^{116}Sn(α,2nγ) 1982Va10

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	K. Kitao	NDS 75,99 (1995)	1-Feb-1993

1982Va10 E(α)=22-33 MeV; excitation function, enriched target, semi γ, $\gamma\gamma$ coin, $\gamma(\theta)$, $\gamma\gamma$(t), linear polarization.
1982Ch01 E(α)=24 MeV; enriched target, semi γ, $\gamma\gamma$ coin, $\gamma(\theta)$.
Others: 1969Lu05, 1969Be04, 1970Wa13, 1973Wy01.

^{118}Te Levels

E(level)†	J$^\pi$&	$T_{1/2}$[a]	Comments
0.0#	0^+		
605.710# *20*	2^+		
957.6‡ *3*			
1150.86 *4*	2^+		
1206.41# *3*	4^+		
1482.9‡ *3*	$1^+,2^+$		
1702.56 *5*	4^+		
1820.82# *4*	6^+		
1891.97@ *6*	3^+		
2150.11 *4*	6^+		
2367.75@ *6*	5^+		
2517.22 *11*	5^-		
2573.88# *5*	8^+		
2919.36@ *6*	7^+		
2999.42 *7*	8^+		
2999.73 *9*	7^-		
3189.16 *9*	8^-	0.23 ns *8*	$T_{1/2}$: from centroid-shift of 189γ(t) (1982Va10).
3359.90# *6*	10^+		
3400.07 *6*	9^-		
3444.67 *6*	10^+		
3460.42 *8*	9^-		
3586.56@ *8*	9^+		
3679.90 *14*	9^-		
3834.59 *8*	$(8,10)^+$		
3881.22 *10*	10^-		
4138.02 *8*	11^-		
4171.98 *6*	12^+		
4219.30# *12*	12^+		
4220.50 *11*	11^-		
4288.42 *14*	$(10,12)^-$		
4347.74@ *10*	11^+		
4582.08 *11*	$(10,12)^-$		
4855.71 *14*	$(11,13)^-$		
4867.65 *12*	13^-		
4945.95 *8*	14^+		
5122.73# *15*	14^+		
5346.65 *13*	(14,15)		

† From a least-squares fit to E(γ's) (evaluator).
‡ From 1982Ch01.
# Member of quasi ground-state band.

Continued on next page (footnotes at end of table)

^{116}Sn(α,2nγ) 1982Va10 (continued)

^{118}Te Levels (continued)

@ ΔJ=2 band built on 3$^+$ state.
& Given by 1982Va10 based on $\gamma(\theta)$, γ-linear polarization and assumption that all stretched Q transitions are E2, and also based on J$^\pi$ previously established for 600 (2$^+$), 1151 (2$^+$), 1206 (4$^+$), 1702 (4$^+$), 1821 (6$^-$), 2517 (5$^-$) and 2574 (8$^+$) levels.
[a] Time distribution measurements indicated no evidence for delayed transitions with $T_{1/2}\geq 1.5$ ns in energy range between 150 and 1500 keV, except for the 189γ (1982Va10).

$\gamma(^{118}Te)$

α(K)exp from Ice(K) and correction factors for Ice(θ) (1973Wy01), and Iγ (1982Va10). Values are normalized to α(K)(E2)=0.00414 for 605.7γ.

E$_\gamma$ †	I$_\gamma$ #	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[a]	δ[a]	Comments
189.43 *2*	3.07 *6*	3189.16	8$^-$	2999.73	7$^-$	M1+E2	+0.20 *2*	
329.33 *3*	7.21 *9*	2150.11	6$^+$	1820.82	6$^+$	M1+E2	+0.01 *5*	
351.9‡ *3*	4 *1*	957.6		605.710	2$^+$			
400.69[d] *10*	1.8[d] *2*	3400.07	9$^-$	2999.42	8$^+$	D		
400.69[d] *10*	0.8[d] *1*	5346.65	(14,15)	4945.95	14$^+$			
407.20 *10*	0.70 *5*	4288.42	(10,12)$^-$	3881.22	10$^-$	E2[b]		
445.25 *5*	1.81 *4*	3444.67	10$^+$	2999.42	8$^+$	E2[b]		
447.40 *5*	1.70 *5*	2150.11	6$^+$	1702.56	4$^+$	E2[b]		
461.00 *8*	1.20 *8*	3460.42	9$^-$	2999.42	8$^+$	D+Q	−0.07 *+5−7*	
475.83 *7*	1.06 *5*	2367.75	5$^+$	1891.97	3$^+$	E2[b]		
496.00 *9*	2.0 *1*	1702.56	4$^+$	1206.41	4$^+$	M1+E2	+1.0 *+3−2*	
540.6 *1*	1.01 *5*	4220.50	11$^-$	3679.90	9$^-$	E2[b]		
545.12 *3*	5.97 *9*	1150.86	2$^+$	605.710	2$^+$	E2[b]		
551.60[c@] *5*	<6.75[c]	1702.56	4$^+$	1150.86	2$^+$	[E2]		
551.60[c@] *5*	<6.75[c]	2919.36	7$^+$	2367.75	5$^+$	[E2]		
600.71 *2*	85 *2*	1206.41	4$^+$	605.710	2$^+$	E2		α(K)exp=0.0053 *11*; α(K)=0.00423.
605.71 *2*	100	605.710	2$^+$	0.0	0$^+$	[E2]		
614.42 *2*	61 *1*	1820.82	6$^+$	1206.41	4$^+$	E2		α(K)exp=0.0032 *7*; α(K)=0.00399.
635.21 *8*	0.63 *6*	4855.71	(11,13)$^-$	4220.50	11$^-$	D,Q		
665.2 *1*	0.41 *6*	2367.75	5$^+$	1702.56	4$^+$	M1+E2	+0.9 *+13−4*	
667.19 *5*	1.88 *9*	3586.56	9$^+$	2919.36	7$^+$	E2[b]		
692.05 *4*	2.95 *10*	3881.22	10$^-$	3189.16	8$^-$	E2[b]		
696.4 *1*	1.85 *9*	2517.22	5$^-$	1820.82	6$^+$	D		
700.86 *5*	1.82 *8*	4582.08	(10,12)$^-$	3881.22	10$^-$	D,Q		δ=−0.53 *+13−8* if M1+E2.
727.29 *7*	1.63 *7*	4171.98	12$^+$	3444.67	10$^+$	E2[b]		
729.63 *9*	1.55 *8*	4867.65	13$^-$	4138.02	11$^-$	E2[b]		
737.94 *5*	3.6 *1*	4138.02	11$^-$	3400.07	9$^-$	E2[b]		
741.17 *7*	1.1 *1*	1891.97	3$^+$	1150.86	2$^+$	M1+E2	−9.5	$\Delta\delta$=+40-190.
753.06 *3*	26.5 *9*	2573.88	8$^+$	1820.82	6$^+$	E2		α(K)exp=0.0024 *5*; α(K)=0.00240. Mult.: stretched Q, and E2 from α(K)exp.
761.18 *5*	0.86 *5*	4347.74	11$^+$	3586.56	9$^+$	E2[b]		
769.26 *7*	1.45 *9*	2919.36	7$^+$	2150.11	6$^+$	D		δ: given as δ=0.00 *+3−18*.
773.97 *4*	1.14 *4*	4945.95	14$^+$	4171.98	12$^+$	E2[b]		
786.02 *3*	11.2 *5*	3359.90	10$^+$	2573.88	8$^+$	E2[b]		
812.09 *4*	2.20 *7*	4171.98	12$^+$	3359.90	10$^+$	E2[b]		
826.19 *4*	4.87 *8*	3400.07	9$^-$	2573.88	8$^+$	D		

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^{116}Sn(α,2nγ) 1982Va10 (continued)

γ(^{118}Te) (continued)

E_γ[†]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ[a]	Comments
835.17 *5*	1.68 *5*	3834.59	(8,10)$^+$	2999.42	8$^+$	D,Q		δ=0.6 *1* if M1+E2.
849.3 *2*	9.7[&] *2*	2999.42	8$^+$	2150.11	6$^+$	E2[b]		
849.6 *2*	1.1[&] *2*	2999.73	7$^-$	2150.11	6$^+$	D		
859.4 *1*	3.0[&] *2*	4219.30	12$^+$	3359.90	10$^+$	(E2)[b]		
860.6 *1*	1.1[&] *1*	4220.50	11$^-$	3359.90	10$^+$	D		
870.79 *3*	2.26 *8*	3444.67	10$^+$	2573.88	8$^+$	Q		Mult.: from 1987ClZY.
877.2[‡] *3*	8 *1*	1482.9	1$^+$,2$^+$	605.710	2$^+$			
886.55 *9*	1.1 *1*	3460.42	9$^-$	2573.88	8$^+$	D+Q	−0.07 *+4−6*	
903.43 *9*	0.46 *8*	5122.73	14$^+$	4219.30	12$^+$			
943.74 *4*	11.0 *4*	2150.11	6$^+$	1206.41	4$^+$	Q		
1097.2[‡] *3*	3 *1*	1702.56	4$^+$	605.710	2$^+$	E2		Mult.: from $\gamma(\theta)$ (1982Ch01).
1098.6 *2*	1.2 *2*	2919.36	7$^+$	1820.82	6$^+$	M1+E2	−2.3 *+9−15*	
1106.0 *3*	2.1 *2*	3679.90	9$^-$	2573.88	8$^+$	D		
1150.7 *2*	1.6 *1*	1150.86	2$^+$	0.0	0$^+$	Q		
1161.2 *1*	1.9 *1*	2367.75	5$^+$	1206.41	4$^+$	M1+E2	+7.2 *+5−12*	
1178.91 *9*	7.1 *1*	2999.73	7$^-$	1820.82	6$^+$	E1+M2	+0.04 *2*	
1286.1 *2*	1.5 *1*	1891.97	3$^+$	605.710	2$^+$	M1+E2	−1.7 *+2−1*	
1483[‡e]		1482.9	1$^+$,2$^+$	0.0	0$^+$			E_γ: from authors′ drawing.

[†] From 1982Va10 unless otherwise noted.
[‡] From 1982Ch01.
[#] Relative to I(605.7γ)=100 at E(α)=32 MeV (1982Va10).
[@] Unresolved doublet. $\gamma(\theta)$ data was given for a complex transition, but authors considered each γ to be stretched E2.
[&] Derived from coincidence data.
[a] From $\gamma(\theta)$ and γ-linear polarization, unless otherwise noted.
[b] Stretched Q from $\gamma(\theta)$, and RUL for $T_{1/2}$<1.5 ns rules out M2.
[c] Multiply placed with undivided intensity.
[d] Multiply placed with intensity suitably divided.
[e] Placement of transition in the level scheme is uncertain.

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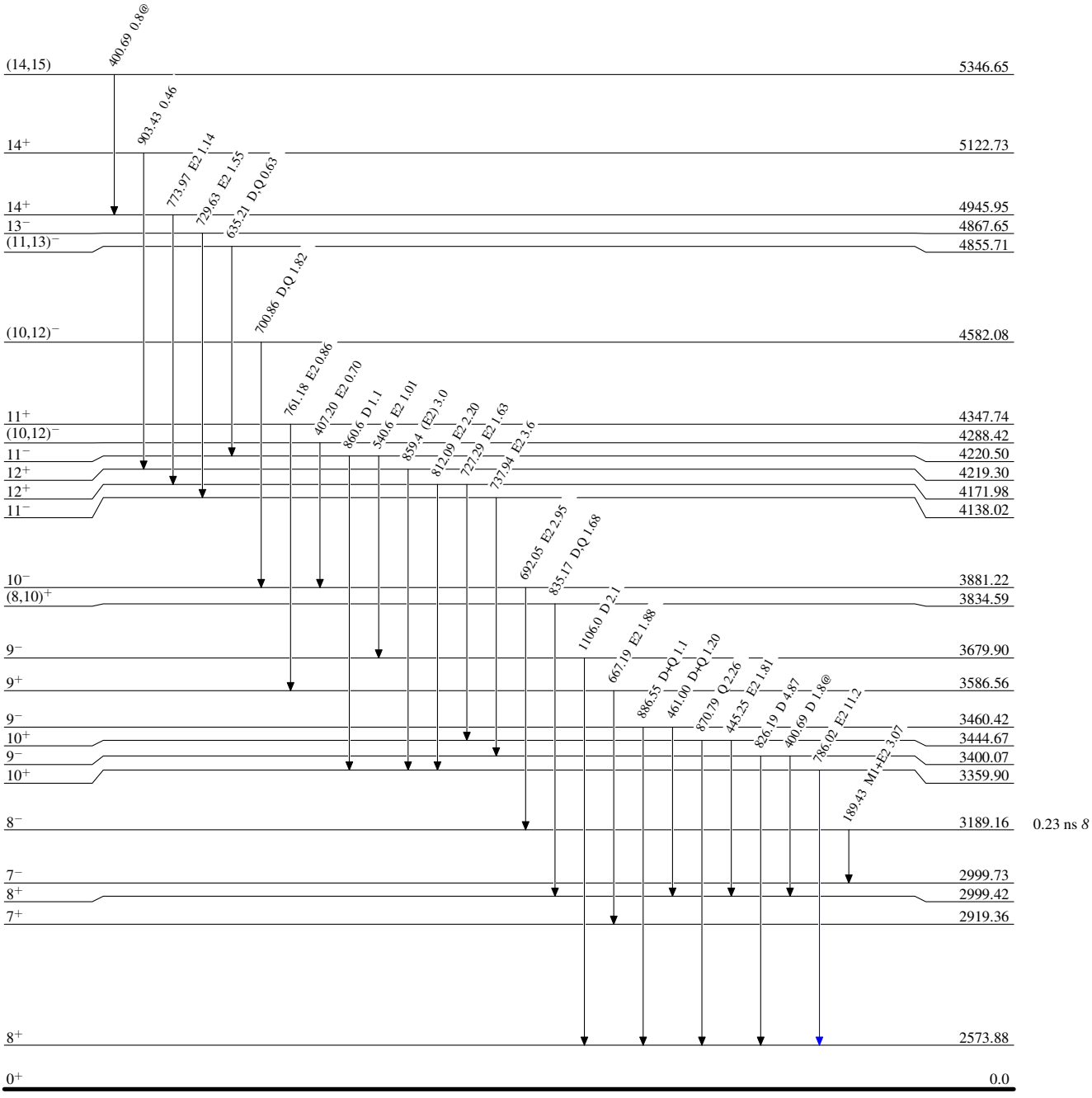
Level Scheme

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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



$^{118}_{52}Te_{66}$

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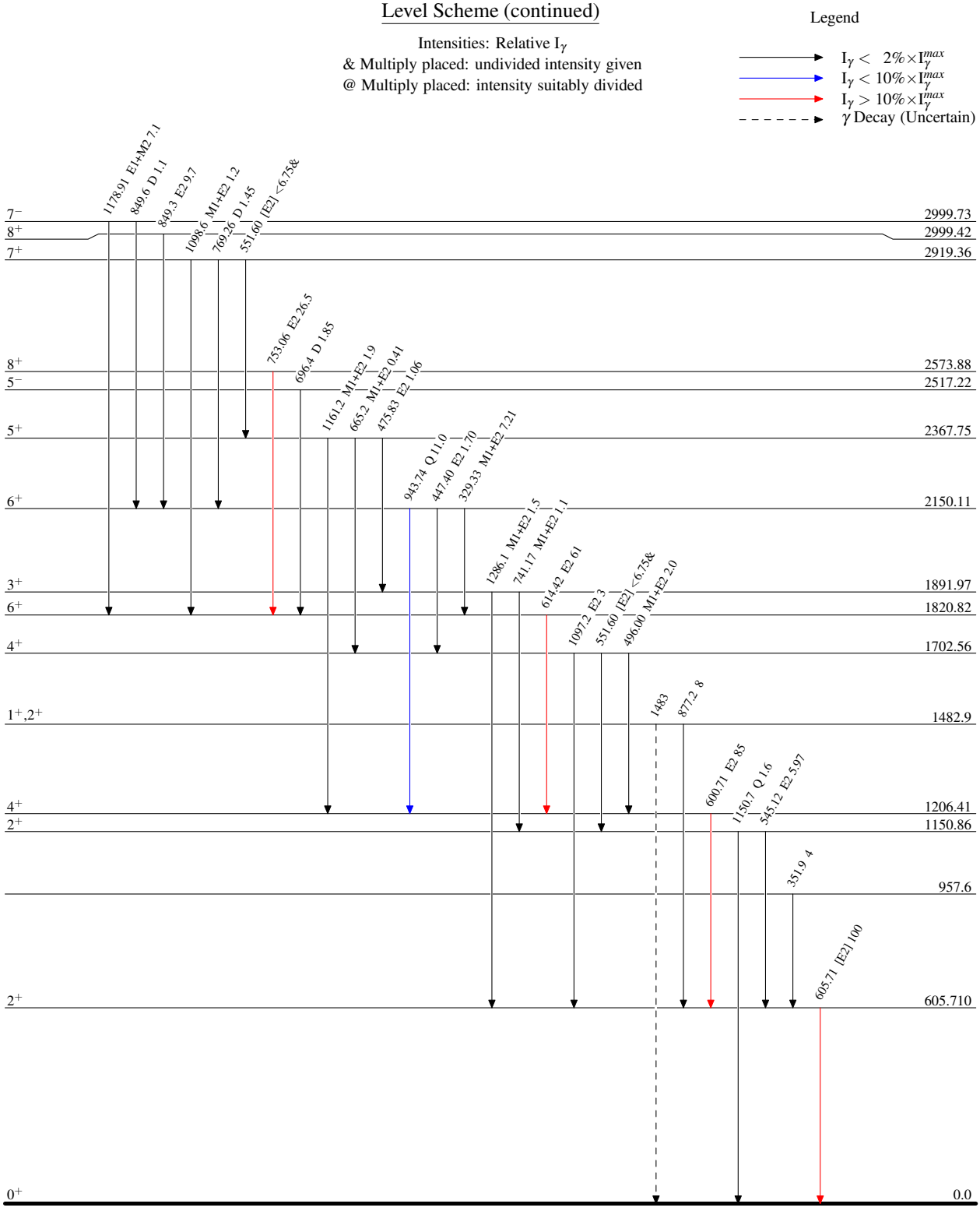
Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



$^{118}_{52}Te_{66}$