^{154}Sm(p,d) 1997Bl11

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 170, 1 (2020)	16-Aug-2020

1997Bl11: E(p)=23 MeV and d measured in magnetic spectrometer with FWHM ≈ 6 keV and d(θ) measured. The thesis of A. Gollwitzer (1997GoZN), one of the authors of 1997Bl11, reports most of the same information. 1998Bl16, and 1996Go17 (conference papers by some of the same authors as 1997Bl11) have a general discussion of this work.

Other: 1983Ga07 with E(p)=42 MeV and FWHM ≈ 65-70 keV (estimated by evaluator) reports 19 levels and 8 tentative L values.

^{153}Sm Levels

E(level)†	Jπ‡	L#	S@	Comments
0&	3/2+	2	0.242	
7&	5/2+	2	0.030	
36a	3/2−	1	0.016	
53&	7/2+			Jπ: J^π and band assignment assume L=4.
65&	9/2+	4	0.368	
91a	5/2−	3	0.049	
98b	11/2−	5	0.690	
128c	3/2−	1	0.054	
174a	7/2−	3	0.035	
183c	5/2−	3	0.143	
190&	11/2+	6		
196&	13/2+	6	0.771	
263c	5/2−,7/2−	3	0.187,0.108	
267a	9/2−,11/2−	5	0.321,0.154	
275		(4,5)	0.068,0.049	
322d	3/2+	2	1.0	
362d	5/2+	2	0.036	
369c	9/2−,11/2−	5	0.112,0.057	
405e	3/2−	1	0.519	
415f	1/2+	0	1.218	
448a	9/2−,11/2−	5	0.179,0.086	
481f	3/2+	2	0.079	
494c	11/2−	5	0.129	
509		(4)	0.085	
524	5/2−,7/2−	3	0.281,0.164	
548		(3,4)		
654				
695g	1/2−	1	0.023	
728	5/2−	3	0.012	
734h	1/2+	0	0.263	
749g	3/2−	1+0	0.004,0.004	Jπ: J^π and band assignment correspond to L=1 component.
767		2	0.017	
779		2	0.033	
787		2	0.089	
796g		3	0.016	Jπ: Band assignment assumes J^π=5/2−.
816		(2,3)	0.003,0.003	
862		(2)	0.001	
885		(2,3)	0.003	
904		(4,5)	0.052,0.042	
916		(2)	0.006	
923g	7/2−	(3)	0.007	

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^{154}Sm(p,d) 1997Bl11 (continued)

^{153}Sm Levels (continued)

E(level)†	Jπ‡	L#	S@	Comments
964		2	0.018	
983		1	0.007	
1001		(3)	0.001	
1010		(3)	0.001	
1019		(3)	0.001	
1059		(2,3)	0.002	
1074		3	0.023	
1086		(3)		
1097		1	0.002	
1106		(2,3)	0.002,0.002	
1116		3	0.001	
1134		3	0.003	
1139		3	0.004	
1149		(2,3)	0.001,0.002	
1155		(2)	0.002	
1161		1	0.002	
1172		2	0.010	
1197		3	0.003	
1210		2+0	0.001,0.001	
1219		(3)	0.004	Additional information 1.
1235		4	0.010	
1250		3	0.004	
1262		5	0.024	
1269		3	0.001	
1276		(1)		Additional information 2.
1289		(4)	0.014	
1296		5	0.109	
1308		0	0.010	
1318		(0)	0.001	
1342		2	0.004	
1352		5	0.100	
1359		(2)	0.003	
1362		2	0.009	
1376		5	0.102	
1399		2	0.002	
1419		2	0.027	
1434		(3)	0.002	
1441		0	0.006	
1447	$3/2^-$	1	0.001	
1455	$11/2^-$	3	0.002	
1463		3	0.003	
1469		(3)	0.001	
1478		2	0.001	
1484		(2,3)		
1493		(5)	0.018	
1504		2	0.010	
1509		(2)	0.006	
1526		2	0.008	
1532	$(3/2^+,5/2^+)$	2	0.272,0.154	
1540		2	0.013	
1545		2	0.012	
1552		2	0.011	
1557		(1)	0.007	
1563		2	0.009	
1589		2	0.021	
1599		(2)	0.009	
1605		2	0.026	

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^{154}Sm(p,d) 1997Bl11 (continued)

^{153}Sm Levels (continued)

E(level)†	L#	S@	E(level)†	L#	S@	E(level)†	L#	S@
1613	2	0.005	1798	2	0.005	1983	3	0.013
1619	2	0.004	1809	2	0.020	1991	(2,3)	0.007,0.007
1624	3+0	0.007,0.004	1817	(0+3)	0.001,0.003	1999		
1632	2+0	0.003,0.002	1822	(2)	0.003	2007	(3)	0.004
1638	2	0.006	1826	2	0.008	2023	(2)	0.002
1645	2	0.020	1833	2	0.006	2030		
1652	(2)	0.003	1840	2	0.010	2038	(3)	0.005
1659			1845	2	0.006	2046	(3)	0.010
1664	2	0.006	1854	2	0.004	2053	(3)	0.007
1672	1	0.004	1861	(2)	0.004	2062	(2)	0.002
1678	3	0.008	1873	(2+0)	0.006,0.004	2070	2	0.002
1684	2	0.004	1881	(3)	0.014	2077	2	0.002
1705	2	0.003	1892	2	0.014	2084	(2)	0.002
1717	(2,3)	0.003,0.003	1899			2090	2	0.003
1724	(2)	0.003	1907	(0+3)		2097	2	0.003
1734	(2,3)	0.002,0.002	1916	2	0.003	2106	2	0.003
1747	(3)	0.003	1925	2	0.005	2114	2	0.006
1759	(3)	0.002	1936	2	0.004	2122	(3)	0.003
1763	(3)	0.001	1944	3	0.004	2128	3	0.005
1776	(1)	0.001	1951	(3)	0.003	2135	2	0.013
1788	2	0.006	1966	1	0.003	2142	2	0.004
1794	(3)	0.004	1975	0	0.010	2152	2	0.004

† Uncertainties are ≈ 0.5% from general statement.

‡ J^π and band assignments are from this work. Note that the authors also had available results from (d,t), (^{3}He,α), and average-resonance n capture studies (1997GoZN) which may have influenced these assignments.

Based on angular distributions in 3° steps from 7° to 35°.

@ From 1997Bl11, where it is labeled as A_0, relative spectroscopic factor defined by $[(d\sigma/d\Omega)_{exp}]/[(d\sigma/d\Omega)_{DWBA}]$; normalized to 1.0 for 322 level. For levels with unknown J^π, following orbitals are assumed by 1997Bl11: $p_{3/2}$ for L=1, $d_{3/2}$ for L=2, $f_{5/2}$ for L=3, $g_{7/2}$ for L=4 and $h_{11/2}$ for L=5. The uncertainty is estimated by 1997Bl11 as 20%.

& Band(A): 3/2[651]+3/2[402] band.

a Band(B): 3/2[521] band.

b Band(C): 11/2[505] bandhead.

c Band(D): 3/2[532] band.

d Band(E): 3/2[402]+3/2[651] band.

e Band(F): 1/2[530] band member.

f Band(G): 1/2[400]+1/2[660] band.

g Band(H): 1/2[521] band.

h Band(I): 1/2[660]+1/2[400] bandhead.

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Band(D): 3/2[532] band

11/2$^-$ 494

Band(B): 3/2[521] band

9/2$^-$,11/2$^-$ 448

Band(F): 1/2[530] band member

3/2$^-$ 405

Band(E): 3/2[402]+3/2[651] band

9/2$^-$,11/2$^-$ 369

5/2$^+$ 362

3/2$^+$ 322

9/2$^-$,11/2$^-$ 267

5/2$^-$,7/2$^-$ 263

Band(A): 3/2[651]+3/2[402] band

13/2$^+$ 196

11/2$^+$ 190

5/2$^-$ 183

7/2$^-$ 174

3/2$^-$ 128

Band(C): 11/2[505] bandhead

11/2$^-$ 98

5/2$^-$ 91

9/2$^+$ 65

7/2$^+$ 53

3/2$^-$ 36

5/2$^+$ 7

3/2$^+$ 0

$^{153}_{62}Sm_{91}$

^{154}Sm(p,d) 1997Bl11 (continued)

Band(H): 1/2[521] band

7/2$^-$ 923

796

3/2$^-$ 749

Band(I): 1/2[660]+1/2[400] bandhead

1/2$^+$ 734

1/2$^-$ 695

Band(G): 1/2[400]+1/2[660] band

3/2$^+$ 481

1/2$^+$ 415

$^{153}_{62}Sm_{91}$