

$^{124}\text{Sn}(^{12}\text{C},4n\gamma)$ [1975Gi11](#),[1976Fi11](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, A. A. Rodionov and S. Sakharov, Balraj Singh		NDS 104, 497 (2005)	10-Feb-2005

[1975Gi11](#): E=46 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$, $\gamma(\theta)$ using three Ge(Li) detectors.

[1976Fi11](#): E=60 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$ using two Ge(Li) detectors.

Others:

[1996Da02](#): E=60 MeV. Measured $\gamma(\theta, H, t)$, deduced g factor of 10^+ isomer.

[1995Ha26](#): E=60 MeV. Measured $\gamma(\theta, H, t)$, deduced g factor of 10^+ isomer.

 ^{132}Ba Levels

A 2960, 9^- level is omitted since it is not confirmed by [1995Ju09](#). The 477 γ is placed by [1995Ju09](#) from 2901 to a 2423, 6^- level.

E(level) [†]	J ^π [#]	T _{1/2}	Comments
0.0@	0 ⁺		
464.4@ 5	2 ⁺		
1031.6& 6	2 ⁺		
1127.7@ 6	4 ⁺		
1504.1 11	0 ⁺		
1510.9& 6	3 ⁺		
1729.4& 7	4 ⁺		
1931.8@ 7	6 ⁺		
2026.3 7			
2119.2 ^a 7	5 ⁻		
2240.7 7			
2357.2 ^a 7	(6 ⁻)		
2422.4 [‡] 7	6 ⁽⁻⁾		
2483.0 ^a 7	(7 ⁻)		
2717.9 [‡] 8	7 ⁽⁻⁾		
2798.9@ 12	8 ⁺		
2865.7 [‡] 12	(8 ⁺)		
2900.4 ^a 8	(8 ⁻)		
2900.8 [‡] 13	(7 ⁻)		
3114.8@ 12	10 ⁺	8.94 ns 14	g=-0.159 5 (1996Da02) g=-0.156 11 (1995Ha26) T _{1/2} : from 1996Da02 .
3187.8 [‡] 10	(9 ⁻)		
3355.6 [‡] 9	(9 ⁻)		
3913.6 13			
4059.7 [‡] 14	(11 ⁻)		
4802.9 14			
4817.2 [‡] 16	(13 ⁻)		

[†] From least-squares fit to $E\gamma$'s.

[‡] Proposed (by evaluators) based on results from [1995Ju09](#).

[#] From Adopted Levels.

@ Band(A): Yrast band.

& Band(B): γ -vibrational band.

^a Band(C): Octupole band.

$^{124}\text{Sn}(^{12}\text{C},4n\gamma)$ **1975Gi11,1976Fl11 (continued)** $\gamma(^{132}\text{Ba})$ A₂'s are from [1975Gi11](#).

E_γ †	I_γ †	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.‡	α^a	Comments
$^{x96.7}_{@} 1$	3.8 4							
$^{x114.0}_{@} 1$	6.0 6							
125.9 1	4.4 4	2483.0	(7 ⁻)	2357.2	(6 ⁻)	D+Q		I _γ : 7 (1976Fl11). A ₂ =-0.21 8. Additional information 14 .
$^{x155}_{@}$								E _γ : shown only In figure 5 of 1975Gi11 from 3117 level to 2961 level.
$^{x174.0}_{@} 2$	6.0 6							
$^{x182.6}_{@} 2$	3.0 3							
187.4 2	3.3 3	2119.2	5 ⁻	1931.8	6 ⁺	D		I _γ : too high by a factor of ≈4 as compared to that In Adopted Gammas. A ₂ =-0.14 8.
$^{x197.3}_{@} 2$	4.6 5							
$^{x199.7}_{@} 2$	1.5 2							
$^{x215.5}_{\#} 5$								I _γ : 5 (1976Fl11). May correspond to 215.7γ from 6107 level In 1995Ju09 .
$^{x233.5}_{@} 2$	1.9 2							
238.1 2	6.5 7	2357.2	(6 ⁻)	2119.2	5 ⁻	D+Q		I _γ : 9 (1976Fl11). A ₂ =-0.43 12. Additional information 13 .
242.3 2	3.0 3	2483.0	(7 ⁻)	2240.7				I _γ : 5 (1976Fl11). Additional information 15 .
$^{x253.6}_{@} 3$	3.4 3							
$^{x284.2}_{@} 3$	5.2 5							
295.8 & b 3	1.4 2	2717.9	7 ⁽⁻⁾	2422.4	6 ⁽⁻⁾			E _γ : from 1995Ju09 .
303.2 1		2422.4	6 ⁽⁻⁾	2119.2	5 ⁻			May correspond to 307.7γ from 6414 level In 1995Ju09 .
$^{x306.9}_{@} 3$	1.8 2							
315.9 3	9.5 9	3114.8	10 ⁺	2798.9	8 ⁺	(E2)	0.0385	α(K)=0.0315 10; α(L)=0.00558 17; α(M)=0.00117 4; α(N+...)=0.00031 1 I _γ : 34 (1976Fl11). A ₂ =+0.35 3. Additional information 20 .
363.5 4	9.6 10	2483.0	(7 ⁻)	2119.2	5 ⁻	(Q)		I _γ : 10 (1976Fl11). A ₂ =+0.34 8. Additional information 16 .
383.1 4	0.7 1	1510.9	3 ⁺	1127.7	4 ⁺			
390.0 4	16.2 16	2119.2	5 ⁻	1729.4	4 ⁺	D		I _γ : 25 (1976Fl11). A ₂ =-0.06 3. Additional information 11 .
417.4 4	7.5 8	2900.4	(8 ⁻)	2483.0	(7 ⁻)	D+Q		I _γ : 18 (1976Fl11). A ₂ =-0.72 10. Additional information 19 .
$^{x425.6}_{@} 4$	1.8 2							May correspond to 424.6γ from 6196 level In 1995Ju09 .
455.3 & b 5	3.6 4	3355.6	(9 ⁻)	2900.4	(8 ⁻)			
464.6 5	100	464.4	2 ⁺	0.0	0 ⁺	(Q)		A ₂ =+0.19 3. I _γ : 100 (1976Fl11). Additional information 1 .

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$^{124}\text{Sn}(^{12}\text{C},4n\gamma)$ **1975Gi11,1976Fl11 (continued)** $\gamma(^{132}\text{Ba})$ (continued)

E_γ [†]	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
477.7 ^b 5	3.0 3	2900.4	(8 ⁻)	2422.4	6 ⁽⁻⁾	(Q)	placement is from 2901, 8 ⁻ to 2423, 6 ⁻ level In 1995Ju09 . $I_\gamma(478)/I_\gamma(417)=0.40$ 6 (1975Gi11) marginally agrees with 0.28 4 from 1995Ju09 . $A_2=+0.18$ 10. $A_2=+0.15$ 7. I_γ : <2 (1976Fl11). Additional information 5 .
479.4 5	9.0 9	1510.9	3 ⁺	1031.6	2 ⁺		I_γ : <1 (1976Fl11). $A_2=0.00$ 5. I_γ : 12 (1976Fl11). Additional information 2 .
515.2 [#] 5		2026.3		1510.9	3 ⁺		
^x 536.2 [@] 5	11.2 11						
567.4 6	14.1 14	1031.6	2 ⁺	464.4	2 ⁺		$A_2=0.00$ 5. I_γ : 12 (1976Fl11). Additional information 2 .
597.6 ^{&b} 6	4.2 4	2717.9	7 ⁽⁻⁾	2119.2	5 ⁻		
602.2 6	9.4 9	1729.4	4 ⁺	1127.7	4 ⁺		I_γ : 5 (1976Fl11). $A_2=+0.07$ 7. Additional information 7 .
^x 643.9 [@] 6	3.7 4						
663.4 7	68 7	1127.7	4 ⁺	464.4	2 ⁺	(Q)	$A_2=+0.26$ 3. I_γ : 79 (1976Fl11). Additional information 4 .
^x 668.7 [@] 7	9.1 9						
697.5 7	15.2 15	1729.4	4 ⁺	1031.6	2 ⁺	(Q)	I_γ : 9 (1976Fl11). $A_2=+0.14$ 5. Additional information 8 .
704.8 ^{&b} 7	3.5 4	3187.8	(9 ⁻)	2483.0	(7 ⁻)		I_γ : 9 (1976Fl11). Additional information 21 .
^x 748.6 7	2.5 3						a 747.3 γ is placed from 3105, 8 ⁻ level In 1995Ju09 ; but other transitions of comparable intensities are not reported by 1975Gi11 .
^x 752.4 [@] 8	3.8 4						
757.5 ^{&b} 8	2.9 3	4817.2	(13 ⁻)	4059.7	(11 ⁻)		I_γ : 6 (1976Fl11). Additional information 23 .
798.8 [#] 5		3913.6		3114.8	10 ⁺		I_γ : 18 (1976Fl11). I_γ : 75 (1976Fl11). $A_2=+0.08$ 4. Additional information 10 .
803.9 8	31 3	1931.8	6 ⁺	1127.7	4 ⁺		I_γ : 29 (1976Fl11). $A_2=+0.27$ 4. Additional information 17 .
867.1 9	13.1 13	2798.9	8 ⁺	1931.8	6 ⁺	(Q)	I_γ : 9 (1976Fl11). Additional information 22 .
871.9 ^{&b} 9	2.5 3	4059.7	(11 ⁻)	3187.8	(9 ⁻)		I_γ : 14 (1976Fl11). I_γ : <2 (1976Fl11). I_γ : 5 (1976Fl11). Additional information 18 .
889.3 [#] 5		4802.9		3913.6			E_γ : composite line. I_γ : 8 (1976Fl11). $A_2=-0.19$ 6. Additional information 12 .
898.7 [#] 5		2026.3		1127.7	4 ⁺		I_γ : 8 (1976Fl11). $A_2=+0.02$ 8. Additional information 3 .
933.9 ^{&b} 9	4.0 4	2865.7	(8 ⁺)	1931.8	6 ⁺		$A_2=+0.19$ 15.
969.0 ^{&b} 10	7.5 8	2900.8	(7 ⁻)	1931.8	6 ⁺		
991.3 10	9.3 9	2119.2	5 ⁻	1127.7	4 ⁺	D	
1031.0 10	8.6 9	1031.6	2 ⁺	0.0	0 ⁺		
1039.7 10	2.1 2	1504.1	0 ⁺	464.4	2 ⁺		

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$^{124}\text{Sn}(^{12}\text{C},4n\gamma)$ **1975Gi11,1976F111 (continued)** $\gamma(^{132}\text{Ba})$ (continued)

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
1046.3 10	6.5 7	1510.9	3 ⁺	464.4	2 ⁺	I_γ : <2 (1976F111). $A_2=+0.29$ 7. Additional information 6.
1112.8 [#] 5		2240.7		1127.7	4 ⁺	I_γ : 6 (1976F111).
^x 1208.8 ^{#@} 5						I_γ : <1 (1976F111). placement from 2241 (In 1976F111) to 1032, 2 ⁺ is unlikely In view of (6 ⁺) assignment for this level by 1995Ju09 and 1989Pa17.
1264.9 13	3.6 4	1729.4	4 ⁺	464.4	2 ⁺	I_γ : 8 (1976F111). Additional information 9.

[†] From 1975Gi11, unless otherwise stated. Values available from 1976F111 are given under comments, where the energy uncertainty is ≈ 0.5 keV.

[‡] From $\gamma(\theta)$ (1975Gi11); mult=Q corresponds to stretched quadrupole ($\Delta J=2$) transition; D or D+Q to $\Delta J=1$ transition. Based on band structures and systematics of yrast population of states in high-spin structures, 1975Gi11 assign E2 to mult=Q; E1 to mult=D in cases where $\Delta(J^\pi)$ is given; and M1+E2 to mult=D+Q.

[#] From 1976F111 only.

[@] γ not confirmed In later studies (1995Ju09,1989Pa17); probably contributed by an impurity In 1975Gi11.

[&] Placement proposed (by evaluators) based on results from 1995Ju09.

^a Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

^b Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

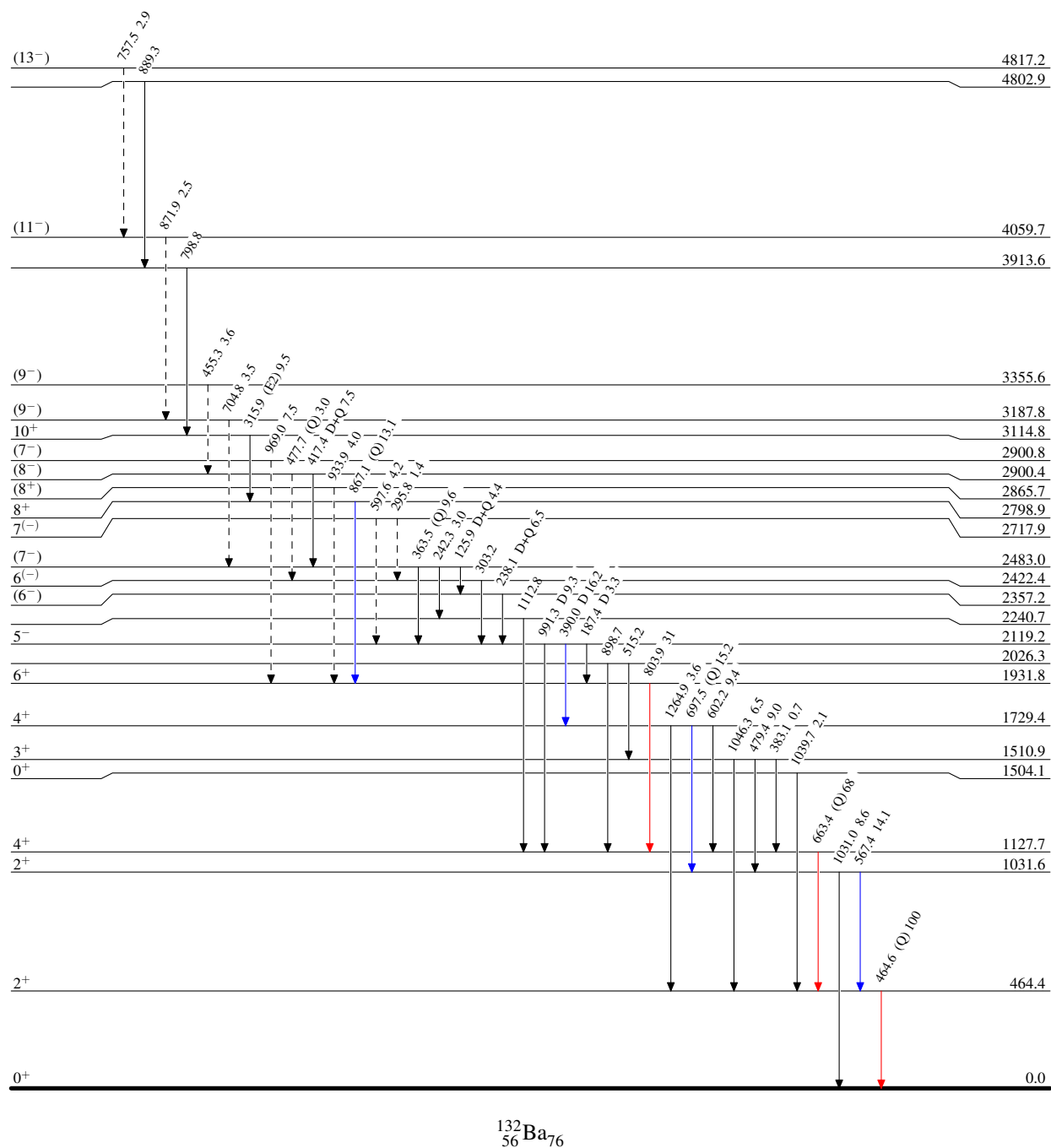
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Level Scheme

Intensities: Relative I_γ

Legend

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



8.94 ns 14

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Band(A): Yrast band

10^+ 3114.8

8^+ 2798.9

6^+ 1931.8

4^+ 1127.7

2^+ 464.4

0^+ 0.0

Band(C): Octupole band

(8^-) 2900.4

(7^-) 2483.0

(6^-) 2357.2

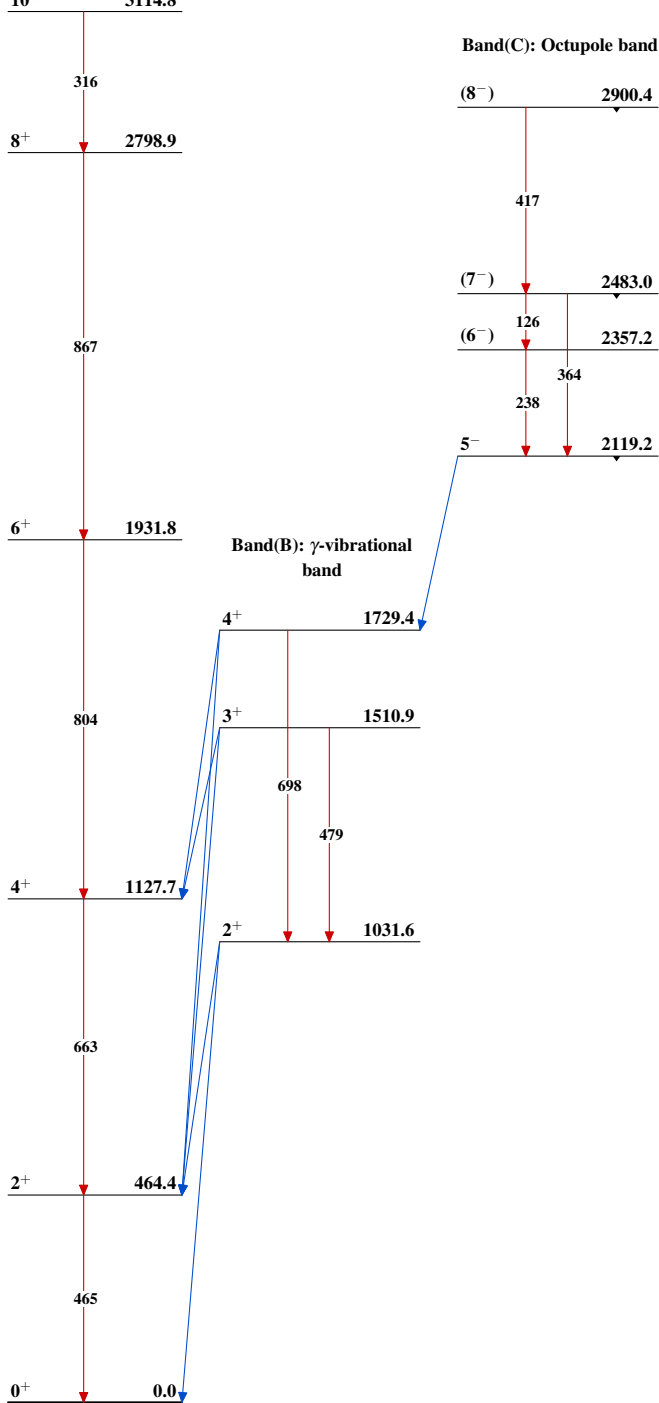
5^- 2119.2

Band(B): γ -vibrational band

4^+ 1729.4

3^+ 1510.9

2^+ 1031.6



$^{132}_{56}\text{Ba}_{76}$