^{124}Sn(^{12}C,3nγ) 1975Gi11,1995Ju02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov and A. Rodionov, F. G. Kondev	NDS 112, 855 (2011)	31-Oct-2010

1975Gi11: ^{124}Sn(^{12}C,3nγ), E=46 MeV; measured Eγ, Iγ, $\gamma\gamma$ coin, $\gamma\gamma$ delay, $\gamma(\theta)$; ^{133}Ba: deduced levels, J^π, $T_{1/2}$. Cyclotron, Ge(Li) detectors.
1995Ju02: ^{124}Sn(^{13}C,4nγ) E=48.4, 65.5 MeV; measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$ coin, DCO values; ^{133}Ba: deduced levels, J^π.

^{133}Ba Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[#]	Comments
0.0	1/2$^+$	10.551 y *11*	
12.327 *6*	3/2$^+$		
288.4 *3*	11/2$^-$	38.93 h *10*	
290.96 *21*	5/2$^+$		
302.96 *22*	3/2$^+$		E(level): not suggested in 1995Ju02.
577.0 *4*	7/2$^+$		
901.9 *6*	13/2$^-$		
968.9 *7*	15/2$^-$		
1528.9 *8*	15/2$^-$		
1711.9 *7*	17/2$^-$		
1857.9 *7*	19/2$^-$		
1941.4 *7*	19/2$^+$	3.5 ns *15*	$T_{1/2}$: authors of 1975Gi11 give 2 to 5 ns. J$^\pi$: assigned by analogy with ^{135}Ce, ^{137}Nd, and ^{131}Xe in 1975Gi11.
2170.3 *8*	19/2$^-$		
2365.1 *8*	23/2$^+$		
2381.2 *8*	21/2$^+$		
2457.4? *9*	21/2$^-$		E(level): not observed in 1995Ju02.
2490.2? *9*			E(level): not observed in 1995Ju02.
2495.3?[@] *10*	21/2$^+$[@]		
2508.7[@] *9*	21/2$^-$[@]		
2829.8[@] *9*	23/2$^-$[@]		
2888.3[@] *12*	23/2$^-$[@]		
2977.1[@] *11*	19/2[@]		
3104.0?[@] *11*	25/2$^+$[@]		
3113.8[@] *11*	21/2$^+$[@]		
3245.7[@] *11*	23/2$^+$[@]		
3254.2[@] *11*	25/2$^-$[@]		
3344.3?[@] *13*	27/2$^+$[@]		
3581.0?[@] *12*	27/2$^-$[@]		

[†] From a least-squares fit to Eγ's.
[‡] From 1975Gi11.
[#] From 'Adopted Levels'.
[@] Added by evaluators using unplaced γ's from 1975Gi11 and using the ^{133}Ba level scheme suggested by 1995Ju02.

^{124}Sn(^{12}C,3nγ) 1975Gi11,1995Ju02 (continued)

$\gamma(^{133}Ba)$

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	Comments
12.327 *6*		12.327	3/2$^+$	0.0	1/2$^+$	M1+E2	E_γ,Mult.: from 'Adopted Levels and gammas'.
83.5 *1*	30 *3*	1941.4	19/2$^+$	1857.9	19/2$^-$	(E1)	I_γ: from $\gamma\gamma$-coin. Mult.: stated in table 1 of 1975Gi11.
[x]110.7 *1*	3.3 *3*						
[x]120.5 *1*	1.0 *1*						
131.90 *13*	3.6 *4*	3245.7	23/2$^+$	3113.8	21/2$^+$		
[x]134.6 *1*	3.7 *4*						
136.70 *14*	4.5 *5*	3113.8	21/2$^+$	2977.1	19/2		
146.1 *1*		1857.9	19/2$^-$	1711.9	17/2$^-$		E_γ: given in level scheme only, not given in table 1 (1975Gi11).
[x]202.5 *2*	1.9 *2*						
229.2 *2*	3.5 *4*	1941.4	19/2$^+$	1711.9	17/2$^-$	E1	Mult.: stated in table 1 of 1975Gi11.
[x]255.9 *2*	6.4 *6*						
276.1 *3*		288.4	11/2$^-$	12.327	3/2$^+$	M4	Mult.: from 'Adopted Levels and gammas'.
278.8 *3*	11.5 *12*	290.96	5/2$^+$	12.327	3/2$^+$	M1(+E2)	$\gamma(\theta)$: A_2=−0.44 *6*.
285.8 *3*	6.2 *6*	577.0	7/2$^+$	290.96	5/2$^+$	M1(+E2)	$\gamma(\theta)$: A_2=−0.55 *13*.
290.6[@] *3*	3.3[@]	290.96	5/2$^+$	0.0	1/2$^+$		E_γ: 291.3 *1*, Iγ=0.4 *1* in 1995Ju02.
290.6[@] *3*	3.3[@]	302.96	3/2$^+$	12.327	3/2$^+$		$\gamma(\theta)$: A_2=−0.10 *15*.
303.0 *3*	6.4 *6*	302.96	3/2$^+$	0.0	1/2$^+$	M1(+E2)	$\gamma(\theta)$: A_2=−0.52 *8*. E_γ: not observed in 1995Ju02.
321.1 *3*	2.8 *3*	2829.8	23/2$^-$	2508.7	21/2$^-$		
326.8 *3*	2.1 *2*	3581.0?	27/2$^-$	3254.2	25/2$^-$		
[x]331.9 *3*	5.9 *6*						
338.4 *3*	2.5 *3*	2508.7	21/2$^-$	2170.3	19/2$^-$		
365.9 *4*	4.9 *5*	3254.2	25/2$^-$	2888.3	23/2$^-$		
[x]391.9 *4*	3.2 *3*						
[x]395.7 *4*	4.7 *5*						
[x]419.5 *4*	3.1 *3*						
423.7 *4*	25 *3*	2365.1	23/2$^+$	1941.4	19/2$^+$	E2	$\gamma(\theta)$: A_2=0.16 *4*.
439.8 *4*	10.2 *10*	2381.2	21/2$^+$	1941.4	19/2$^+$	M1+E2	$\gamma(\theta)$: A_2=−0.31 *12*.
458.1 *5*	4.5 *5*	2170.3	19/2$^-$	1711.9	17/2$^-$		
[x]531.6 *5*	1.6 *2*						
553.9 *6*	5.9 *5*	2495.3?	21/2$^+$	1941.4	19/2$^+$		
565.4 *6*	10.7 *11*	577.0	7/2$^+$	12.327	3/2$^+$	E2	$\gamma(\theta)$: A_2=0.03 *10*.
599.5 *6*	9.4 *9*	2457.4?	21/2$^-$	1857.9	19/2$^-$		E_γ: not observed in 1995Ju02. I_γ: composite line.
613.6 *6*	30 *3*	901.9	13/2$^-$	288.4	11/2$^-$	D+Q	$\gamma(\theta)$: A_2=−0.63 *7*.
[x]622.0 *6*	4.1 *4*						
627.1 *6*	12.8 *13*	1528.9	15/2$^-$	901.9	13/2$^-$	M1+E2	$\gamma(\theta)$: A_2=−0.77 *7*.
632.5 *6*	3.0 *3*	2490.2?		1857.9	19/2$^-$	M1,E2	$\gamma(\theta)$: A_2=0.16 *12*.
641.8 *6*	7.0 *7*	2170.3	19/2$^-$	1528.9	15/2$^-$	Q	$\gamma(\theta)$: A_2=0.40 *9*.
680.4 *7*	100	968.9	15/2$^-$	288.4	11/2$^-$	Q	$\gamma(\theta)$: A_2=0.20 *3*.
737.0 *7*	9.8 *10*	3245.7	23/2$^+$	2508.7	21/2$^-$		
738.9 *7*	4.9 *5*	3104.0?	25/2$^+$	2365.1	23/2$^+$		
742.9 *7*	18.0 *18*	1711.9	17/2$^-$	968.9	15/2$^-$	M1+E2	$\gamma(\theta)$: A_2=−0.84 *13*.
745.5 *7*	4.1 *4*	2457.4?	21/2$^-$	1711.9	17/2$^-$	Q	$\gamma(\theta)$: A_2=0.43 *13*. E_γ: the transition depopulates the 3256-keV level in 1995Ju02.
745.5 *7*	4.1 *4*	3254.2	25/2$^-$	2508.7	21/2$^-$		
[x]760.8 *8*	2.5 *3*						
809.8 *8*	9.0 *9*	1711.9	17/2$^-$	901.9	13/2$^-$	E2	$\gamma(\theta)$: A_2=0.11 *8*.
[x]842.7 *8*	7.0 *7*						
888.9 *9*	60 *6*	1857.9	19/2$^-$	968.9	15/2$^-$	Q	$\gamma(\theta)$: A_2=0.19 *3*.
960.8 *10*	3.0 *3*	2490.2?		1528.9	15/2$^-$	M1,E2	$\gamma(\theta)$: A_2=0.31 *10*.
979.2 *10*	9.2 *10*	3344.3?	27/2$^+$	2365.1	23/2$^+$		

Continued on next page (footnotes at end of table)

^{124}Sn(^{12}C,3nγ) 1975Gi11,1995Ju02 (continued)

$\gamma(^{133}Ba)$ (continued)

† From 1975Gi11; $\Delta E\gamma$ assigned by evaluators according statement of authors that $\Delta E\gamma \approx 0.1\%$.
‡ From 1975Gi11, observed at 55° to the beam.
# From $\gamma(\theta)$ of 1975Gi11, except as noted.
@ Multiply placed with undivided intensity.
x γ ray not placed in level scheme.

^{124}Sn(^{12}C,3nγ) 1975Gi11,1995Ju02

Level Scheme

Intensities: Relative I_γ

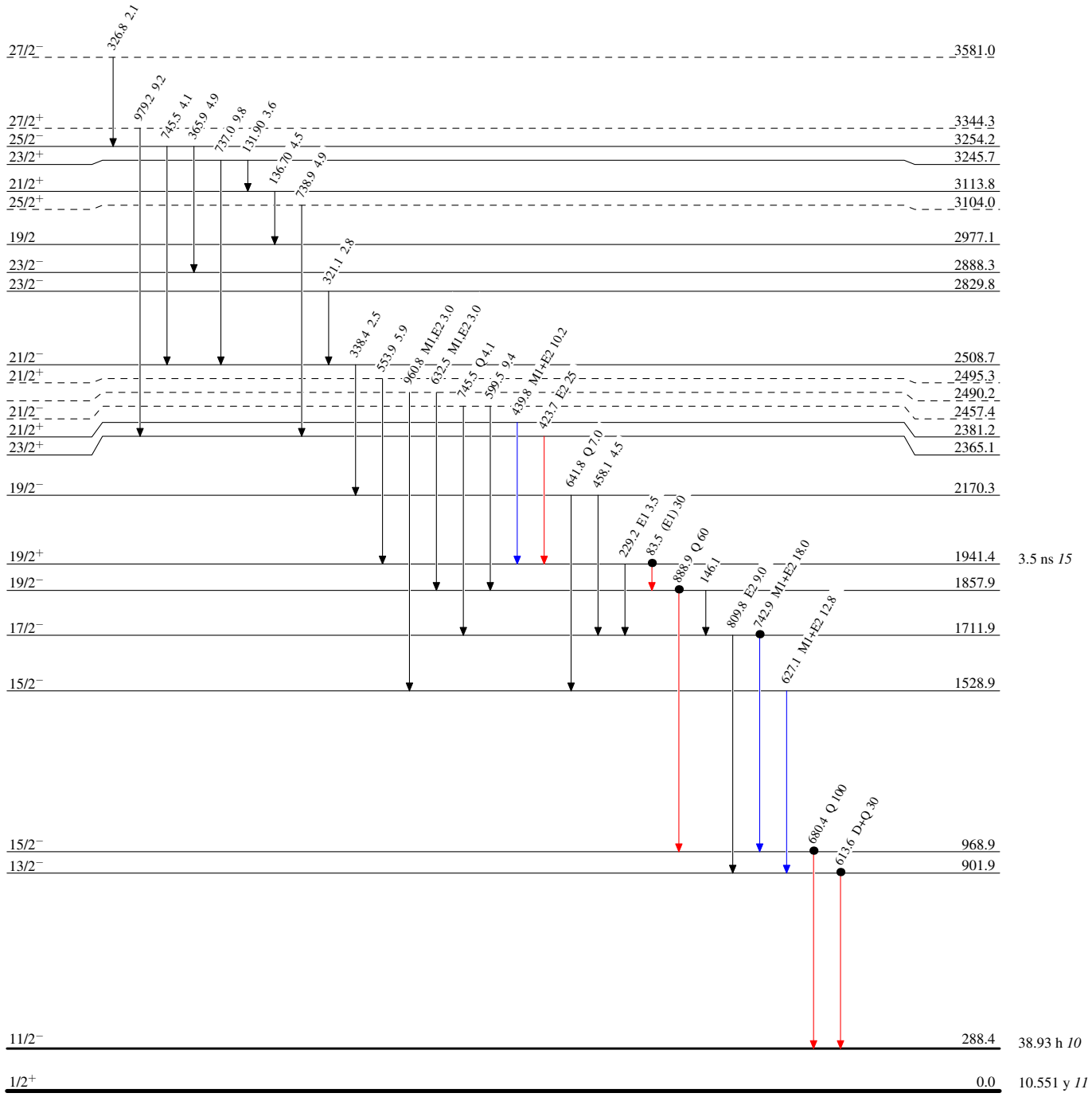
Legend

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

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

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

Coincidence



$^{133}_{56}Ba_{77}$

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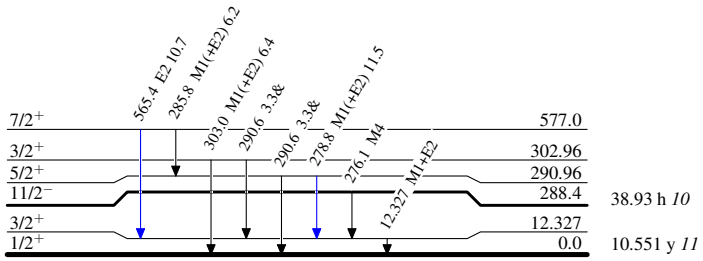
Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



$^{133}_{56}Ba_{77}$