^{156}Gd(^{37}Cl,4nγ):SD 1998Re20

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson, Balraj Singh	NDS 142, 1 (2017)	15-Apr-2017

1998Re20 (also 2000Re10, 1998Re04): ^{156}Gd(^{37}Cl,4nγ) E=172 MeV. Measured Eγ, Iγ, $\gamma\gamma$ coin using Gammasphere array of 102 Compton-suppressed Ge detectors. Deduced SD bands.

^{189}Tl Levels

SD-1 and SD-2 bands are interpreted (by 1998Re20) as signature partners associated with $\pi i_{13/2}$ (Ω=5/2) configuration.

E(level)	J$^\pi$[†]	E(level)	J$^\pi$[†]	E(level)	J$^\pi$[†]
x[‡]	J1≈(27/2)	3732.6+x[‡] *15*	J1+16	1927.5+y[#] *18*	J2+10
326.3+x[‡] *10*	J1+2	4369.4+x[‡] *16*	J1+18	2432.3+y[#] *19*	J2+12
694.2+x[‡] *12*	J1+4	5040.3+x?[‡] *19*	J1+20	2973.7+y[#] *19*	J2+14
1102.7+x[‡] *12*	J1+6	y[#]	J2≈(25/2)	3552.8+y[#] *20*	J2+16
1551.3+x[‡] *12*	J1+8	304.5+y[#] *10*	J2+2	4167.0+y[#] *21*	J2+18
2039.6+x[‡] *13*	J1+10	649.3+y[#] *12*	J2+4	4815.4+y?[#] *23*	J2+20
2566.4+x[‡] *13*	J1+12	1034.3+y[#] *15*	J2+6		
3131.1+x[‡] *13*	J1+14	1461.3+y[#] *18*	J2+8		

[†] Proposed in 1998Re20 based on fitting of measured dynamic moment of inertia as a function of $\hbar\omega$ using a Harris parameterization. These assignments are consistent with the observation that the SD bands feed the normal-deformed states at and below spin 25/2.
[‡] Band(A): SD-1 band (1998Re20). Percent population=0.1-0.2.
[#] Band(a): SD-2 band (1998Re20). Percent population=0.1-0.2.

γ(^{189}Tl)

E$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	I$_{(\gamma+ce)}$[‡]
304.5[#] *10*	304.5+y	J2+2	y	J2≈(25/2)	0.39 *8*
326.3[#] *10*	326.3+x	J1+2	x	J1≈(27/2)	0.13 *8*
344.8 *6*	649.3+y	J2+4	304.5+y	J2+2	0.45 *8*
367.9 *6*	694.2+x	J1+4	326.3+x	J1+2	0.38 *7*
385 *1*	1034.3+y	J2+6	649.3+y	J2+4	
408.5 *3*	1102.7+x	J1+6	694.2+x	J1+4	1.09 *8*
427 *1*	1461.3+y	J2+8	1034.3+y	J2+6	0.97 *11*
448.6 *3*	1551.3+x	J1+8	1102.7+x	J1+6	1.00 *8*
466.2 *3*	1927.5+y	J2+10	1461.3+y	J2+8	1.00 *9*
488.3 *3*	2039.6+x	J1+10	1551.3+x	J1+8	0.95 *8*
504.8 *3*	2432.3+y	J2+12	1927.5+y	J2+10	0.86 *9*
526.8 *3*	2566.4+x	J1+12	2039.6+x	J1+10	0.94 *7*
541.4 *3*	2973.7+y	J2+14	2432.3+y	J2+12	0.82 *8*
564.7 *3*	3131.1+x	J1+14	2566.4+x	J1+12	0.83 *10*
579.1 *6*	3552.8+y	J2+16	2973.7+y	J2+14	0.54 *8*
601.5 *6*	3732.6+x	J1+16	3131.1+x	J1+14	0.50 *7*
614.2 *6*	4167.0+y	J2+18	3552.8+y	J2+16	0.47 *9*
636.8 *6*	4369.4+x	J1+18	3732.6+x	J1+16	0.33 *8*
648.4[#] *10*	4815.4+y?	J2+20	4167.0+y	J2+18	0.35 *7*
670.9[#] *10*	5040.3+x?	J1+20	4369.4+x	J1+18	0.23 *7*

Continued on next page (footnotes at end of table)

^{156}Gd(^{37}Cl,4nγ):SD 1998Re20 (continued)

$\gamma(^{189}Tl)$ (continued)

† $\Delta(E\gamma)$ assigned by the evaluators, based on a general comment by 1998Re20 that it varies from 0.3 to 1 keV.
‡ Relative intensities within each SD band, read (by the evaluators) from intensity plot given by 1998Re20.
# Placement of transition in the level scheme is uncertain.

Legend

γ Decay (Uncertain)

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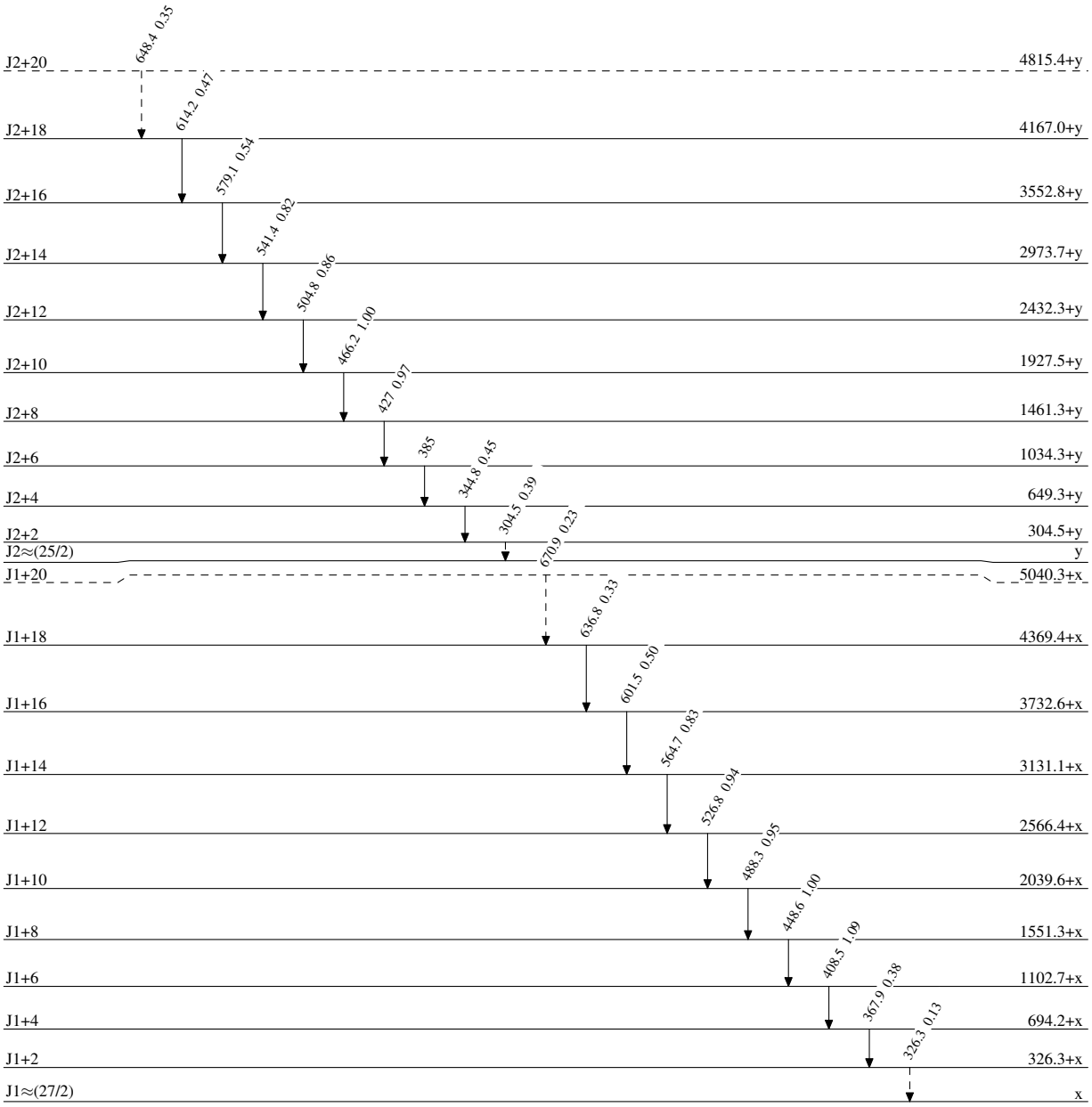
Level Scheme



$^{189}_{81}Tl_{108}$

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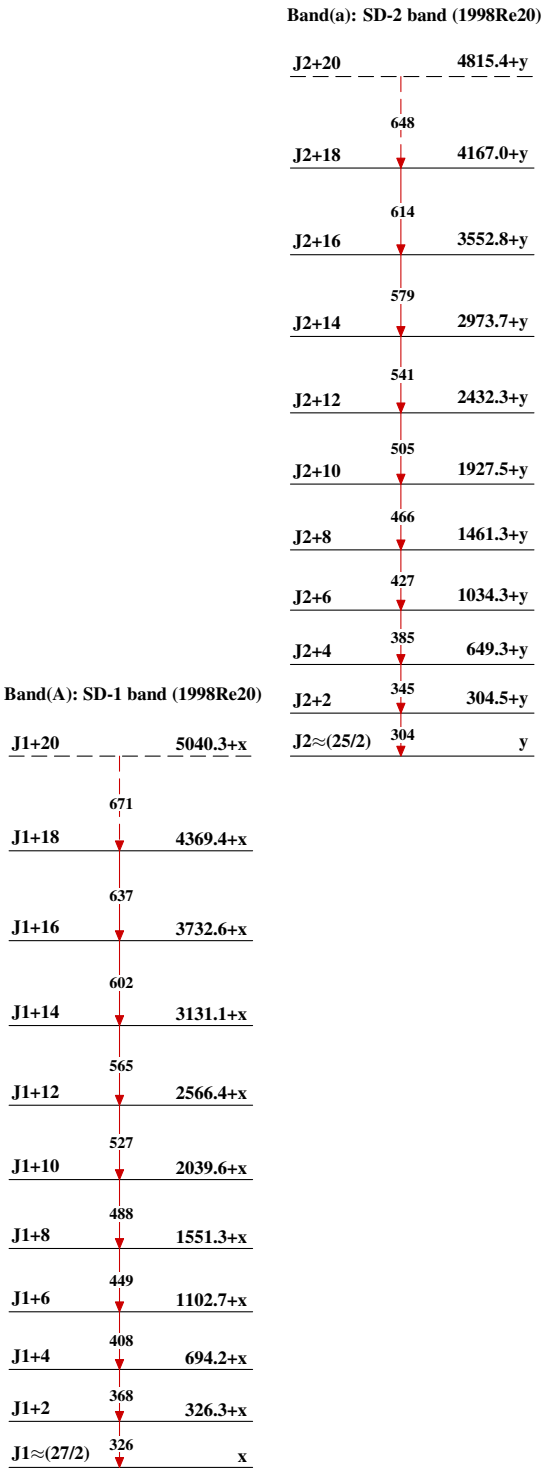

$^{189}_{81}Tl_{108}$