^{120}Sn(α,2nγ),^{119}Sn(α,nγ) 1991Le03,1982Ch01,1971Ke20

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. Tamura	NDS 108, 455 (2007)	30-Sep-2006

The level scheme is that proposed by 1991Le03 on the basis of $\gamma\gamma$-coin, excitation functions and transition intensity balance. But the evaluator notes that levels at 3381.7- and 3579.6-keV, and the associated 712.0γ and 909.93γ are removed from the decay scheme because these two γ's are placed from 3382- and 3580-keV levels in ^{116}Cd(^{9}Be,3nγ) (1996Pa11), respectively.

1991Le03: ^{120}Sn(α,2nγ) E(α)=14-22 MeV; BGO-Compton suppression semi γ, $\gamma\gamma$-coin, $\gamma(\theta)$, excitation functions.

1982Ch01: ^{119}Sn(α,nγ) E(α)=18 MeV; semi γ, $\gamma\gamma$-coin, $\gamma(\theta)$, excitation functions.

1973Wy01: ^{120}Sn(α,2nγ) E(α)=27.5 MeV; semi ce; deduced α(exp).

1971Ke20: ^{120}Sn(α,2nγ) E(α)=16-30 MeV; semi γ, $\gamma\gamma$-coin, $\gamma(\theta)$, excitation functions.

Others: ^{120}Sn(α,2nγ) (1970Wa13,1969Be04); ^{122}Sn(^{3}He,3nγ) (1967Be07); ^{123}Sb(p,2nγ) (1965Sa11,1966Ej02).

^{122}Te Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0&	0^+	1909.62[a] *17*	4^+	2758.9# *3*	(6^-)	3210.6 *3*	(9^+)
564.11& *10*	2^+	1951.01 *18*	3^+	2800.5@ *3*	7^-	3290.8[a] *3*	(10^+)
1181.30& *14*	4^+	2042.0 *4*	4^+	2890.55 *25*	(7^-)	3995.4[a] *4*	(12^+)
1256.75 *18*	2^+	2283.95[a] *19*	6^+	2913.3 *3*	(8^+)	4905.3[a] *4*	(14^+)
1357.41[a] *19*	0^+	2407.91# *24*	5^-	2971.9 *3*	(7^-)		
1751.12& *18*	6^+	2669.7[a] *3*	8^+	3073.6 *3*	(8^-)		

† E(levels) are based on a least-squares fit to the E(γ's) of 1991Le03 (evaluator).
‡ From Adopted Levels.
# Belong to band 5 (2408: 5^- member, 2759: (6^-)) in Adopted Levels.
@ Belong to band 6 (2801: 7^- base state) in Adopted Levels.
& Band(A): band 1, g.s. band.
[a] Band(B): band 2, positive parity band built on the two-proton hole 0^+ state at 1357 keV.

γ(^{122}Te)

Eγ†	Iγ@	Ei(level)	Jiπ	Ef	Jfπ	Mult.&	δ[a]	Comments
101‡ *1*		3073.6	(8^-)	2971.9	(7^-)			
183‡[b] *1*		3073.6	(8^-)	2890.55	(7^-)			
213‡ *1*		2971.9	(7^-)	2758.9	(6^-)			
273.06 *7*	1.5 *3*	3073.6	(8^-)	2800.5	7^-			Eγ=273.2 *3*, Iγ=1 *1* (1982Ch01). A_2=+0.45 *38*, A_4=0.00 (1991Le03); A_2=+0.38 *7* (1982Ch01).
297.26 *7*	14.4 *3*	3210.6	(9^+)	2913.3	(8^+)	(D+Q)		Eγ=297.4 *3*, Iγ=1 *1* (1982Ch01). Mult.: A_2=+0.33 *9*, A_4=0.00 (1991Le03); A_2=+0.13 *4*, A_4=−0.11 *7* (1982Ch01); (D+Q) from DCO in (^{9}Be,3nγ).
351.0 *1*	1.4 *1*	2758.9	(6^-)	2407.91	5^-	D+Q	−1.5 *+11−8*	Mult.: A_2=−0.84 *15*, A_4=+0.19 *13* (1991Le03).
532.84 *11*	6.7 *2*	2283.95	6^+	1751.12	6^+	M1+E2	−0.20 *+11−7*	Eγ=532.7 *3*, Iγ=6 *1* (1982Ch01); Eγ=532.4, Iγ=9 (1971Ke20). Mult.: A_2=+0.29 *3*, A_4=+0.05 *4* (1991Le03); A_2=+0.13 3 (1982Ch01); A_2=+0.20 *3*, A_4=−0.05 *10* (1971Ke20); RUL.
564.1 *1*	100.0 *14*	564.11	2^+	0.0	0^+	E2		Eγ=564.2 *3*, Iγ=100 (1982Ch01); Eγ=563.6,

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^{120}Sn(α,2nγ),^{119}Sn(α,nγ) 1991Le03,1982Ch01,1971Ke20 (continued)

γ(^{122}Te) (continued)

E_γ [†]	I_γ [@]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [&]	δ [a]	Comments
								Iγ=100 (1971Ke20). Mult.: A_2=+0.33 *2*, A_4=−0.05 *4* (1991Le03); A_2=+0.23 *4*, A_4=−0.04 *5* (1982Ch01); A_2=+0.29 *1*, A_4=−0.04 *4* (1971Ke20); RUL.
569.83 *12*	55.9 *11*	1751.12	6^+	1181.30	4^+	E2		Eγ=570.1 *3*, Iγ=38 *4* (1982Ch01) Eγ=569.5, Iγ=65 (1971Ke20). Mult.: A_2=+0.39 *2*, A_4=−0.07 *4* (1991Le03); A_2=+0.30 *3*, A_4=−0.06 *4* (1982Ch01); A_2=+0.33 *1*, A_4=−0.05 *4* (1971Ke20); α(K)exp=0.0049 *8*.
617.19 *12*	83.9 *17*	1181.30	4^+	564.11	2^+	E2		Eγ=613.7 *3*, Iγ=73 *7* (1982Ch01); Eγ=616.9, Iγ=90 (1971Ke20). Mult.: A_2=+0.37 *2*, A_4=−0.09 *4* (1991Le03); A_2=+0.27 *4*, A_4=−0.06 *6* (1982Ch01); A_2=+0.32 *1*, A_4=−0.05 *2* (1971Ke20); α(K)exp=0.0033 *7*.
621.05 *13*	3.3 *1*	3290.8	(10^+)	2669.7	8^+	Q		Eγ=622.1 *3*, Iγ=1 *1* (1982Ch01). Mult.: A_2=+0.43 *4*, A_4=−0.15 *5* (1991Le03); A_2=+0.13 *6* (1982Ch01).
692.6 *3*	7.4 *2*	1256.75	2^+	564.11	2^+	(M1+E2)		Eγ=692.8 *3*, Iγ=3 *1* (1982Ch01); Eγ=692.7, Iγ=4 (1971Ke20); Mult.: A_2=−0.12 *9* (1982Ch01); A_2=−0.15 *10* (1971Ke20) A_2=+0.16 *4* (evaluator assumes the sign=+ is probably wrong), A_4=−0.14 *5* (1991Le03); RUL.
694.3 *5*	4.2 *1*	1951.01	3^+	1256.75	2^+	(D+Q)		Eγ=694.3 *3*, Iγ=7 *1* (1982Ch01) Eγ=692.7, Iγ=4 (1971Ke20). Mult.: A_2=+0.18 *3*, A_4=−0.09 *4* (1991Le03); A_2=−0.07 6 (1982Ch01).
704.59 *14*	2.2 *1*	3995.4	(12^+)	3290.8	(10^+)	Q		Mult.: A_2=+0.45 *5*, A_4=−0.20 *7* (1991Le03).
[x]712.0 *2*	2.0 *1*					D		Mult.: A_2=−0.18 *4*, A_4=0.00 (1991Le03); 1991Le03 placed this γ from 3381.7 level directly to 2670 keV level in their decay scheme in (α,2nγ), but evaluator assumes the transition belong to band 6 (11^- to 9^-) in Adopted Levels.
728.32 *15*	2.1 *1*	1909.62	4^+	1181.30	4^+	M1+E2	−0.57 *5*	Eγ=728.5 *3*, Iγ=3 *1* (1982Ch01). Mult.: A_2=−0.03 *5*, A_4=−0.19 *17* (1991Le03); A_2=−0.04 3 (1982Ch01); RUL.
769.7 *2*	1.2 *1*	1951.01	3^+	1181.30	4^+	D+Q		Mult.: A_2=+0.15 *10*, A_4=0.00 (1991Le03).
793.30 *16*	2.5 *1*	1357.41	0^+	564.11	2^+			A_2=0.00, A_4=0.00 (1991Le03); decay scheme requires Q.
860.7 *3*	1.5 *1*	2042.0	4^+	1181.30	4^+	M1+E2	+1.3 *+3−4*	Eγ=859.9 *3*, Iγ=2 *1* (1982Ch01). Mult.: A_2=+0.33 *8*, A_4=−0.25 *10* (1991Le03); A_2=+0.29 *6* (1982Ch01); RUL.
909.93 *19*	2.2 *1*	4905.3	(14^+)	3995.4	(12^+)			A_2=+0.30 *5*, A_4=−0.11 *6* (1991Le03). E$_\gamma$: 1991Le03 placed directly on 2670 keV level in (α,2nγ), but evaluator displaced this as a transition from (14^+) to (12^+) in band 2 (Adopted Levels).
[x]915.3[#]								
918.6 *2*	20.4 *4*	2669.7	8^+	1751.12	6^+	E2		Eγ=918.6 *3*, Iγ=10 *3* (1982Ch01); Eγ=919.0, Iγ=36 (1971Ke20).

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^{120}Sn(α,2nγ),^{119}Sn(α,nγ) 1991Le03,1982Ch01,1971Ke20 (continued)

γ(^{122}Te) (continued)

E_γ [†]	I_γ [@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	δ [a]	Comments
								Mult.: A_2=+0.36 *2*, A_4=−0.16 *3* (1991Le03); A_2=+0.34 *5*, A_4=−0.11 *6* (1982Ch01); A_2=+0.33 *1*, A_4=−0.06 *3* (1971Ke20); α(K)exp=0.0020 *5*; RUL.
1049.4 *2*	16.5 *3*	2800.5	7^-	1751.12	6^+	E1		Eγ=1049.9, Iγ=17 (1971Ke20). Mult.: A_2=−0.11 *2*, A_4=0.00 (1991Le03); A_2=−0.24 *3* (1982Ch01); A_2=−0.32 *4*, A_4=−0.11 *8* (1971Ke20);ΔJ=1, Δπ=yes from Adopted Levels.
1102.6 *2*	4.5 *1*	2283.95	6^+	1181.30	4^+	E2		Eγ=1102.7 *3*, Iγ=4 *1* (1982Ch01) Eγ=1102.6, Iγ=4 (1971Ke20). Mult.: A_2=+0.37 *3*, A_4=−0.28 *4* (1991Le03); A_2=+0.30 *4*, A_4=−0.09 *6* (1982Ch01); A_2=+0.23 *7*, A_4=−0.09 *15* (1971Ke20); RUL.
1139.43 *17*	3.2 *1*	2890.55	(7^-)	1751.12	6^+	D(+Q)	−0.28 *+1−4*	Eγ=1139.1 *3*, Iγ=2 *1* (1982Ch01). Mult.: A_2=−0.88 *4*, A_4=+0.04 *4* (1991Le03); A_2=−0.91 *3*, A_4=+0.16 *6* (1982Ch01).
1162.19 *18*	4.3 *1*	2913.3	(8^+)	1751.12	6^+	Q		Eγ=1162.0 *3*, Iγ=2 *1* (1982Ch01). Mult.: A_2=+0.28 *3*, A_4=−0.20 *4* (1991Le03); A_2=+0.38 *7* (1982Ch01).
[x]1171.1[#]								
1220.76 *20*	2.0 *1*	2971.9	(7^-)	1751.12	6^+	D		Eγ=1220.6 *3*, Iγ=2 *1* (1982Ch01); Eγ=1220.5, Iγ=4 (1971Ke20). Mult.: A_2=−0.34 *33* A_4=0.00 (1991Le03); A_2=−0.34 *6* (1982Ch01); A_2=−0.26 *7*, A_4=−0.09 *15* (1971Ke20).
1226.6 *2*	6.5 *1*	2407.91	5^-	1181.30	4^+	D		Eγ=1226.2 *3*, Iγ=6 *1* (1982Ch01) Eγ=1126.1, Iγ=7 (1971Ke20). Mult.: A_2=−0.20 *2*, A_4=0.00 (1991Le03); A_2=−0.21 *3* (1982Ch01); A_2=−0.18 *5*, A_4=−0.04 *12* (1971Ke20).
1256.78 *23*	1.1 *1*	1256.75	2^+	0.0	0^+	E2		Eγ=1256.6 *3*, Iγ=2 *1* (1982Ch01). Mult.: A_2=+0.15 *7*, A_4=−0.05 *9* (1991Le03); A_2=+0.06 *5* (1982Ch01); RUL.
1345.5 *2*	1.8 *1*	1909.62	4^+	564.11	2^+	E2		Eγ=1345.5 *3*, Iγ=3 *1* (1982Ch01). Mult.: A_2=+0.15 *4*, A_4=−0.02 *5* (1991Le03); A_2=+0.19 4 (1982Ch01); RUL.
1386.9 *2*	1.0 *1*	1951.01	3^+	564.11	2^+	M1(+E2)		Mult.: A_2=+0.14 *8*, A_4=+0.04 *10* (1991Le03). −0.3<δ<0.0.
1477.9 *2*	1.3 *1*	2042.0	4^+	564.11	2^+	E2		Mult.: A_2=+0.16 *7*, A_4=−0.03 *8* (1991Le03); RUL.

[†] From 1991Le03, unless noted otherwise.
[‡] From 1982Ch01; shown in the level scheme only.
[#] From 1971Ke20.
[@] From 1991Le03; relative to I(564.1γ)=100 at E(α)=18-24 MeV, detailed conditions are given. Uncertainties are statistical from peak fitting only.
[&] Multipolarities were deduced from γ(θ) (1971Ke20,1982Ch01,1991Le03), and α(K)exp. The α(K)exp are from 1973Wy01 deduced from Iγ/Iγ(ce) normalized so that α(K)(564γ)=0.00500 (E2 theory).
[a] From 1991Le03; deduced from γ(θ).
[b] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

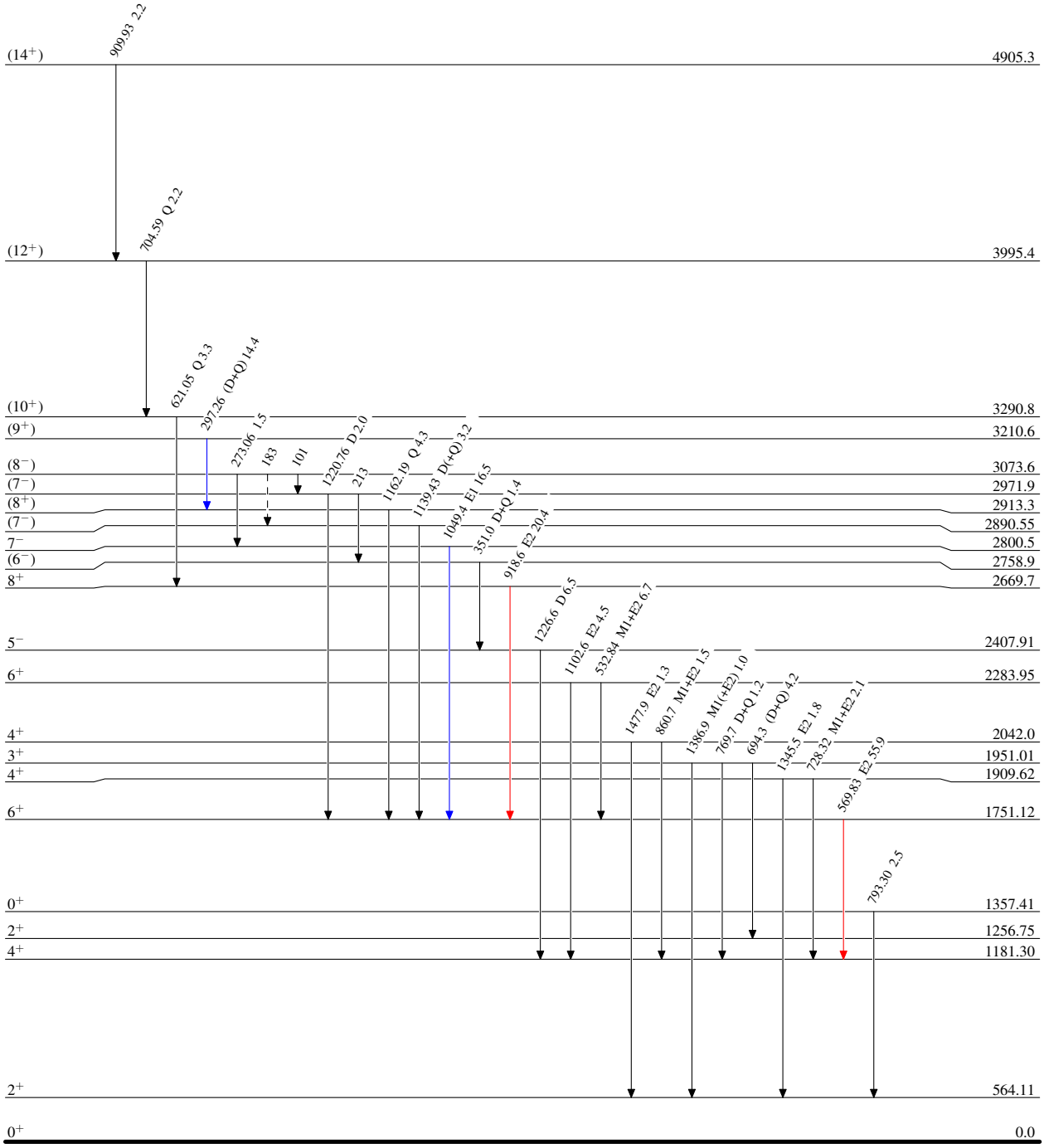
^{120}Sn(α,2nγ),^{119}Sn(α,nγ) **1991Le03,1982Ch01,1971Ke20**

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)

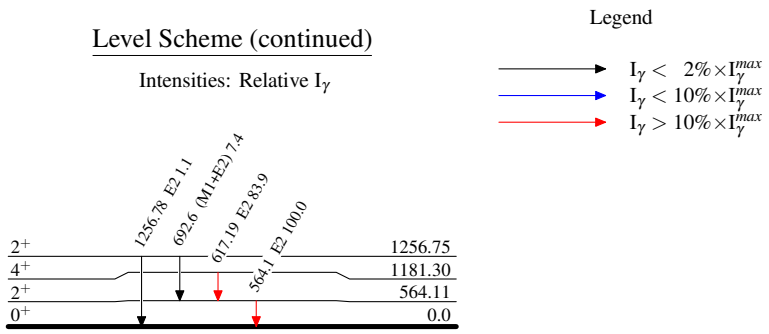


$^{122}_{52}Te_{70}$

^{120}Sn(α,2nγ),^{119}Sn(α,nγ) 1991Le03,1982Ch01,1971Ke20

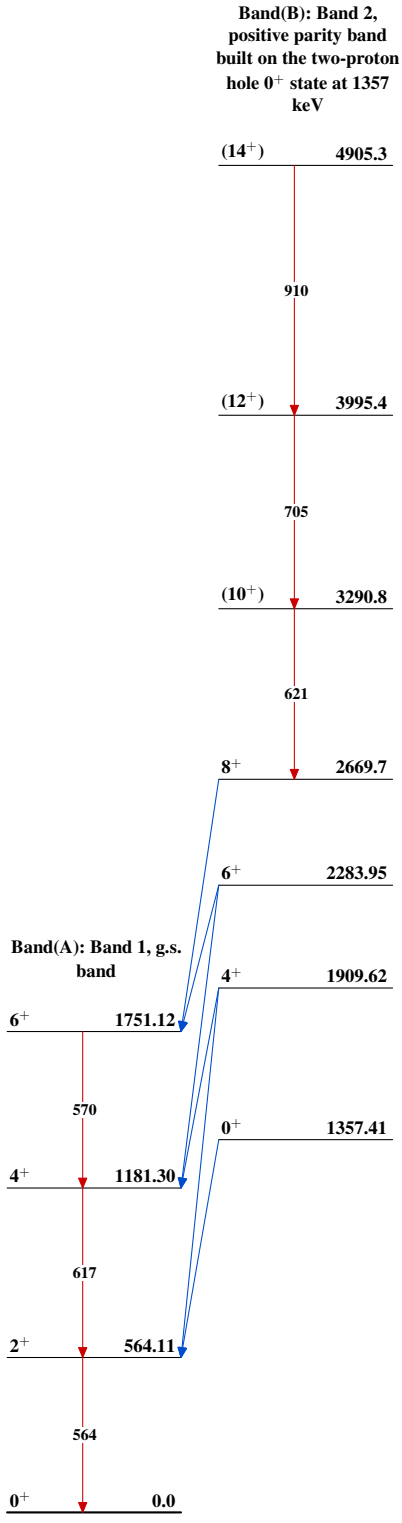
Level Scheme (continued)

Intensities: Relative I_γ



$^{122}_{52}Te_{70}$

^{120}Sn(α,2nγ),^{119}Sn(α,nγ) 1991Le03,1982Ch01,1971Ke20



$^{122}_{52}Te_{70}$