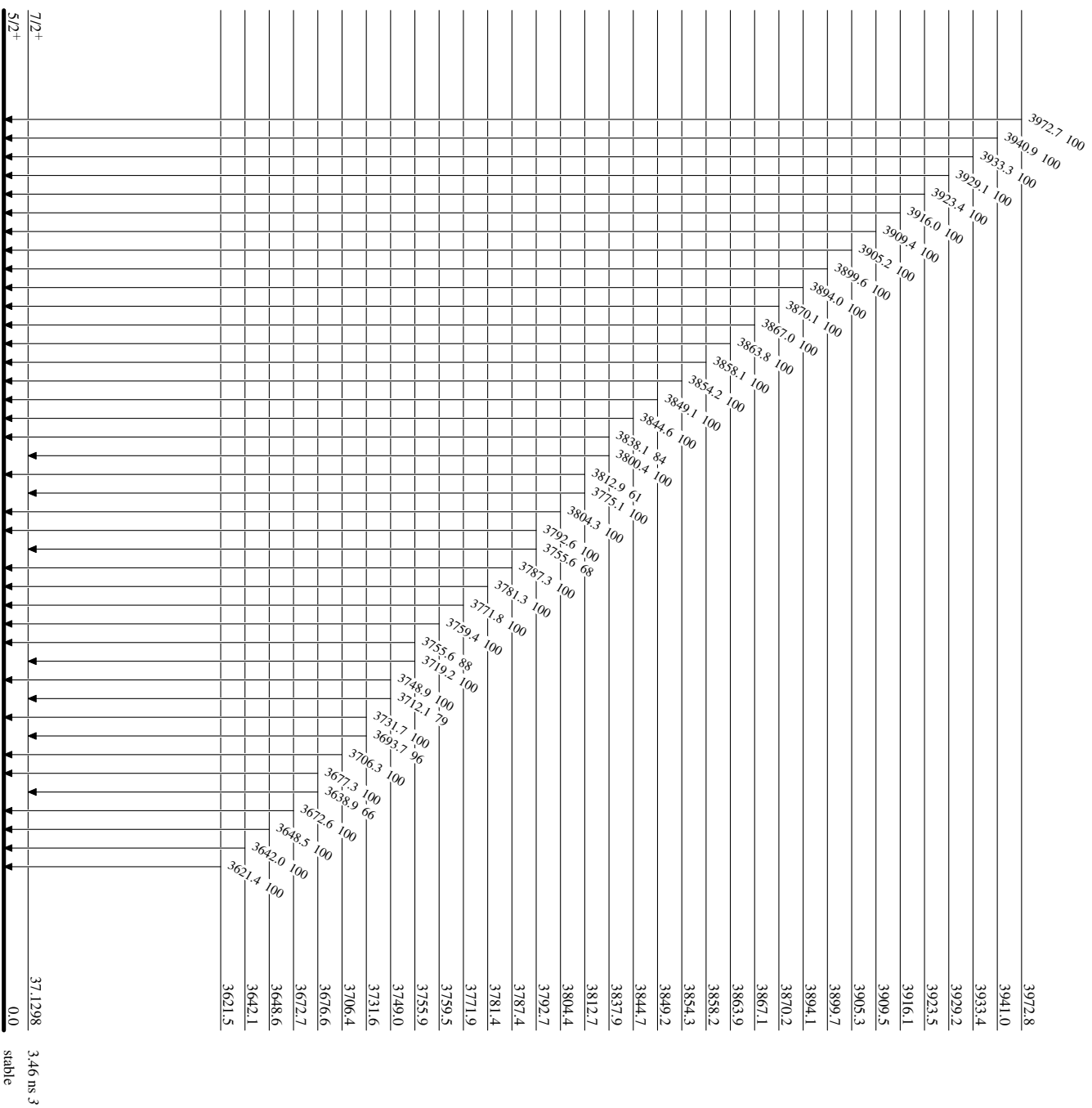
<sup>a</sup> Multiply placed with undivided intensity.

<sup>b</sup> Placement of transition in the level scheme is uncertain.

**Adopted Levels, Gammas**

Level Scheme

Intensities: Relative photon branching from each level



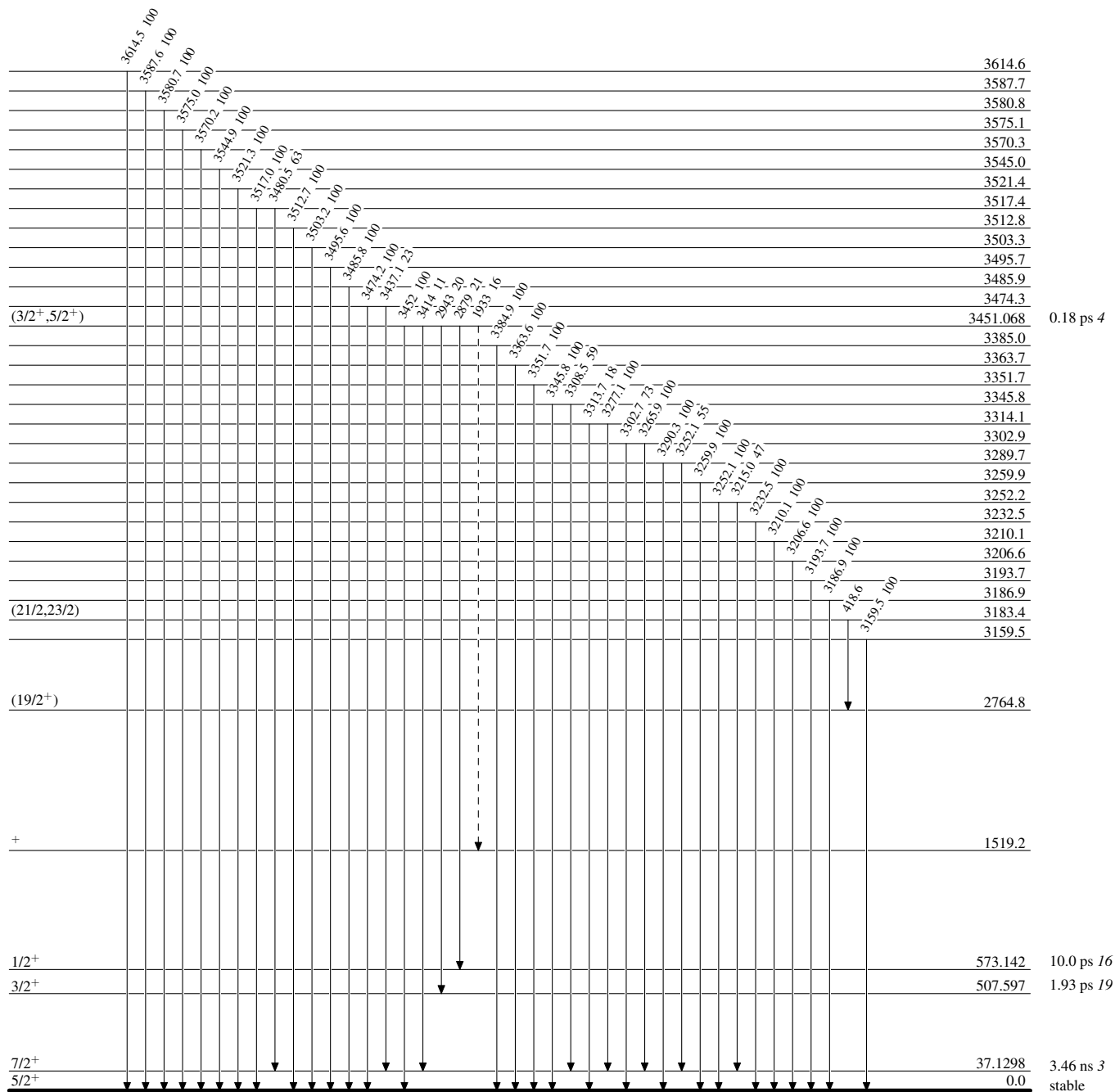
**Adopted Levels, Gammas**

Legend

**Level Scheme (continued)**

Intensities: Relative photon branching from each level

-----▶  $\gamma$  Decay (Uncertain)

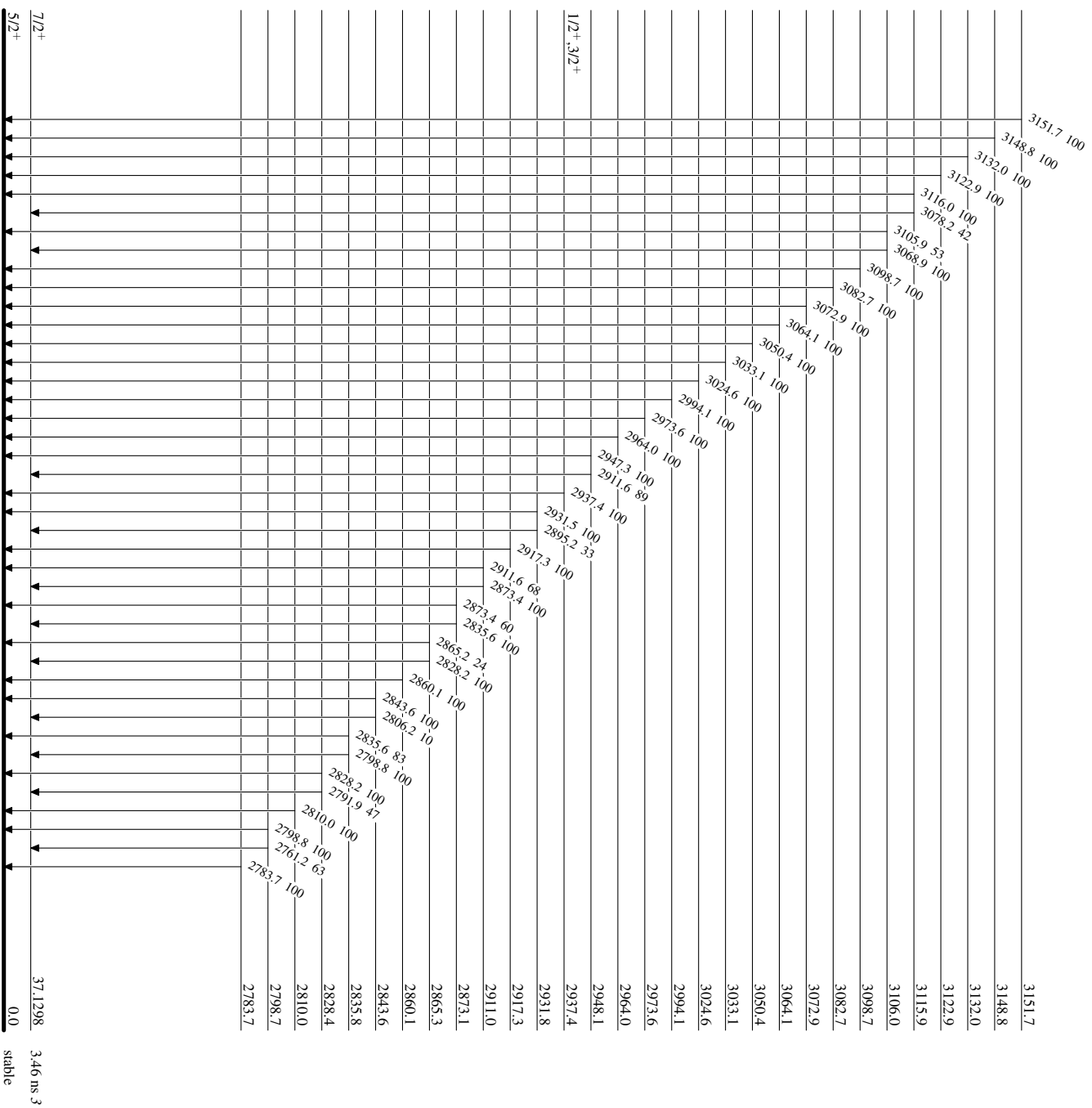


$^{121}_{51}\text{Sb}_{70}$

**Adopted Levels, Gammas**

Level Scheme (continued)

Intensities: Relative photon branching from each level





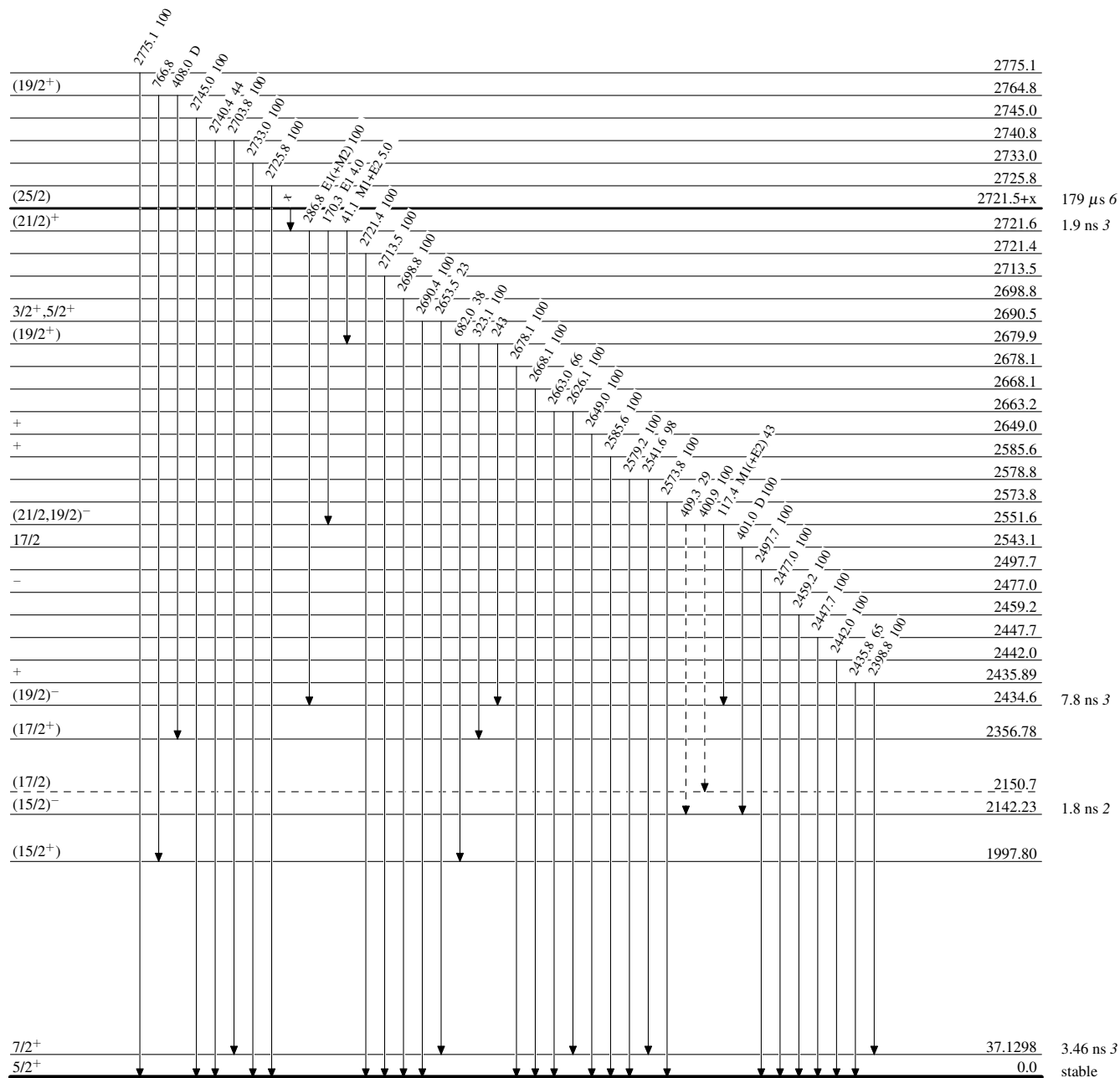
**Adopted Levels, Gammas**

Legend

**Level Scheme (continued)**

Intensities: Relative photon branching from each level

----->  $\gamma$  Decay (Uncertain)





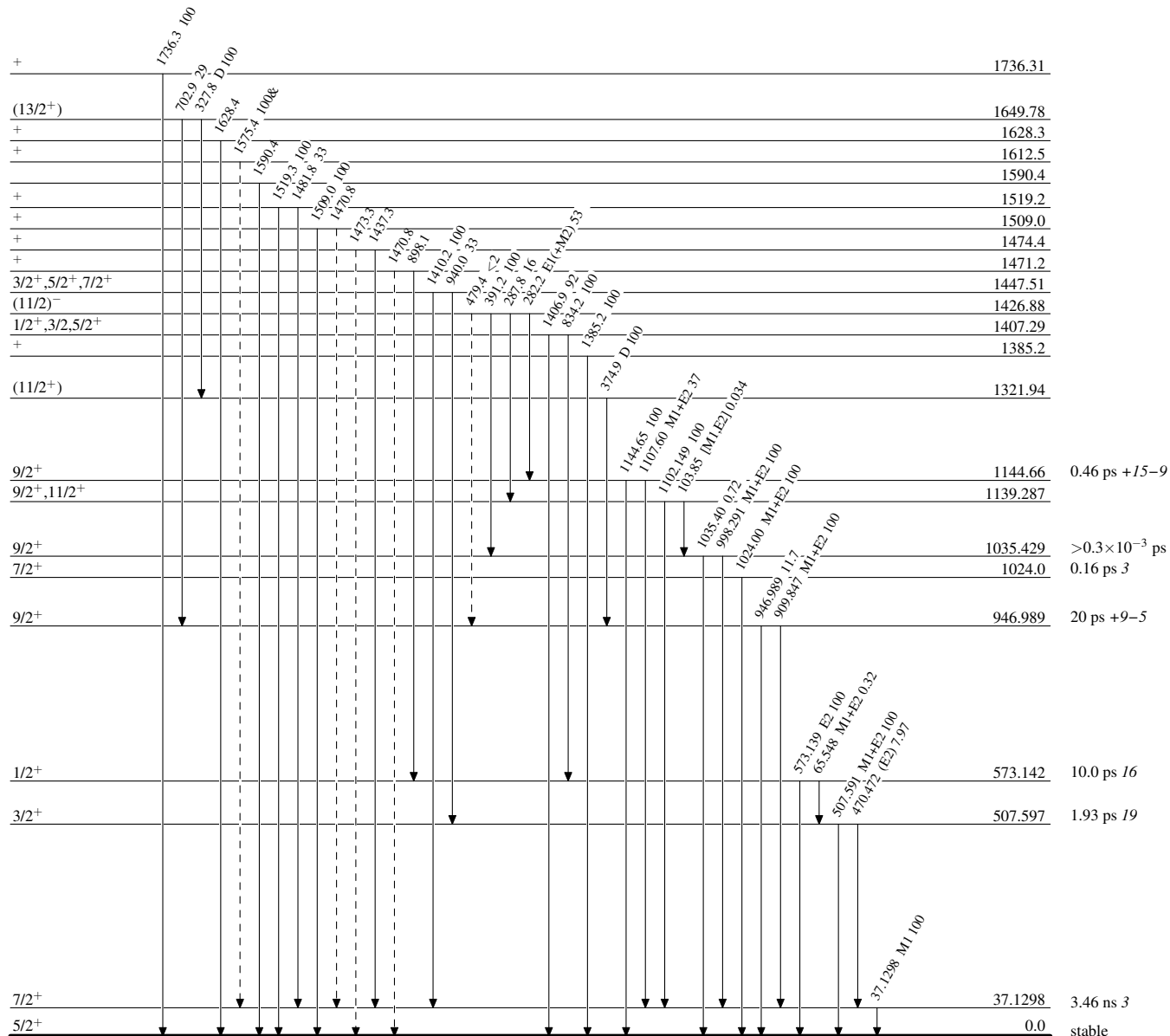
**Adopted Levels, Gammas**

Legend

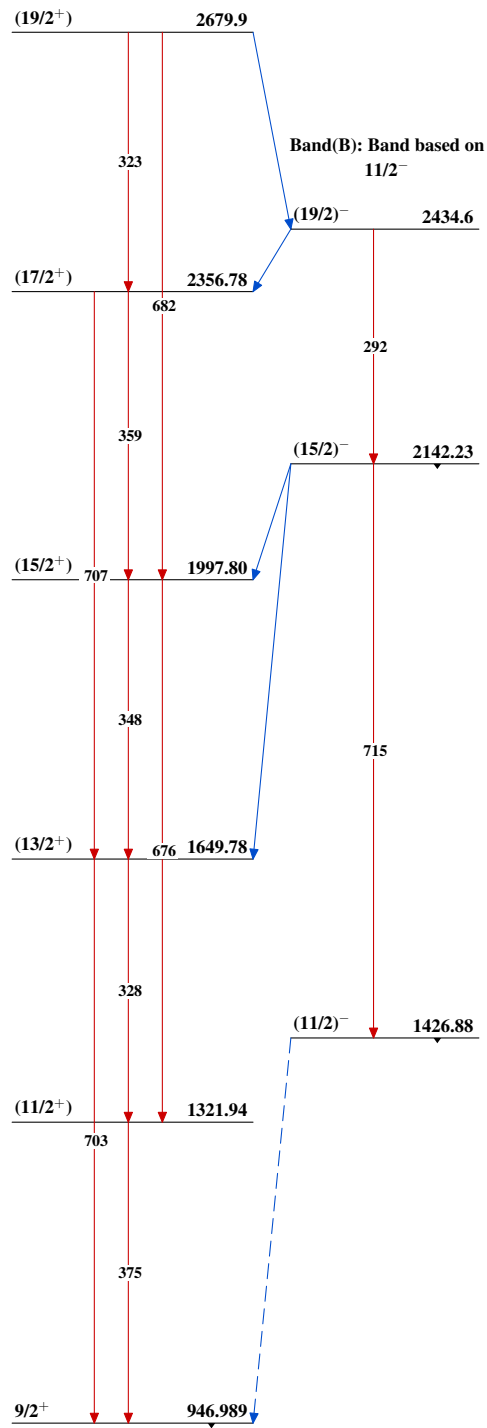
**Level Scheme (continued)**

Intensities: Relative photon branching from each level  
& Multiply placed: undivided intensity given

-----►  $\gamma$  Decay (Uncertain)



$^{121}_{51}\text{Sb}_{70}$

**Adopted Levels, Gammas**Band(A): Band based on  $9/2^+[404]$  $^{121}_{51}\text{Sb}_{70}$