

$^{116}\text{Sn}(^3\text{He},3n\gamma)$  **1986Lo14**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 111, 717 (2010)	1-Dec-2009

$E(^3\text{He})=27.5$  MeV enriched target (96.8%).

Measured:  $\gamma$ ,  $\gamma(E)$ ,  $\gamma(\theta)$ ,  $\gamma(t)$ ,  $\gamma\gamma$ , ce.

Preliminary work (**1967Be07**), no evidence for the 607 $\gamma$ .

$^{116}\text{Te}$  Levels

E(level)	$J^\pi^\dagger$	$T_{1/2}$	E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$
0	$0^+$	2.49 h 4	2340.2 <sup>#</sup> 4	$(5^+)$	3220.8 <sup>@</sup> 6	$(7^-,8^-)$
678.9 <sup>‡</sup> 2	$2^+$		2556.3 <sup>@</sup> 4	$(5^-)$	3245.4 <sup>#</sup> 5	$(7^+)$
1218.9 <sup>#</sup> 2	$2^+$		2564.8 <sup>#</sup> 5	$(6^+)$	3342.1 6	
1359.6 <sup>‡</sup> 3	$4^+$		2773.3 <sup>‡</sup> 4	$8^+$	3574.8 <sup>‡</sup> 6	$10^+$
1637.3 <sup>#</sup> 3	$3^+$		2966.5 <sup>@</sup> 5	$6^-$	3993.8 <sup>&amp;</sup> 7	$(9^-,10^-)$
1812.2 <sup>#</sup> 3	$4^+$		3027.4 <sup>&amp;</sup> 5	$7^-$	4345.5 <sup>‡</sup> 7	$12^+$
2002.6 <sup>‡</sup> 4	$6^+$		3175.2 <sup>&amp;</sup> 6	$8^-$	4352.3 8	
2119.2 <sup>@</sup> 4	$5^-$		3190.5 5	$7^-$		

<sup>†</sup> As given by **1986Lo14** based on gammas multiplicities.

<sup>‡</sup> Band(A): g.s. yrast band member.

<sup>#</sup> Band(B):  $\gamma$  band.

<sup>@</sup> Band(C): could Be band members of 2 quasiparticle state  $\nu(h_{11/2},s_{1/2})$ .

<sup>&</sup> Band(D): could Be band members of 2 quasiparticle state  $\nu(h_{11/2},d_{5/2})$ .

$\gamma(^{116}\text{Te})$

$E_\gamma$	$I_\gamma^\dagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. <sup>‡</sup>	Comments
147.7 2	3.2	3175.2	$8^-$	3027.4	$7^-$	M1	$\alpha(K)\text{exp}=0.240$ 20 Mult.: $A_2=-0.087$ 14\$ $A_4=-0.07$ 3.
151.6 2	<2	3342.1		3190.5	$7^-$		
224.6 2	0.3	2564.8	$(6^+)$	2340.2	$(5^+)$	M1	$\alpha(K)\text{exp}=0.059$ 14
254.3 2	2.4	3220.8	$(7^-,8^-)$	2966.5	$6^-$	(M1,E2)	$\alpha(K)\text{exp}=0.055$ 6 Mult.: $A_2=0.22$ 9\$ $A_4=-0.01$ 1. $\alpha(K)\text{exp}=0.020$ 2 Mult.: $A_2=0.12$ 10\$ $A_4=-0.030$ 15.
337.9 2	9.5	2340.2	$(5^+)$	2002.6	$6^+$	M1+E2	$\alpha(K)\text{exp}>0.006$
358.5 2	$\leq 0.5$	4352.3		3993.8	$(9^-,10^-)$		
452.5 2	1.6	1812.2	$4^+$	1359.6	$4^+$	(M1+E2)	$\alpha(K)\text{exp}=0.010$ 1 Mult.: $A_2=0.13$ 3\$ $A_4=-0.02$ 4.
527.8 2	$\approx 2$	2340.2	$(5^+)$	1812.2	$4^+$	(M1+E2)	$\alpha(K)\text{exp}\approx 0.004$
540.0 2	$\approx 6$	1218.9	$2^+$	678.9	$2^+$	(M1+E2)	$\alpha(K)\text{exp}\approx 0.007$ Mult.: $A_2=0.044$ 10\$ $A_4=-0.03$ 2.
593.4 2	1.8	1812.2	$4^+$	1218.9	$2^+$	E2	$\alpha(K)\text{exp}=0.011$ 2 Mult.: $A_2=0.19$ 2\$ $A_4=0.08$ 3.
643.0 2	36.1	2002.6	$6^+$	1359.6	$4^+$	E2	Mult.: from adopted $\gamma$ 's. $A_2=0.276$ 42\$ $A_4=-0.091$ 63.
678.9 2	100	678.9	$2^+$	0	$0^+$	E2	$\alpha(K)\text{exp}=0.0026$ 2 Mult.: $A_2=0.183$ 4\$ $A_4=-0.055$ 6.
680.7 2	65.7	1359.6	$4^+$	678.9	$2^+$	E2	$\alpha(K)\text{exp}=0.0031$ 2 Mult.: $A_2=0.224$ 2\$ $A_4=-0.066$ 3.
<sup>x</sup> 687.5 2	1.0					(E1+M2)	$\alpha(K)\text{exp}>3.E-3$

Continued on next page (footnotes at end of table)

$^{116}\text{Sn}(\text{}^3\text{He}, 3\text{n}\gamma)$  1986Lo14 (continued) $\gamma(^{116}\text{Te})$  (continued)

$E_\gamma$	$I_\gamma^\dagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. $^\ddagger$	Comments
							Mult.: $A_2=-0.80$ 12; $A_4=0.4$ 2. The authors suggest placement as feeding the 2340.2 level. $\alpha(\text{K})_{\text{exp}}$ and $\gamma(\theta)$ are consistent with $J^\pi(3027.7)=6^+$ or $4^+$ , not with $\Delta\pi=-$ as given by the authors. This possible 3027.7 level is not confirmed in other reactions.
759.7 2	3.6	2119.2	$5^-$	1359.6	$4^+$	E1	$\alpha(\text{K})_{\text{exp}}=0.0011$ 2 Mult.: $A_2=-0.11$ 3\$ $A_4=0.02$ 5.
770.7# 2	11.6#	2773.3	$8^+$	2002.6	$6^+$	E2	Mult.: $A_2=0.273$ 5\$ $A_4=-0.076$ 7.
770.7# 2	11.6#	4345.5	$12^+$	3574.8	$10^+$		
801.5 2	0.2	3574.8	$10^+$	2773.3	$8^+$	E2	$\alpha(\text{K})_{\text{exp}}=0.0026$ 4 Mult.: $A_2=0.22$ 7\$ $A_4=-0.1$ 1.
818.6 2	2.0	3993.8	$(9^-, 10^-)$	3175.2	$8^-$	M1+E2	$\alpha(\text{K})_{\text{exp}}=0.0020$ 4 Mult.: $A_2=0.22$ 5\$ $A_4=-0.02$ 8.
847.1 2	<3	2966.5	$6^-$	2119.2	$5^-$	(M1)	$\alpha(\text{K})_{\text{exp}}>0.0015$ Mult.: $A_2=-0.1$ 1\$ $A_4=0.1$ 1.
905.2 2	2.7	3245.4	$(7^+)$	2340.2	$(5^+)$	E2	$\alpha(\text{K})_{\text{exp}}=0.0014$ 3 Mult.: $A_2=0.21$ 6\$ $A_4=-0.04$ 1.
958.4 2	2.5	1637.3	$3^+$	678.9	$2^+$	M1	$\alpha(\text{K})_{\text{exp}}=0.0017$ 3 Mult.: $A_2=0.18$ 5\$ $A_4=0.03$ 7.
963.9 2	2.2	2966.5	$6^-$	2002.6	$6^+$	(E1+M2)	$\alpha(\text{K})_{\text{exp}}=0.0012$ 2 Mult.: $A_2=0.26$ 2\$ $A_4=-0.09$ 10.
980.5 2	5.6	2340.2	$(5^+)$	1359.6	$4^+$	M1+E2	$\alpha(\text{K})_{\text{exp}}=0.00096$ 12 Mult.: $A_2=0.30$ 5\$ $A_4=-0.05$ 8.
1024.8 2	4.9	3027.4	$7^-$	2002.6	$6^+$	E1	$\alpha(\text{K})_{\text{exp}}=0.00080$ 12 Mult.: $A_2=-0.269$ 14\$ $A_4=0.004$ 3.
1133.0 2	$\approx 3$	1812.2	$4^+$	678.9	$2^+$		
1187.9 2	2.4	3190.5	$7^-$	2002.6	$6^+$	E1	$\alpha(\text{K})_{\text{exp}}<0.00075$ Mult.: $A_2=0.298$ 10\$ $A_4=0.09$ 2.
1196.7 2	$\approx 12$	2556.3	$(5^-)$	1359.6	$4^+$	E1	$\alpha(\text{K})_{\text{exp}}\approx 0.0005$ Mult.: $A_2=-0.298$ 10\$ $A_4=0.009$ 2.
1218.9 2		1218.9	$2^+$	0	$0^+$		

$^\dagger$  Uncertainty in  $I_\gamma$  range from 2% to 30%.

$^\ddagger$  From  $\alpha(\text{K})_{\text{exp}}$  measured with an electron spectrometer, normalized assuming E2 for  $643\gamma$ .

# Multiply placed with undivided intensity.

$^x$   $\gamma$  ray not placed in level scheme.

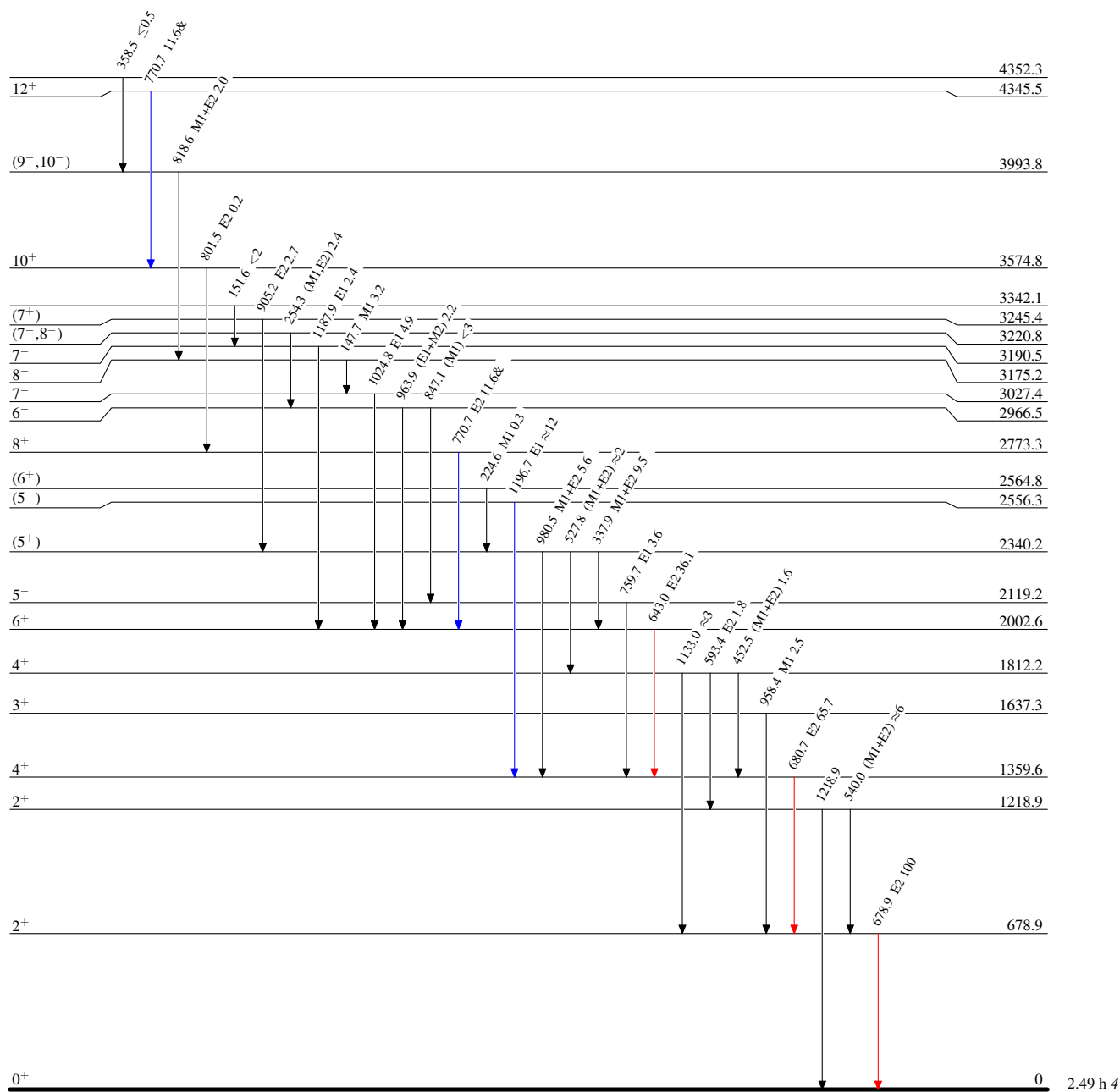
$^{116}\text{Sn}(^3\text{He},3n\gamma)$  1986Lo14

## Level Scheme

Intensities: Relative  $I_\gamma$   
& Multiply placed: undivided intensity given

## Legend

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

 $^{116}\text{Te}_{64}$ 

2.49 h 4

$^{116}\text{Sn}(^3\text{He},3n\gamma)$  1986Lo14

Band(A): g.s. yrast band member

 $12^+$  4345.5

771

 $10^+$  3574.8

802

 $8^+$  2773.3

771

 $6^+$  2002.6

643

 $4^+$  1359.6

681

 $2^+$  678.9Band(B):  $\gamma$  band $(7^+)$  3245.4

905

 $(6^+)$  2564.8

225

 $(5^+)$  2340.2

528

 $4^+$  1812.2 $3^+$  1637.3

593

 $2^+$  1218.9Band(D): Could Be band members of 2 quasiparticle state  $\nu(h_{11/2}, d_{5/2})$  $(9^-, 10^-)$  3993.8

819

 $8^-$  3175.2

148

 $7^-$  3027.4Band(C): Could Be band members of 2 quasiparticle state  $\nu(h_{11/2}, s_{1/2})$  $(7^-, 8^-)$  3220.8

254

 $6^-$  2966.5 $(5^-)$  2556.3

847

 $5^-$  2119.2 $^{116}_{52}\text{Te}_{64}$