(HI,xnγ) 1984La29

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson, D. Symochko(a), M. Fadil(b), and J. K. Tuli	NDS 112, 1949 (2011)	1-Jun-2010

See also ^{124}Sn(^{24}Mg,6nγ): SD for two superdeformed structures in ^{142}Sm.
HI=^{19}F,^{24}Mg (1981Me09,1980BeZY).
HI=α (1974LuZS,1979BeZK,1980BeZV) E=50-60 MeV, E≥60 MeV (1984La29).
HI=^{3}He E=32-50 MeV (1984LaZU,1984La29).
Measured: γ, γ(θ), γγ, γ(t) (1981Me09,1984LaZU,1984La29).
Level scheme is that of 1984La29; E(level) and Eγ are taken from authors′ level scheme, except where noted otherwise. Authors do not give detailed information but J^{π} are presumably based on γ(θ).
1974LuZS also report weak gammas not given by others: 121.0 (4), 173.0 (2), 265.3 (2), 362.2 (3), 469.2 (2), 484.2 (<1)?, 588.2 (2), 649.0 (1), 663.5 (2), 728.1 (3), 760.4 (3), 834.0 (3), 862.3 (3), 1012.0 (3).

^{142}Sm Levels

E(level)	J^{π}	$T_{1/2}$	Comments
0.0	0^+		
767.9 *10*	2^+		
1784.0 *14*	3^-		
1791.2 *14*	4^+		
2347.7 *14*	5^-		
2371.7 *16*	7^-	175 ns *5*	$T_{1/2}$: from 1984LaZU.
2415.8 *17*	(4^-)		
2419.9 *16*	6^+		
2911.6 *16*	7^-		
3002.9 *17*	(6^+)		
3112.8 *17*	8^-		
3325.8 *16*	8^+		
3386.8 *17*	9^-		
3639.9 *20*	11^-		
3661.8 *17*	10^+	480 ns *60*	$T_{1/2}$: from 1984La29; others: >150 ns (1981Me09); >100 ns (1979BeZK).
3825.7 *18*	10^+		
3974.5 *18*	10^-		
4293.9 *18*	11^-		
4371.7 *18*	11^-		
4541.4 *19*	11^+		
4546.8 *19*	13^-	2.6 ns *6*	$T_{1/2}$: from 1984LaZU; other: 2.5 ns (1981Me09).
4745.7 *19*	12^+		
4970.2 *19*	(11^+)		
5048.2 *19*	12		
5133.5 *19*	13		
5224.0 *20*	14		
5417.8 *22*	15		
5763.5 *24*	16		
5803.0 *24*	16		
6090 *3*			

γ(^{142}Sm)

E_{γ} ‡	E_i(level)	J_i^{π}	E_f	J_f^{π}
(24.1)	2371.7	7^-	2347.7	5^-
78.1	5048.2	12	4970.2	(11^+)
85.5	5133.5	13	5048.2	12
90.5	5224.0	14	5133.5	13

Continued on next page (footnotes at end of table)

(HI,xnγ) 1984La29 (continued)

γ(^{142}Sm) (continued)

E_γ[‡]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[†]	Comments
163.9		3825.7	10^+	3661.8	10^+			
175.1		4546.8	13^-	4371.7	11^-			
193.8		5417.8	15	5224.0	14			
201.2	17	3112.8	8^-	2911.6	7^-			
252.9		4546.8	13^-	4293.9	11^-			
253.1[@]	21	3639.9	11^-	3386.8	9^-			
273.9	59	3386.8	9^-	3112.8	8^-			
275.1		3661.8	10^+	3386.8	9^-	[E1]	0.0183	α(K)=0.01564 *22*; α(L)=0.00213 *3*; α(M)=0.000455 *7*; α(N+..)=0.0001182 *17* α(N)=0.0001024 *15*; α(O)=1.500×10^{-5} *21*; α(P)=8.54×10^{-7} *12*
286.9		6090		5803.0	16			
302.5		5048.2	12	4745.7	12^+			
319.4		4293.9	11^-	3974.5	10^-			
336.0		3661.8	10^+	3325.8	8^+	[E2]	0.0397	α(K)=0.0314 *5*; α(L)=0.00651 *10*; α(M)=0.001444 *21*; α(N+..)=0.000369 *6* α(N)=0.000322 *5*; α(O)=4.47×10^{-5} *7*; α(P)=1.720×10^{-6} *24*
345.7		5763.5	16	5417.8	15			
385.2		5803.0	16	5417.8	15			
387.7		5133.5	13	4745.7	12^+			
397.1		4371.7	11^-	3974.5	10^-			
438.9	14	3825.7	10^+	3386.8	9^-			
491.8		2911.6	7^-	2419.9	6^+			
506.7		5048.2	12	4541.4	11^+			
539.9	21	2911.6	7^-	2371.7	7^-			
556.5	75	2347.7	5^-	1791.2	4^+			
563.7	6	2347.7	5^-	1784.0	3^-			
587.7		3974.5	10^-	3386.8	9^-			
628.6		2419.9	6^+	1791.2	4^+			
631.8[#]		2415.8	(4^-)	1784.0	3^-			
677.1		5224.0	14	4546.8	13^-			
715.6		4541.4	11^+	3825.7	10^+			
741.1	30	3112.8	8^-	2371.7	7^-			
767.9	100	767.9	2^+	0.0	0^+			
861.6		3974.5	10^-	3112.8	8^-			
905.8		3325.8	8^+	2419.9	6^+			
907.2		4293.9	11^-	3386.8	9^-			
920.0	12	4745.7	12^+	3825.7	10^+			
954.2		3325.8	8^+	2371.7	7^-			
985.0		4371.7	11^-	3386.8	9^-			
1016.2	6	1784.0	3^-	767.9	2^+			
1023.2	90	1791.2	4^+	767.9	2^+			
1211.7[#]		3002.9	(6^+)	1791.2	4^+			
1290.3		3661.8	10^+	2371.7	7^-	[E3]	0.00294 *5*	α=0.00294 *5*; α(K)=0.00246 *4*; α(L)=0.000371 *6*; α(M)=8.02×10^{-5} *12*; α(N+..)=2.68×10^{-5} *4* α(N)=1.81×10^{-5} *3*; α(O)=2.67×10^{-6} *4*; α(P)=1.522×10^{-7} *22*; α(IPF)=5.84×10^{-6} *9*
1308.4		4970.2	(11^+)	3661.8	10^+			

[†] Additional information 1.
[‡] No uncertainties given.

Continued on next page (footnotes at end of table)

(HI,xnγ) 1984La29 (continued)

$\gamma(^{142}Sm)$ (continued)

Observed only in (^{3}He,3nγ).
@ From 1981Me09.

(HI,xnγ) 1984La29

Level Scheme

Intensities: Relative I_γ

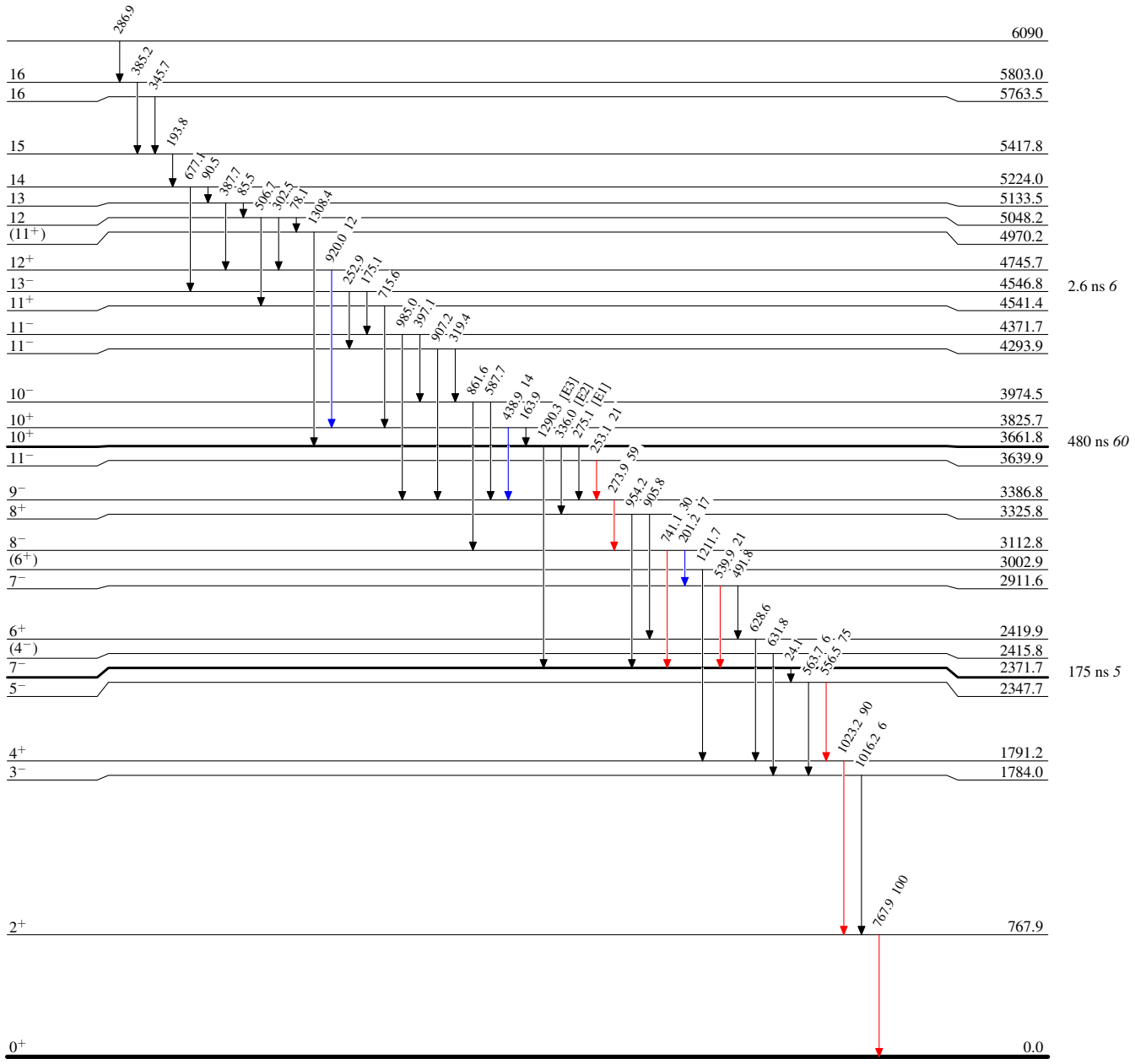
Legend

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

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

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

γ Decay (Uncertain)



$^{142}_{62}Sm_{80}$