

¹¹⁶Sn(²⁴Mg,p4n γ) **1987Be22**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Alexander A. Rodionov And Yuri L. Khazov		NDS 109, 517 (2008)	22-Jan-2008

1987Be22: ¹¹⁶Sn(²⁴Mg,p4n γ) E=144 MeV. Measured E γ , I γ , $\gamma(\theta)$, $\gamma\gamma$, excitation functions, enriched targets, four Compton-suppressed Ge detectors.

¹³⁵Pm Levels

E(level) [†]	J π [#]	Comments
0.0+z [@]	(11/2 ⁻)	E(level): systematics (see figure 3 in 1993BrZU) suggest 11/2 ⁻ as g.s..
286.8+z [@] 1	(15/2 ⁻)	
800.5+z [@] 2	(19/2 ⁻)	
1458.9+z [@] 2	(23/2 ⁻)	
1670.9+z ^{‡a} 2	(19/2 ⁺)	No deexciting γ ray reported.
1993.7+z ^{&} 2	(21/2 ⁺)	
2055.9+z ^{‡a} 11	(23/2 ⁺)	
2208.0+z [@] 3	(27/2 ⁻)	
2397.2+z ^{&} 3	(25/2 ⁺)	
2612.7+z ^{‡a} 11	(27/2 ⁺)	
2960.9+z ^{&} 4	(29/2 ⁺)	
3013.2+z [@] 4	(31/2 ⁻)	
3348.2+z ^{‡a} 11	(31/2 ⁺)	
3700.9+z ^{&} 5	(33/2 ⁺)	
3860.3+z [@] 6	(35/2 ⁻)	
4202.6+z ^{‡a} 12	(35/2 ⁺)	
4536.9+z ^{‡&} 11	(37/2 ⁺)	
4704.4+z 11		This was assigned (1987Be22) as the 39/2 ⁻ member of the yrast band but 1988Wa01 propose this member at 4759 deexciting by 898 γ (see Adopted Levels).

[†] From least-squares fit to E γ 's. Value of z=68.9+y in 'Adopted Levels'.

[‡] Level not listed In 'Adopted Levels', since it is not confirmed by [2001We08](#).

[#] Primarily from band assignments, assuming the lowest populated state at 11/2⁻. $\gamma(\theta)$ data for selected transitions are consistent with these assignments.

[@] Band(A): $\pi 3/2[541]$, $\alpha=-1/2$. From h_{11/2} orbital. triaxial shape ($\gamma \approx -15^\circ$) is indicated by single-particle Routhian plots calculated by [1987Be22](#). The alignment plot shows a backbend at a crossing rotational frequency $h\omega \approx 420$ keV, attributed to the alignment of a pair of protons from lower h_{11/2} midshell. There does not seem any evidence for alignment of a pair of neutrons from upper h_{11/2} midshell.

[&] Band(B): $\pi 5/2[413] \otimes \pi, h_{11/2}^{+2}$, $\alpha=+1/2$. Band configuration assignment is tentative.

^a Band(C): $\pi 5/2[413] \otimes \pi, h_{11/2}^{+2}$, $\alpha=-1/2$. Band assignment is tentative. This band is not given in 'Adopted Levels' since the 385 γ , 597 γ , 735.5 γ and 854.4 γ have not been reported by [2001We08](#). The 556.8 γ is placed somewhere else in the level scheme given by [2001We08](#).

$\gamma(^{135}\text{Pm})$

E γ	I γ	E _i (level)	J π _i	E _f	J π _f	Mult. [†]	Comments
286.8 1	100	286.8+z	(15/2 ⁻)	0.0+z	(11/2 ⁻)	Q	A ₂ =+0.140 14, A ₄ =-0.053 20.
385 1	<1	2055.9+z	(23/2 ⁺)	1670.9+z	(19/2 ⁺)		
403.5 1	5.7 4	2397.2+z	(25/2 ⁺)	1993.7+z	(21/2 ⁺)	Q	A ₂ =+0.50 7, A ₄ =-0.15 9.
513.7 1	83.7 12	800.5+z	(19/2 ⁻)	286.8+z	(15/2 ⁻)		

Continued on next page (footnotes at end of table)

$^{116}\text{Sn}(^{24}\text{Mg,p4n}\gamma)$ **1987Be22** (continued) $\gamma(^{135}\text{Pm})$ (continued)

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	Comments
556.8 1	3.1 5	2612.7+z	(27/2 ⁺)	2055.9+z	(23/2 ⁺)		
563.7 2	7.5 6	2960.9+z	(29/2 ⁺)	2397.2+z	(25/2 ⁺)		
597 [‡] 1	<1	2055.9+z	(23/2 ⁺)	1458.9+z	(23/2 ⁻)		
658.4 2	62.8 11	1458.9+z	(23/2 ⁻)	800.5+z	(19/2 ⁻)	Q	$A_2=+0.223$ 20, $A_4=-0.050$ 27.
735.5 2	3.8 5	3348.2+z	(31/2 ⁺)	2612.7+z	(27/2 ⁺)		
740.0 3	3.8 6	3700.9+z	(33/2 ⁺)	2960.9+z	(29/2 ⁺)		
749.1 1	27.5 9	2208.0+z	(27/2 ⁻)	1458.9+z	(23/2 ⁻)	(Q)	$A_2=+0.15$ 3, $A_4=-0.03$ 4.
805.2 2	17.7 9	3013.2+z	(31/2 ⁻)	2208.0+z	(27/2 ⁻)		
836 [‡] 1	<1	4536.9+z?	(37/2 ⁺)	3700.9+z	(33/2 ⁺)		
844.1 9	5.8 13	4704.4+z		3860.3+z	(35/2 ⁻)		
847.1 4	11.7 9	3860.3+z	(35/2 ⁻)	3013.2+z	(31/2 ⁻)		
854.4 [‡] 6	<1	4202.6+z?	(35/2 ⁺)	3348.2+z	(31/2 ⁺)		
938.4 3	5.5 7	2397.2+z	(25/2 ⁺)	1458.9+z	(23/2 ⁻)		I_γ : unresolved doublet.
1193.1 2	4.9 7	1993.7+z	(21/2 ⁺)	800.5+z	(19/2 ⁻)	D	$A_2=-0.07$ 7, $A_4=-0.13$ 10.

[†] From $\gamma(\theta)$. Mult=Q corresponds to $\Delta J=2$, quadrupole and mult=D to $\Delta J=1$, dipole transitions.

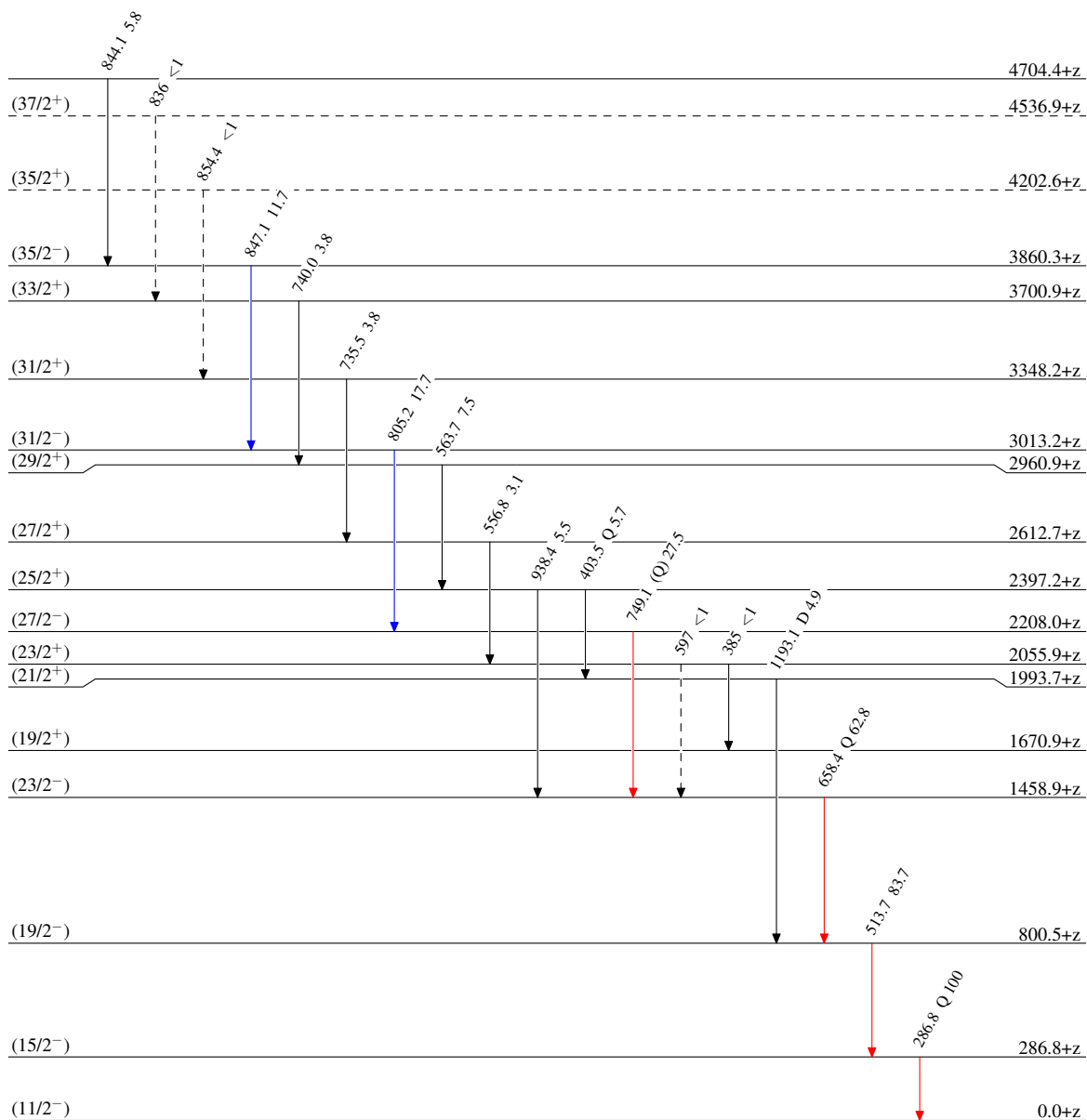
[‡] Placement of transition in the level scheme is uncertain.

$^{116}\text{Sn}(^{24}\text{Mg},p4n\gamma)$ 1987Be22

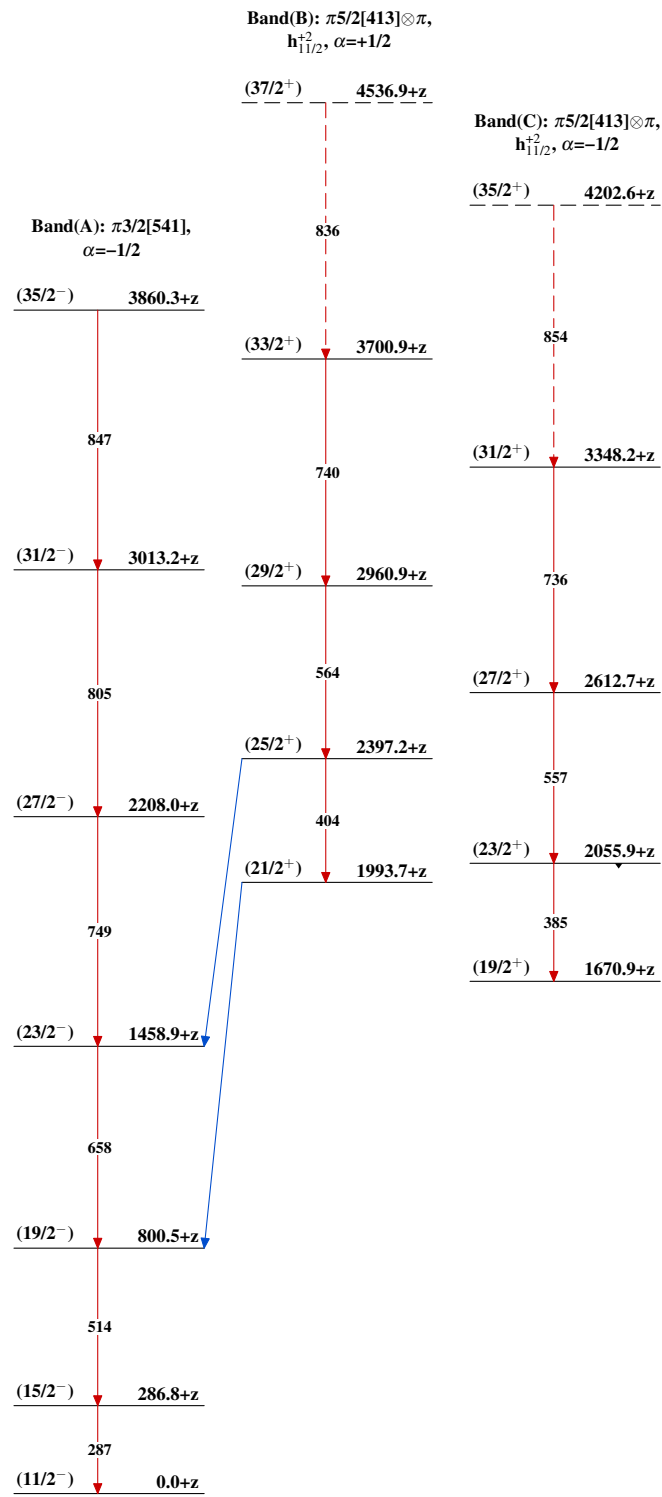
Legend

Level Scheme
Intensities: Relative I_γ

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



$^{135}_{61}\text{Pm}_{74}$

$^{116}\text{Sn}(^{24}\text{Mg},\text{p}4\text{n}\gamma) \quad ^{1987}\text{Be}22$  $^{135}_{61}\text{Pm}_{74}$