^{155}Gd(d,p) 1993Kl03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. W. Reich	NDS 113, 2537 (2012)	1-Mar-2012

$J^\pi(^{155}Gd)=3/2^-$. configuration=ν3/2(521).

^{155}Gd(d,p): E(d)=22 MeV, enriched (≈90%) target, 50 μg/cm^2 thick. proton spectra studied at θ=25°, 40° and 60° over an energy range from 0 to 2.5 MeV using a Q3d magnetic spectrometer with a multiwire proportional counter. FWHM between 5 and 8 keV. the angles of observation were chosen from DWBA considerations. spectra were recorded in≈500−keV segments. Below 1.7 MeV, the association of (d,p) levels and those from (n,γ) is believed by the authors to be accurate, except for close doublets. Above 1.7, the correspondence between these two groups of levels is believed to be possible with a reasonable probability.

^{156}Gd Levels

1993Kl03 report no L values or spectroscopic factors for the peaks they observe, thus making detailed interpretation of these data problematic.

E(level)	J^π[†]	S[‡]	Comments
0[&]	0^+	4.8[@] *7*	
89.0[#&]	2^+	23.4[@] *17*	
288.2[#&]	4^+	25.2[@] *20*	
1154.4[b] *5*	2^+	29 *4*	
1168.0[c] *10*	0^+	8.8 *24*	
1246.2[b] *12*	3^+	2.4 *12*	
1256.6[c] *5*	2^+	17.1 *23*	
1275.3[d] *10*	3^-	4.5 *11*	
1296.8[a] *13*	4^+	2.6 *8*	
1354.5[b] *13*	4^+	3.3 *10*	
1366.2[e] *24*	1^-	1.6 *8*	
1408.1[d] *6*	5^-	11.0 *16*	
1463.3[c] *3*	4^+	32 *3*	
1505.8[b] *6*	5^+	9.9 *11*	
1538.4[e] *12*	3^-	3.7 *10*	
1621.1 *9*	5^+	4.9 *8*	
1637.7[d] *4*	7^-	14.1 *12*	J^π: Assumed by the evaluator to be the same as the 1638, 7^- state seen in (α,2nγ). See the comment on the 1637.96 level in (d,t).
1705.1[d] *5*	6^-	10.0 *10*	
1767.8 *7*		6.2 *9*	E(level): Probable doublet including the 1771, 2^+, and 1765, 6^+, levels.
1829.0 *9*	2^+	7.3 *13*	
1860.8 *6*	4^+	20.1 *16*	
1912.8 *15*	2^+	6.7 *18*	
1934.6 *4*		23.7 *18*	E(level): Possible doublet including the 1934.1, 2^-, and the 1934.3, 3^-, levels.
1963.6 *8*		17.5 *29*	E(level): Possible multiplet including the 1962.03, 1^-, the 1962.06, 5^+, and perhaps the 1965.1, 4^-, and the 1965.9, 1^+, levels.
1970.2 *8*		9.7 *13*	
1992.6 *9*	4^-	8.0 *10*	
2017.1 *7*	5^-	14.5 *16*	
2030.4 *10*	4^-	11.7 *15*	
2049.2 *5*	2^+	25.3 *19*	
2069.2 *6*	3^+	18.5 *19*	
2109.6 *6*	3^+	11.1 *14*	
2139.0 *5*	3^+	25.2 *21*	
2177.8 *3*		83 *4*	J^π: Associated only with the 2174.3, 2^+, level by 1993Kl03, but the J=4 level at 2175.0 may

Continued on next page (footnotes at end of table)

^{155}Gd(d,p) 1993Kl03 (continued)

^{156}Gd Levels (continued)

E(level)	J^{π}[†]	S[‡]	Comments
			also be populated.
2200.1[f] *5*	2^-	39.5 *27*	
2238.0 *4*	$2^+,3^+$	39 *3*	
2258.3 *8*	3^+	23.2 *23*	
2274.4 *6*		34 *3*	
2303.4 *7*	2^+	19.6 *20*	
2321.3 *7*	2^+	23.1 *22*	
2351.6 *7*	3^+	24.2 *24*	
2367.8 *8*	2^+	31 *3*	
2381.8 *9*	2^+	17.8 *25*	

[†] From adopted values. These assignments depend on correctly associating a (d,p) peak with a particular adopted level, based on agreement with the reported level energies. Where this cannot be done, or where multiple levels are involved, no J^{π} values are given. see the Cross References in the Adopted Levels for the associations.

[‡] Relative I_p at 40°. Values for E(d)=22 MeV.

[#] Nominal value. Value not determined from the (d,p) study because of overlap-related problems (1993Kl03).

[@] Values are subject to large possible systematic errors because of missing overlap with other regions (1993Kl03).

[&] Band(A): g.s. band.

[a] Band(B): First excited $K^{\pi}=0^+$ band.

[b] Band(C): γ-vibrational band.

[c] Band(D): $K^{\pi}=0^+$ band.

[d] Band(E): $K^{\pi}=1^-$ octupole-vibrational band.

[e] Band(F): $K^{\pi}=0^-$ octupole-vibrational band.

[f] Band(G): Probable $K^{\pi}=2^-$ bandhead. Conf=ν3/2[521]+ν1/2[400].

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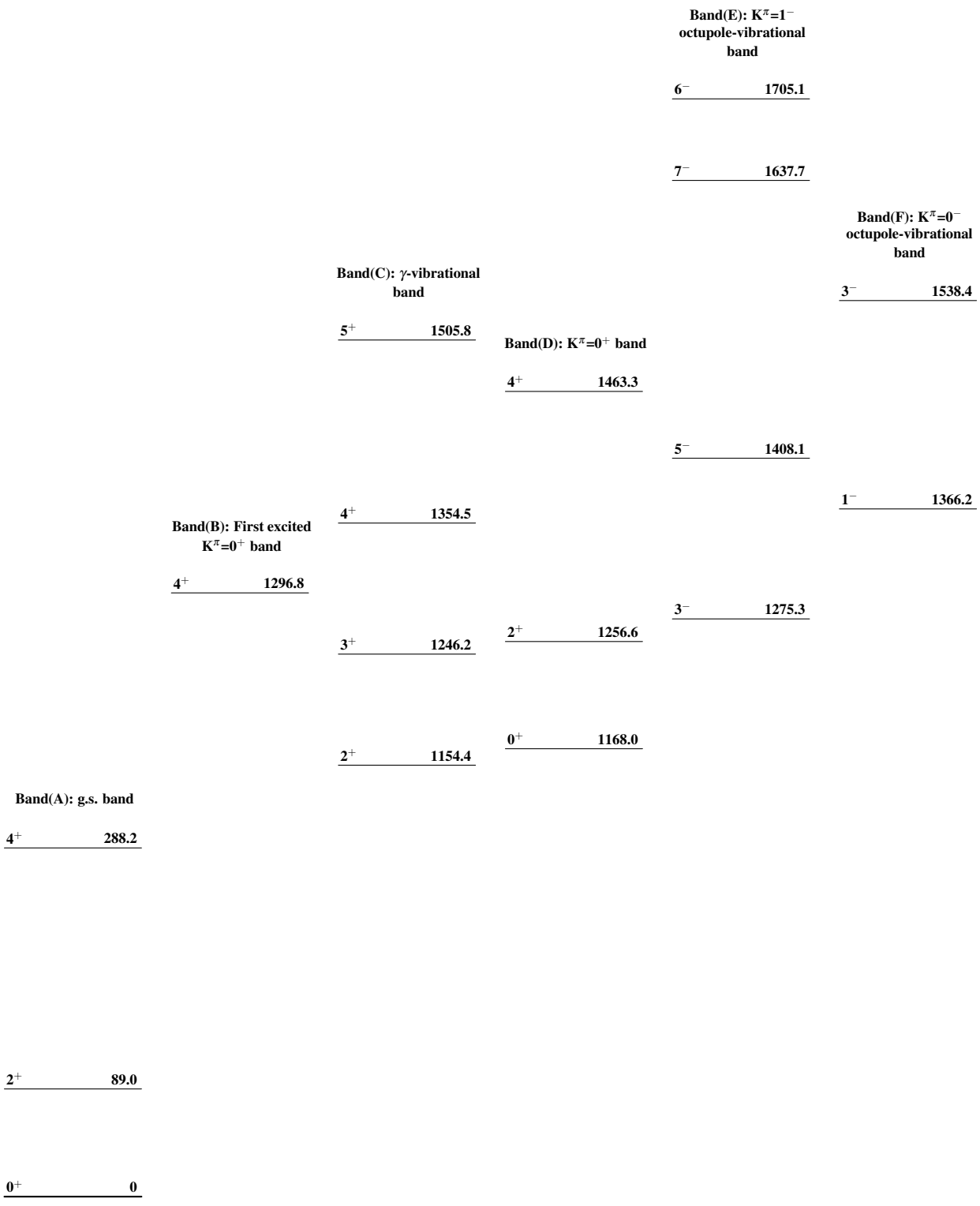

$^{156}_{64}Gd_{92}$

^{155}Gd(d,p) 1993Kl03 (continued)

Band(G): Probable $K^{\pi}=2^{-}$ bandhead

2^{-}	**2200.1**

$^{156}_{64}Gd_{92}$