^{144}Sm(^{14}N,p4nγ),^{144}Sm(^{12}C,3nγ) 2000Fo04

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

1981Ho05: ^{144}Sm(^{12}C,3nγ) with E(^{12}C)=65-95 MeV; measured Iγ(E,t), Iγ(θ), $\gamma\gamma$ coincidence. Also ^{144}Sm(^{11}B,2nγ) with E(^{11}B)=40-70 MeV, and ^{124}Te(^{32}S,3nγ) with E(^{32}S)=125-155 MeV (1981Ho05).
1982Ca09: ^{144}Sm(^{12}C,3nγ) with E(^{12}C)=53-65 MeV; measured Eγ, Iγ, Iγ(t), Iγ(θ), and Ice.
1982Fo06: ^{144}Sm(^{12}C,3nγ) with E(^{12}C)=76 and 86 MeV; measured Iγ, Iγ(t), Iγ(θ), and $\gamma\gamma$ coin.
2000Fo04: ^{144}Sm(^{14}N,p4nγ) with E(^{14}N)=95 MeV; measured Eγ, $\gamma\gamma$ coin., γce coin. with array of 6 Ge Compton- suppressed Ge detectors, an X-ray detector, and 6 BaF_2 detectors. Conversion electrons measured with an e- guide Si(Li) detector. Data from this paper were compiled for the XUNDL database by C. Malcolmson and B. Singh, McMaster University, May 2000.
Others: 1979Ha29, 1980Bo07, 1980Ho30 (see 1981Ho05), and 1980Ja16.
Level scheme is from 2000Fo04. This scheme is very similar to that in the previous evaluation (1998He06) and that of 1982Fo06, which has two authors in common with 2000Fo04. The less complete scheme of 1982Ca09 is very similar, but that of 1981Ho05 has many differences.

^{153}Er Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	Comments
0.0[#]	(7/2$^-$)		J$^\pi$: ν $f^3_{7/2}$ configuration suggested by 2000Fo04 for this band.
299.4[@]	(9/2$^-$)		J$^\pi$: ν ($f^2_{7/2}h_{9/2}$) configuration suggested by 2000Fo04 for this band.
765.7[#]	(11/2$^-$)		
970.6[&]	(13/2$^+$)		J$^\pi$: ν ($f^2_{7/2}i_{13/2}$) configuration suggested by 2000Fo04 for this band.
1111.0[@]	(13/2$^-$)		
1497.6[#]	(15/2$^-$)		
1699.1[@]	(17/2$^-$)		
1725.1[&]	(17/2$^+$)		
2039.4[@]	(21/2$^-$)		
2378.3[&]	(21/2$^+$)		
2751.7	(23/2$^-$)		
2798.2	(27/2$^-$)	373 ns *9*	$T_{1/2}$: From 1982Ca09; others: 380 ns *30* (1981Ho05), 0.40 μs *20* (1980Ja16), 0.30 μs *10* (1980Bo07), and 0.5 μs *3* (1979Ha29). This $T_{1/2}$ was assigned to 2751 level by 1982Ca09, but to this level, which had an energy of 2751+x, by 1981Ho05 and 1982Fo06.
2908.8[&]	(25/2$^+$)		
2949.1	(25/2$^-$)		
2992.7	(29/2$^+$)	≈10 ns	J$^\pi$: ν ($f_{7/2}h_{9/2}i_{13/2}$) configuration suggested by 2000Fo04. $T_{1/2}$: From 1982Fo06.
3312.1	(27/2$^-$)		
3378.0	(29/2$^-$)		
3556.1	(31/2$^-$)		
3651.7	(31/2$^+$)		J$^\pi$: From 1982Fo06 and not given in 2000Fo04.
3939.5	(33/2$^+$)	≈10 ns	J$^\pi$: From 1982Fo06 and not given in 2000Fo04. $T_{1/2}$: From 1982Fo06.
4044.8	(33/2$^+$)		
4124.4	(33/2$^-$)		
4249.2	(35/2$^-$)		
4337.3			
4542.6	(37/2$^-$)		
4819.3	(37/2$^+$)		
4827.1	(33/2,41/2)		
4844.5	(37/2$^+$)		
4891.8	(37/2$^+$)		

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^{144}Sm(^{14}N,p4nγ),^{144}Sm(^{12}C,3nγ) 2000Fo04 (continued)

^{153}Er Levels (continued)

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	Comments
5248.1	(41/2$^-$)	248 ns *32*	$T_{1/2}$: Weighted average of 270 ns *20* (1981Ho05) and 200 ns *30* (1980Ja16) with internal uncertainty of 17 and reduced-χ^2 of 3.8; others: 1.0 μs *5* (1980Bo07) and > 0.2 μs (1979Ha29).
5980.4	(43/2)		J$^\pi$: From 1982Fo06 and not given in 2000Fo04.
6676.3			
6853.6	(47/2)		J$^\pi$: From 1982Fo06 and not given in 2000Fo04.
7253.6			
7383.1			
7441			
8063.9			
8275.1			
8409.6			

[†] From unweighted fit to γ energies.
[‡] From 2000Fo04 and based on measured Iγ(t), I$\gamma(\theta)$ and comparison with systematics of nearby isotones, and shell-model predictions.
[#] Seq.(A): ΔJ=2 sequence based on 7/2$^-$ ground state.
[@] Seq.(B): ΔJ=2 sequence based on 9/2$^-$ level at 299 keV.
[&] Seq.(C): ΔJ=2 sequence based on 13/2$^+$ level at 970 keV.

γ(^{153}Er)

E$_\gamma$[†]	I$_\gamma$[‡]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[#]	Comments
46.4		2798.2	(27/2$^-$)	2751.7	(23/2$^-$)	[E2]	
65.9		3378.0	(29/2$^-$)	3312.1	(27/2$^-$)		
83.9		2992.7	(29/2$^+$)	2908.8	(25/2$^+$)		
105.3		4044.8	(33/2$^+$)	3939.5	(33/2$^+$)		
129.5	3	7383.1		7253.6			
134.5	1	8409.6		8275.1			
177.6	3	6853.6	(47/2)	6676.3			
194.5 *2*	23	2992.7	(29/2$^+$)	2798.2	(27/2$^-$)	E1	Mult.: From α(K)exp=0.06 *3* (1982Fo06).
201.6	4	1699.1	(17/2$^-$)	1497.6	(15/2$^-$)		
204.9	≤20	970.6	(13/2$^+$)	765.7	(11/2$^-$)	E1	Mult.: From α(K)exp=0.07 *5* (1982Fo06).
[x]207.9[&] *3*	1						
211.2	7	8275.1		8063.9			
[x]238.0[@]							
284.5	10	4827.1	(33/2,41/2)	4542.6	(37/2$^-$)		
287.8	7	3939.5	(33/2$^+$)	3651.7	(31/2$^+$)		
293.2	5	4542.6	(37/2$^-$)	4249.2	(35/2$^-$)		
299.4	100	299.4	(9/2$^-$)	0.0	(7/2$^-$)	M1(+E2)	Mult.: From α(K)exp=0.13 *3* (1982Fo06).
[x]305.5[&] *3*	1						
[x]319.2[@]							
340.3	95	2039.4	(21/2$^-$)	1699.1	(17/2$^-$)	E2	
345.3	≤17	1111.0	(13/2$^-$)	765.7	(11/2$^-$)		
349.1	15	4891.8	(37/2$^+$)	4542.6	(37/2$^-$)	E1	Mult.: From α(K)exp=0.016 *16* (1982Fo06).
356.3	≤20	5248.1	(41/2$^-$)	4891.8	(37/2$^+$)	M2	Mult.: From α(K)exp=0.20 *8* (1982Fo06).
363.0	≤36	3312.1	(27/2$^-$)	2949.1	(25/2$^-$)	M1(+E2)	Mult.: From α(K)exp=0.05 *4* (1982Fo06).
[x]394.0[@]							
400.0	16	7253.6		6853.6	(47/2)		
403.7	12	5248.1	(41/2$^-$)	4844.5	(37/2$^+$)	M2	Mult.: From α(K)exp=0.12 *6* (1982Fo06).

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^{144}Sm(^{14}N,p4nγ),^{144}Sm(^{12}C,3nγ) 2000Fo04 (continued)

γ(^{153}Er) (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π
418.1	20	4542.6	(37/2$^-$)	4124.4	(33/2$^-$)	x702.5@					
428.7	≤8	5248.1	(41/2$^-$)	4819.3	(37/2$^+$)	712.2	≤61	2751.7	(23/2$^-$)	2039.4	(21/2$^-$)
429.0	≤8	3378.0	(29/2$^-$)	2949.1	(25/2$^-$)	731.9	≤23	1497.6	(15/2$^-$)	765.7	(11/2$^-$)
482.0	4	4819.3	(37/2$^+$)	4337.3		732.3 *3*	≤23	5980.4	(43/2)	5248.1	(41/2$^-$)
488.8	≤7	4044.8	(33/2$^+$)	3556.1	(31/2$^-$)	746.4	25	4124.4	(33/2$^-$)	3378.0	(29/2$^-$)
530.5	≤13	2908.8	(25/2$^+$)	2378.3	(21/2$^+$)	754.5	18	1725.1	(17/2$^+$)	970.6	(13/2$^+$)
568.3		4124.4	(33/2$^-$)	3556.1	(31/2$^-$)	757.9	≤25	3556.1	(31/2$^-$)	2798.2	(27/2$^-$)
570		4819.3	(37/2$^+$)	4249.2	(35/2$^-$)	765		7441		6676.3	
579.7	11	3378.0	(29/2$^-$)	2798.2	(27/2$^-$)	765.7		765.7	(11/2$^-$)	0.0	(7/2$^-$)
588.1	92	1699.1	(17/2$^-$)	1111.0	(13/2$^-$)	799.5	10	4844.5	(37/2$^+$)	4044.8	(33/2$^+$)
595.5		4844.5	(37/2$^+$)	4249.2	(35/2$^-$)	811.6	99	1111.0	(13/2$^-$)	299.4	(9/2$^-$)
653.2	≤21	2378.3	(21/2$^+$)	1725.1	(17/2$^+$)	847.2		4891.8	(37/2$^+$)	4044.8	(33/2$^+$)
659.0	≤8	3651.7	(31/2$^+$)	2992.7	(29/2$^+$)	873.0	11	6853.6	(47/2)	5980.4	(43/2)
x671.7@						909.8 *2*	26	2949.1	(25/2$^-$)	2039.4	(21/2$^-$)
680.8		8063.9		7383.1		946.7	3	3939.5	(33/2$^+$)	2992.7	(29/2$^+$)
x683.5@						x972.0@					
x687.5@						1052	5	4044.8	(33/2$^+$)	2992.7	(29/2$^+$)
693.0	21	4249.2	(35/2$^-$)	3556.1	(31/2$^-$)	1344.6		4337.3		2992.7	(29/2$^+$)
696.1	6	6676.3		5980.4	(43/2)						

† From 2000Fo04, except as otherwise indicated.
‡ From 1982Fo06 and are for E(^{12}C)=75 MeV at 125° and have uncertainties of 10-30%, depending on Iγ.
# From I(ceK) and Iγ normalized to α_K(340.3)=0.0358 (theory value for assumed E2 γ) (1982Fo06).
@ From 1981Ho05.
& From 1982Fo06.
x γ ray not placed in level scheme.

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Level Scheme

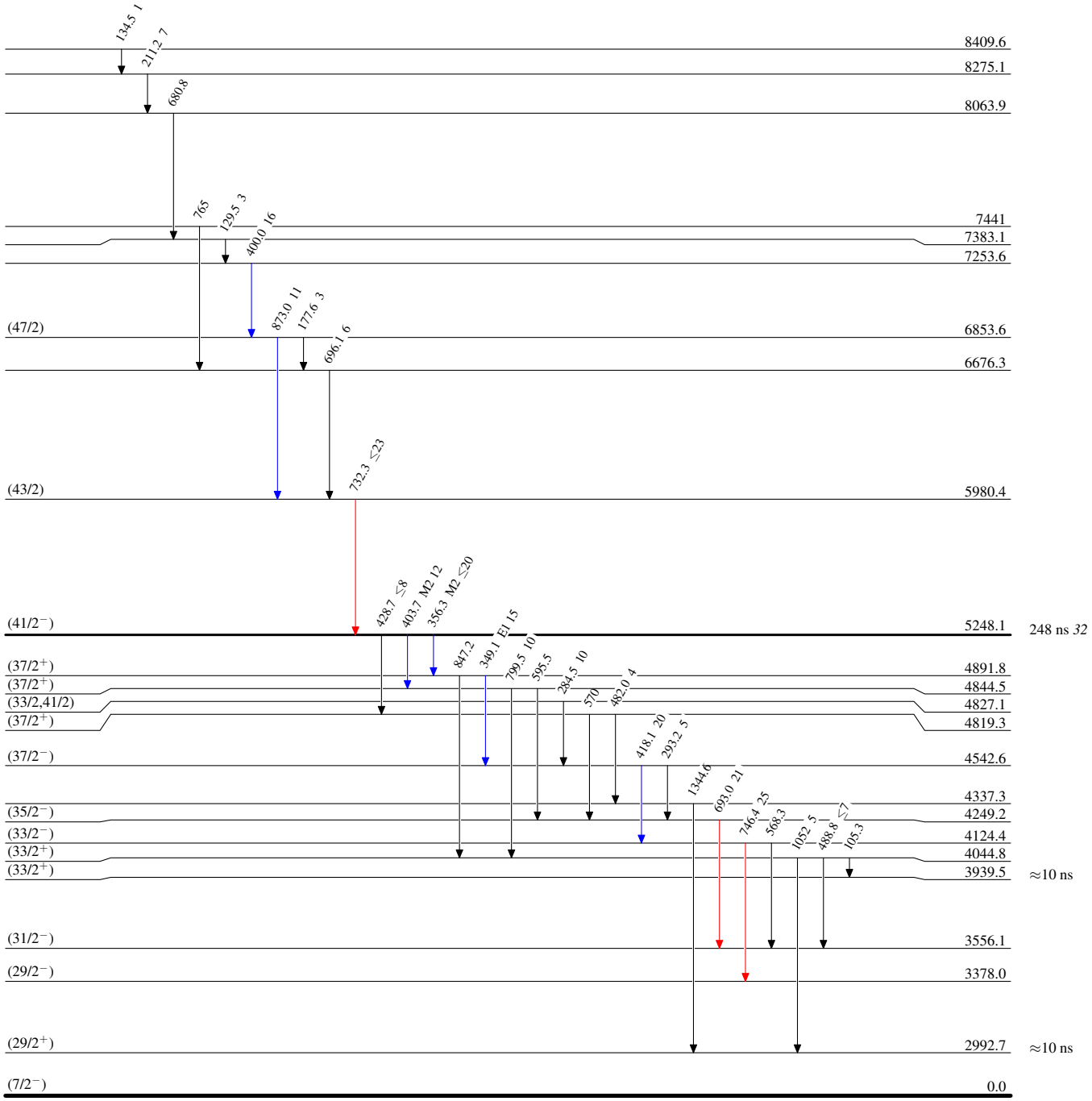
Intensities: Relative I_γ

Legend

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

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

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

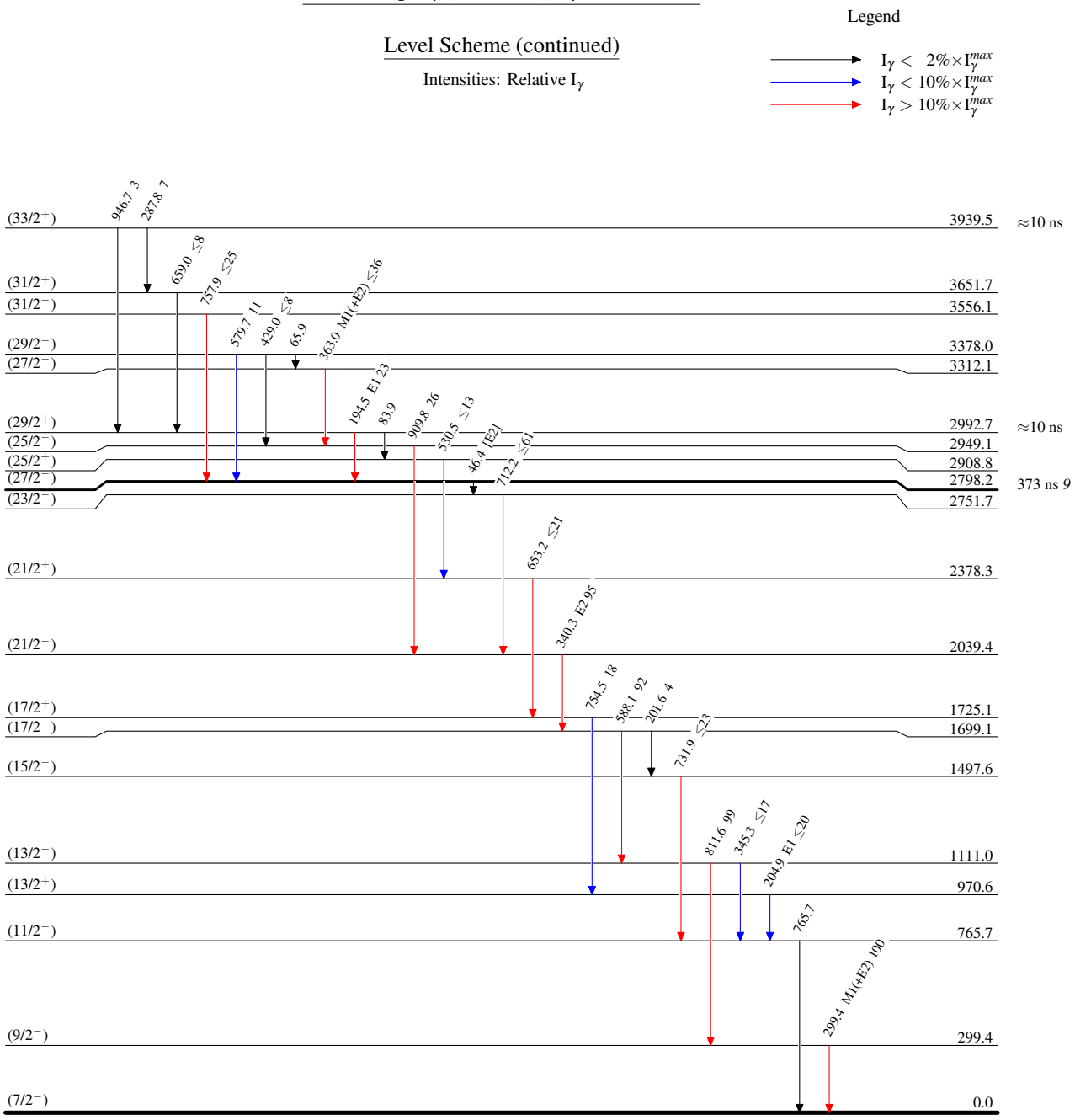


$^{153}_{68}Er_{85}$

^{144}Sm(^{14}N,p4nγ),^{144}Sm(^{12}C,3nγ) 2000Fo04

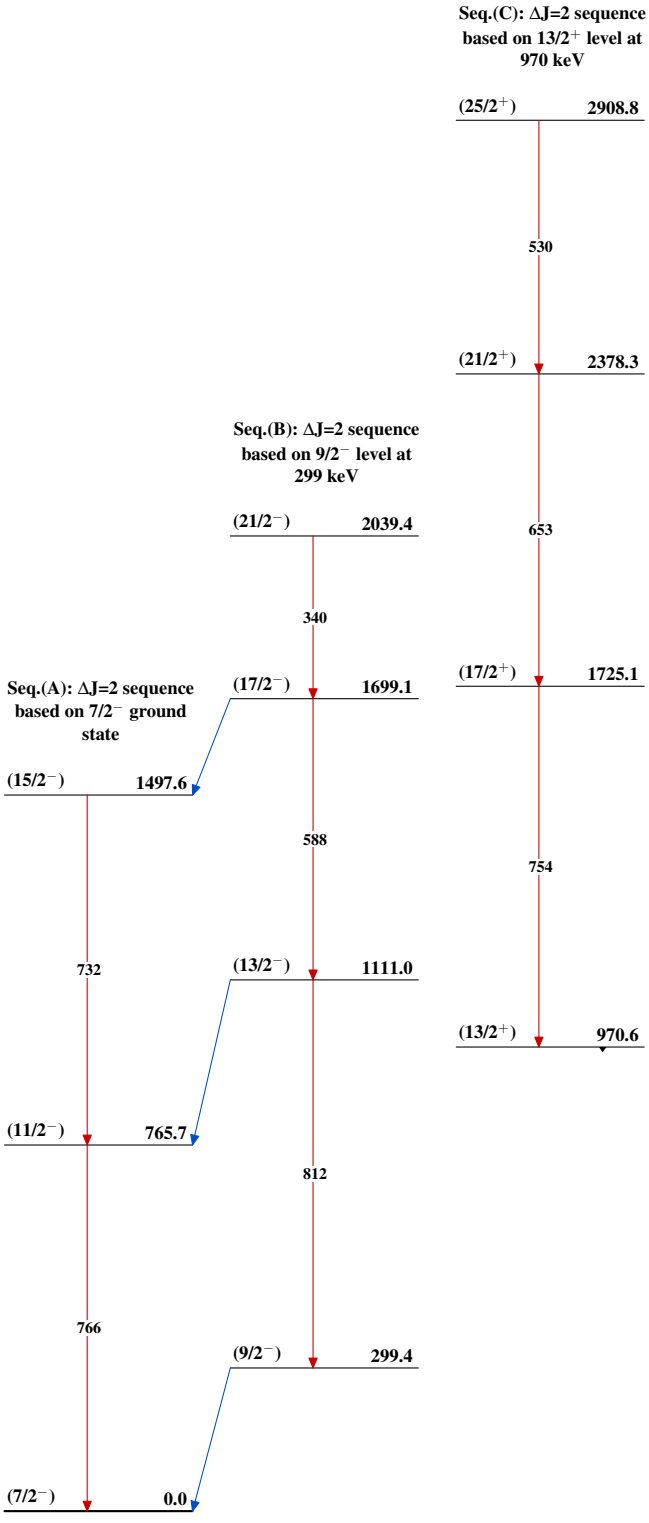
Level Scheme (continued)

Intensities: Relative I_γ



$^{153}_{68}Er_{85}$

^{144}Sm(^{14}N,p4nγ),^{144}Sm(^{12}C,3nγ) 2000Fo04



$^{153}_{68}Er_{85}$