^{147}Sm(^{32}S,p3nγ) 1991Dr06,1991Ce02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 102, 719 (2004)	1-Jun-2004

Includes ^{144}Sm(^{35}Cl,2p2nγ).

Other: 1991Dr02.

1991Dr06: targets: ^{147}Sm, ^{144}Sm. Reactions: ^{147}Sm(^{32}S,p3nγ), E=159 MeV, ^{144}Sm(^{35}Cl,2p2nγ), E=180 MeV. Measured Eγ, Iγ, $\gamma\gamma$ coin, $\gamma(\theta)$. Detectors: array of 6 Compton-suppressed germanium detectors.

1991Ce02: targets: ^{144}Sm, ^{121}Sb, ^{118}Sn. Reactions: ^{144}Sm(^{35}Cl,2p2nγ), E=175-185 MeV; ^{58}Ni on ^{121}Sb and ^{60}Ni on ^{118}Sn, E=270 MeV. Measured Eγ, Iγ (not reported), $\gamma\gamma$ coin, γ-recoil (mass) coin, γ-γ recoil (mass) coin, $\gamma(\theta)$. Detectors: ESSA30, an array of 30 Compton-suppressed hyperpure germanium detectors. Also, an array of 20 germanium detectors with a recoil mass separator.

^{175}Ir Levels

E(level)[†]	J$^\pi$[‡]	Comments
0.0[#]	5/2$^-$	
0.0+x[a]	9/2$^-$	
49[#]	9/2$^-$	
53[&]	(5/2)	
89+x[a]	(11/2$^-$)	
132		
156[&]	(7/2)	
196[#]	(7/2$^-$)	
263+x[a]	(13/2$^-$)	
277	(11/2)	
279[#]	13/2$^-$	
282[&]	(9/2)	
422[#]	11/2$^-$	
426[&]	(11/2)	
433+x[a]	15/2$^-$	
438		
611		
622+x[a]	17/2$^-$	
652[#]	17/2$^-$	
660[@]	13/2$^+$	
767[#]	(15/2$^-$)	E(level): 1991Dr06 give this as 718, which seems to be an error. It is 770 in 1991Ce02.
812[@]	17/2$^+$	
822+x[a]	19/2$^-$	
1038+x[a]	21/2$^-$	
1061[@]	21/2$^+$	
1114[#]	21/2$^-$	
1266+x[a]	23/2$^-$	
1388[@]	25/2$^+$	
1508+x[a]	25/2$^-$	
1629[#]	25/2$^-$	
1762+x[a]	27/2$^-$	
1784[@]	29/2$^+$	
2029+x[a]	29/2$^-$	
2174[#]	29/2$^-$	

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^{147}Sm(^{32}S,p3nγ) 1991Dr06,1991Ce02 (continued)

^{175}Ir Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
2242@	33/2+	2890+x[a]	35/2−	3826+x[a]	41/2−	4549#	45/2−
2306+x[a]	31/2−	3194+x[a]	37/2−	3896#	41/2−	4603@	49/2+
2599+x[a]	33/2−	3301#	37/2−	3939@	45/2+	4837+x[a]	(47/2−)
2735#	33/2−	3323@	41/2+	4154+x[a]	43/2−	5315@	53/2+
2756@	37/2+	3507+x[a]	39/2−	4490+x[a]	(45/2−)	6076@	(57/2+)

† From 1991Dr06.
‡ Spin and parity assignments are based on γ-ray angular correlations and rotational structure. Additional support for assignments to members of the 9/2[514] rotational band comes from a comparison of gyromagnetic ratios (g_K) predicted by the Nilsson model, with experimental values deduced from B(M1)/B(E2) cascade-to-crossover branching ratio intensities (1991Dr06). Tentative spin and parity assignments of 1991Ce02 are based on the systematics of rotational structure in this region, and on measured angular anisotropies for the strongests γ rays.
# 1/2(541) band.
@ 1/2(660) band.
& 5/2(402) band.
a 9/2(514) band.

γ(^{175}Ir)

E_γ†	I_γ†	E_i(level)	J_i^π	E_f	J_f^π
(49)		49	9/2−	0.0	5/2−
(53)		53	(5/2)	0.0	5/2−
88.9	215 *7*	89+x	(11/2−)	0.0+x	9/2−
x98.8	150 *20*				
103.0	104 *6*	156	(7/2)	53	(5/2)
x119.3	≈49				
126.1	165 *70*	282	(9/2)	156	(7/2)
x131.5	≈54				
144.3	106 *10*	426	(11/2)	282	(9/2)
144.5	104 *10*	277	(11/2)	132	
151.8	800 *10*	812	17/2+	660	13/2+
160.4	109 *7*	812	17/2+	652	17/2−
160.6	62 *9*	438		277	(11/2)
169.6	486 *12*	433+x	15/2−	263+x	(13/2−)
173.0	42 *8*	611		438	
174.5	532 *13*	263+x	(13/2−)	89+x	(11/2−)
188.9	5.2×10^2 *17*	622+x	17/2−	433+x	15/2−
196.3	147 *10*	196	(7/2−)	0.0	5/2−
200.3	490 *35*	822+x	19/2−	622+x	17/2−
215.5	607 *21*	1038+x	21/2−	822+x	19/2−
x217.5	≈62				
222.4	38 *7*	660	13/2+	438	
225.8	145 *9*	422	11/2−	196	(7/2−)
228.1	4.9×10^2 *24*	1266+x	23/2−	1038+x	21/2−
229.1	56 *10*	282	(9/2)	53	(5/2)
230.3	1000 *7*	279	13/2−	49	9/2−
233.8	288 *9*	660	13/2+	426	(11/2)
237.9	235 *10*	660	13/2+	422	11/2−
242.3	298 *29*	1508+x	25/2−	1266+x	23/2−
x242.4	121 *7*				

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^{147}Sm(^{32}S,p3nγ) 1991Dr06,1991Ce02 (continued)

$\gamma(^{175}Ir)$ (continued)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π
248.9	1231 *15*	1061	$21/2^+$	812	$17/2^+$
254.1	275 *9*	1762+x	$27/2^-$	1508+x	$25/2^-$
263.4	64 *9*	263+x	$(13/2^-)$	0.0+x	$9/2^-$
266.8	255 *15*	2029+x	$29/2^-$	1762+x	$27/2^-$
270.9	100 *5*	426	(11/2)	156	(7/2)
277.1	196 *24*	2306+x	$31/2^-$	2029+x	$29/2^-$
287.5	159 *11*	2599+x	$33/2^-$	2306+x	$31/2^-$
296.3	131 *8*	2890+x	$35/2^-$	2599+x	$33/2^-$
304.3	84 *17*	3194+x	$37/2^-$	2890+x	$35/2^-$
312	86 *20*	3507+x	$39/2^-$	3194+x	$37/2^-$
319	97 *15*	3826+x	$41/2^-$	3507+x	$39/2^-$
327.5	1253 *50*	1388	$25/2^+$	1061	$21/2^+$
328	112 *15*	4154+x	$43/2^-$	3826+x	$41/2^-$
333.7	≈60	611		277	(11/2)
344.5	270 *50*	433+x	$15/2^-$	89+x	$(11/2^-)$
345.1	193 *33*	767	$(15/2^-)$	422	$11/2^-$
359.1	299 *16*	622+x	$17/2^-$	263+x	$(13/2^-)$
372.4	720 *24*	652	$17/2^-$	279	$13/2^-$
373.3	105 *10*	422	$11/2^-$	49	$9/2^-$
380.9	780 *30*	660	$13/2^+$	279	$13/2^-$
383.1	191 *20*	660	$13/2^+$	277	(11/2)
389.3	490 *35*	822+x	$19/2^-$	433+x	$15/2^-$
395.9	1505 *12*	1784	$29/2^+$	1388	$25/2^+$
416.2	558 *18*	1038+x	$21/2^-$	622+x	$17/2^-$
443.8	505 *38*	1266+x	$23/2^-$	822+x	$19/2^-$
457.5	870 *35*	2242	$33/2^+$	1784	$29/2^+$
462.9	472 *12*	1114	$21/2^-$	652	$17/2^-$
470.4	497 *17*	1508+x	$25/2^-$	1038+x	$21/2^-$
496.3	416 *22*	1762+x	$27/2^-$	1266+x	$23/2^-$
514.2	637 *20*	2756	$37/2^+$	2242	$33/2^+$
514.8	453 *20*	1629	$25/2^-$	1114	$21/2^-$
520.9	392 *34*	2029+x	$29/2^-$	1508+x	$25/2^-$
543.9	325 *20*	2306+x	$31/2^-$	1762+x	$27/2^-$
545.2	330 *10*	2174	$29/2^-$	1629	$25/2^-$
560.7	265 *18*	2735	$33/2^-$	2174	$29/2^-$
564.7	259 *39*	2599+x	$33/2^-$	2029+x	$29/2^-$
566.2	193 *20*	3301	$37/2^-$	2735	$33/2^-$
566.4	442 *30*	3323	$41/2^+$	2756	$37/2^+$
583.8	273 *27*	2890+x	$35/2^-$	2306+x	$31/2^-$
595	138 *21*	3896	$41/2^-$	3301	$37/2^-$
600.5	197 *25*	3194+x	$37/2^-$	2599+x	$33/2^-$
616.0	266 *19*	3939	$45/2^+$	3323	$41/2^+$
616.7	164 *23*	3507+x	$39/2^-$	2890+x	$35/2^-$
631	97 *16*	3826+x	$41/2^-$	3194+x	$37/2^-$
647.5	112 *20*	4154+x	$43/2^-$	3507+x	$39/2^-$
653	108 *15*	4549	$45/2^-$	3896	$41/2^-$
664[‡]	≈69	4490+x	$(45/2^-)$	3826+x	$41/2^-$
664.0	158 *16*	4603	$49/2^+$	3939	$45/2^+$
683[‡]	≈30	4837+x	$(47/2^-)$	4154+x	$43/2^-$
711.8	59 *17*	5315	$53/2^+$	4603	$49/2^+$
761	≈30	6076	$(57/2^+)$	5315	$53/2^+$

[†] From 1991Dr06.

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^{147}Sm(^{32}S,p3nγ) 1991Dr06,1991Ce02 (continued)

$\gamma(^{175}Ir)$ (continued)

‡ Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

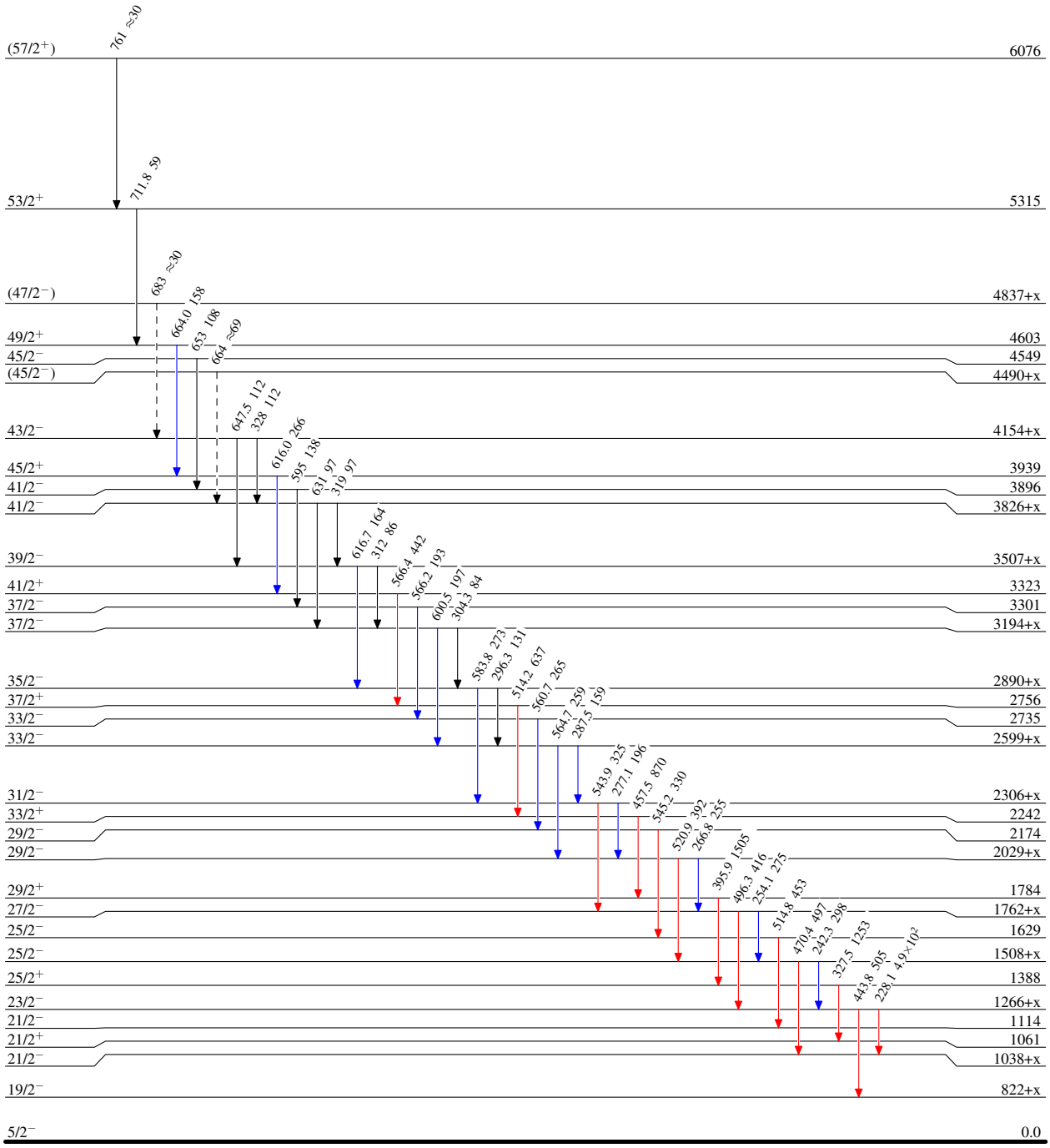
$^{147}Sm(^{32}S,p3n\gamma)$ 1991Dr06,1991Ce02

Level Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{175}_{77}Ir_{98}$

^{147}Sm(^{32}S,p3nγ) 1991Dr06,1991Ce02

Level Scheme (continued)

Intensities: Relative I_γ

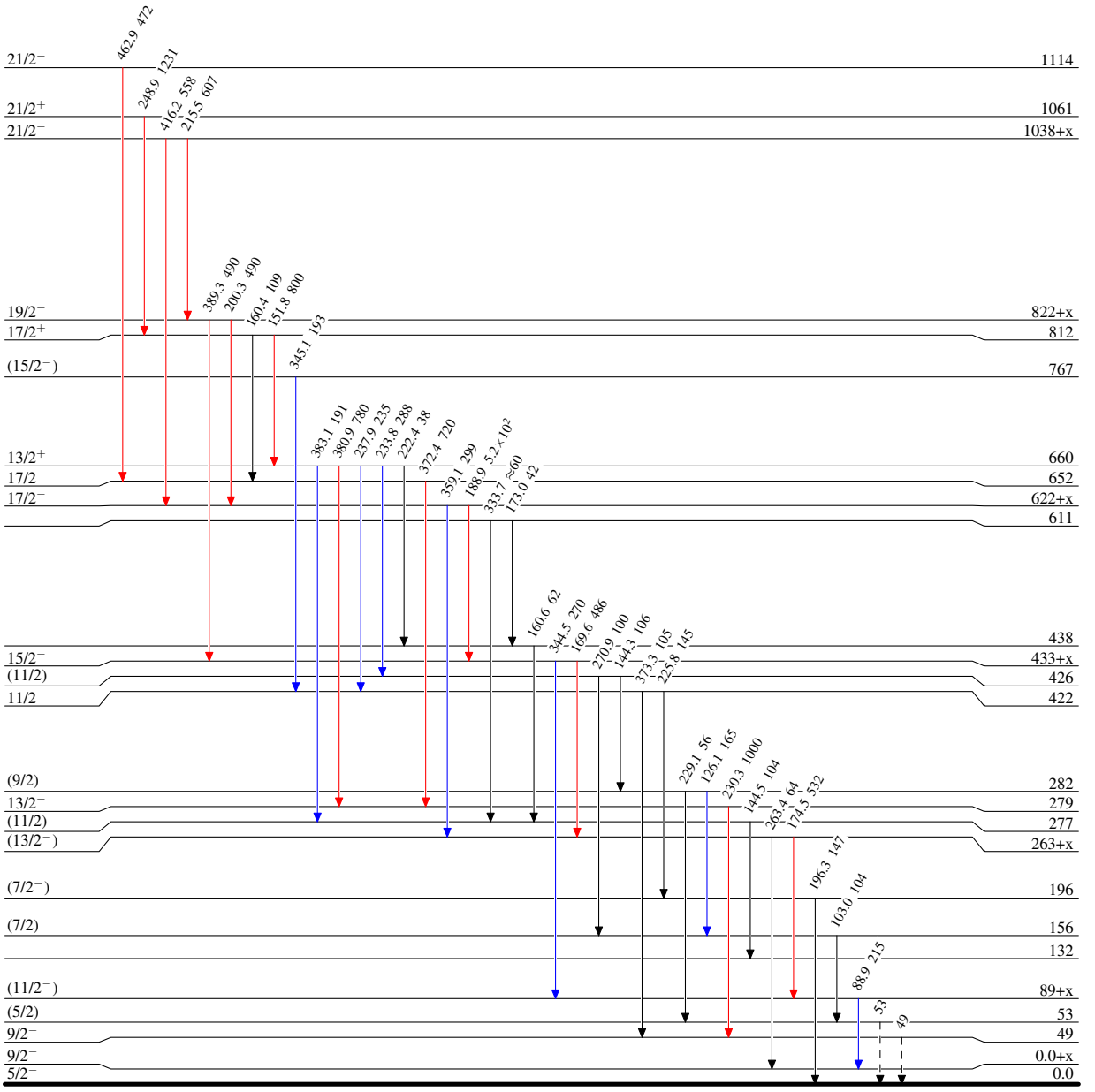
Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)



$^{175}_{77}Ir_{98}$