(HI,xnγ) 2000Gh01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni	NDS 107, 2423 (2006)	1-Jan-2006

2000Gh01: ^{65}Cu(^{36}S,α3nγ) E=142 MeV. Measured Eγ, γγ, Iγ, γγ(θ)(DCO) using the Gammasphere array of 36 HPGe detectors. Other: 1995Gh06, superseded by 2000Gh01.

1981Le11: ^{78}Se(^{20}Ne,3npγ): E=81 MeV. Enriched target. Ge(Li) detectors, measured Eγ, Iγ, γγ, γ(t) distribution with respect to beam pulse. Low-energy photon spectrometer. Superseded by the far more complete experiment of 2000Gh01.

1995Gh06: ^{65}Cu(^{36}S,α3nγ) E=135,142 MeV, ^{66}Zn(^{31}P,2pnγ) E=115 MeV. Superseded by the more complete experiment of 2000Gh01.

^{94}Tc Levels

E(level)†	Jπ‡	$T_{1/2}$	Comments
0.0	7^+		
103.4 *3*	6^+		
1374.0 *3*	9^+		
1447.8 *3*	(8^+)		
2064.1 *5*	11^+		
2067.1# *4*	(9^-)		
2254.2# *4*	(10^-)		
2347.1 *5*	13^+	4.5 ns *6*	$T_{1/2}$: from γ(t) distribution with respect to beam pulse (1981Le11). It is not clear if the half-life is really due to the 2346.9 level or due to a higher-excited state which decays by an unobserved isomeric transition. A 49-keV γ with $T_{1/2}$ ≈5 ns was observed but none of the γ's was found to be in coincidence with it.
2424.5# *5*	(11^-)		
3014.0 *6*			
3456.8# *6*	(13^-)		
3970.0 *7*	14^+		
4061.9# *7*	(15^-)		
4293.2b *8*	(15^+)		
4547.0 *8*	(16^-)		
4767.1# *8*	(16^-)		
5276.1@ *9*	(17^-)		
5284.2# *9*	(17^-)		
5292.0 *8*	(16^-)		
5639.4 *10*	(18^-)		
5652.3# *10*	(18^-)		
5829.2@ *10*	(18^-)		
6453.9& *12*	(16^-)		
6544.4@ *10*	(19^-)		
6553.9a *12*	(16^-)		
6571.1b *10*	(16^+)		
6624.1& *13*	(18^-)		
6757.5# *10*	(19^-)		
6900.6@ *11*	(20^-)		
6974.2& *13*	(19^-)		
7114.9a *13*	(17^-)		
7728.0a *13*	(18^-)		
7924.6# *11*	(20^-)		
8022.2b *11*	(17^+)		

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(HI,xnγ) 2000Gh01 (continued)

^{94}Tc Levels (continued)

E(level)[†]	Jπ[‡]
8537.8[#] *12*	(21⁻)
8559.2[b] *11*	(18⁺)
9120.3 *12*	(19⁺)
9186.4[b] *12*	(19⁺)

† From least-squares fit to Eγ.
‡ Based on γ(θ), asymmetry ratios R and γ intensity pattern. The levels 9⁺,11⁺,13⁺ and 14⁺ are adopted as (9⁺),(11⁺),(13⁺) and (14⁺).
# Band(A): sequence based on (9⁻).
@ Band(B): sequence based on (17⁻).
& Band(C): sequence based on (16⁻).
a Band(D): sequence based on (16⁻).
b Band(E): sequence based on (15⁺).

γ(^{94}Tc)

R=(Iγ(143°)+Iγ(147°))/ Iγ(90°), Q would correspond to R≈2 and d would correspond to R≈1.5.

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
91.8 *4*	7.7 *20*	4061.9	(15⁻)	3970.0	14⁺	R=1.3 *2*.
103.4 *4*	6.0 *10*	103.4	6⁺	0.0	7⁺	R=1.6 *3*.
170.0 *4*	45 *4*	2424.5	(11⁻)	2254.2	(10⁻)	R=1.5 *3*.
170.2 *4*	4.0 *8*	6624.1	(18⁻)	6453.9	(16⁻)	
187.0 *4*	32 *3*	2254.2	(10⁻)	2067.1	(9⁻)	R=1.6 *2*.
231.3 *4*	6.0 *10*	4293.2	(15⁺)	4061.9	(15⁻)	
283.4 *4*	65 *6*	2347.1	13⁺	2064.1	11⁺	R=1.9 *2*.
350.1 *4*	3.9 *6*	6974.2	(19⁻)	6624.1	(18⁻)	
355.2 *4*	5.9 *10*	5639.4	(18⁻)	5284.2	(17⁻)	
356.2 *4*	4.1 *6*	6900.6	(20⁻)	6544.4	(19⁻)	
368.1 *4*	8.1 *11*	5652.3	(18⁻)	5284.2	(17⁻)	R=1.5 *2*.
443.0 *4*	4.0 *7*	3456.8	(13⁻)	3014.0		
485.1 *4*	4.2 *7*	4547.0	(16⁻)	4061.9	(15⁻)	
509.0 *4*	6.1 *9*	5276.1	(17⁻)	4767.1	(16⁻)	
517.1 *4*	14 *1*	5284.2	(17⁻)	4767.1	(16⁻)	R=1.5 *3*.
537.0 *4*	7.9 *11*	8559.2	(18⁺)	8022.2	(17⁺)	R=1.6 *2*.
553.1 *4*	5.1 *9*	5829.2	(18⁻)	5276.1	(17⁻)	
561.0 *4*	4.0 *7*	7114.9	(17⁻)	6553.9	(16⁻)	
561.1 *4*	3.0 *5*	9120.3	(19⁺)	8559.2	(18⁺)	
605.2 *4*	48 *5*	4061.9	(15⁻)	3456.8	(13⁻)	R=1.8 *2*.
613.1 *4*	3.0 *6*	7728.0	(18⁻)	7114.9	(17⁻)	
613.2 *4*	8.1 *12*	8537.8	(21⁻)	7924.6	(20⁻)	R=1.6 *2*.
619.2 *4*	21 *2*	2067.1	(9⁻)	1447.8	(8⁺)	R=1.3 *2*.
627.2 *4*	4.9 *8*	9186.4	(19⁺)	8559.2	(18⁺)	
667.0 *4*	4.0 *8*	3014.0		2347.1	13⁺	
690.4 *4*	67 *7*	2064.1	11⁺	1374.0	9⁺	R=1.9 *3*.
693.0 *4*	12 *1*	2067.1	(9⁻)	1374.0	9⁺	R=1.8 *2*.
705.2 *4*	20 *2*	4767.1	(16⁻)	4061.9	(15⁻)	R=1.5 *1*.
715.2 *4*	5.1 *13*	6544.4	(19⁻)	5829.2	(18⁻)	R=1.5 *2*.

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(HI,xnγ) 2000Gh01 (continued)

γ(^{94}Tc) (continued)

E_γ [†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
880.0 *4*	13 *1*	2254.2	(10^-)	1374.0	9^+	R=1.3 *2*.
1032.0 *4*	40 *4*	3456.8	(13^-)	2424.5	(11^-)	R=1.9 *2*.
1105.2 *4*	8.0 *9*	6757.5	(19^-)	5652.3	(18^-)	R=1.6 *2*.
1110.0 *4*	5.2 *8*	3456.8	(13^-)	2347.1	13^+	
1167.1 *4*	8.0 *11*	7924.6	(20^-)	6757.5	(19^-)	R=1.6 *2*.
1230.1 *4*	4.1 *7*	5292.0	(16^-)	4061.9	(15^-)	
1344.4 *4*	6.2 *12*	1447.8	(8^+)	103.4	6^+	R=1.9 *2*.
1374.0 *4*	100	1374.0	9^+	0.0	7^+	R=2.0 *2*.
1447.8 *4*	14 *1*	1447.8	(8^+)	0.0	7^+	R=1.5 *2*.
1451.1 *4*	10 *1*	8022.2	(17^+)	6571.1	(16^+)	R=1.5 *2*.
1622 *1*	50 *5*	3970.0	14^+	2347.1	13^+	R=1.5 *2*.
2278 *1*	6.1 *10*	6571.1	(16^+)	4293.2	(15^+)	
2392 *1*	4.2 *9*	6453.9	(16^-)	4061.9	(15^-)	
2492 *1*	4.1 *8*	6553.9	(16^-)	4061.9	(15^-)	
2509 *1*	4.0 *10*	6571.1	(16^+)	4061.9	(15^-)	

[†] Δ(Eγ)=0.4 for Eγ<1500 keV and 1.0 for Eγ>1500 keV as suggested by 2000Gh01.

(HI,xnγ) 2000Gh01

Level Scheme

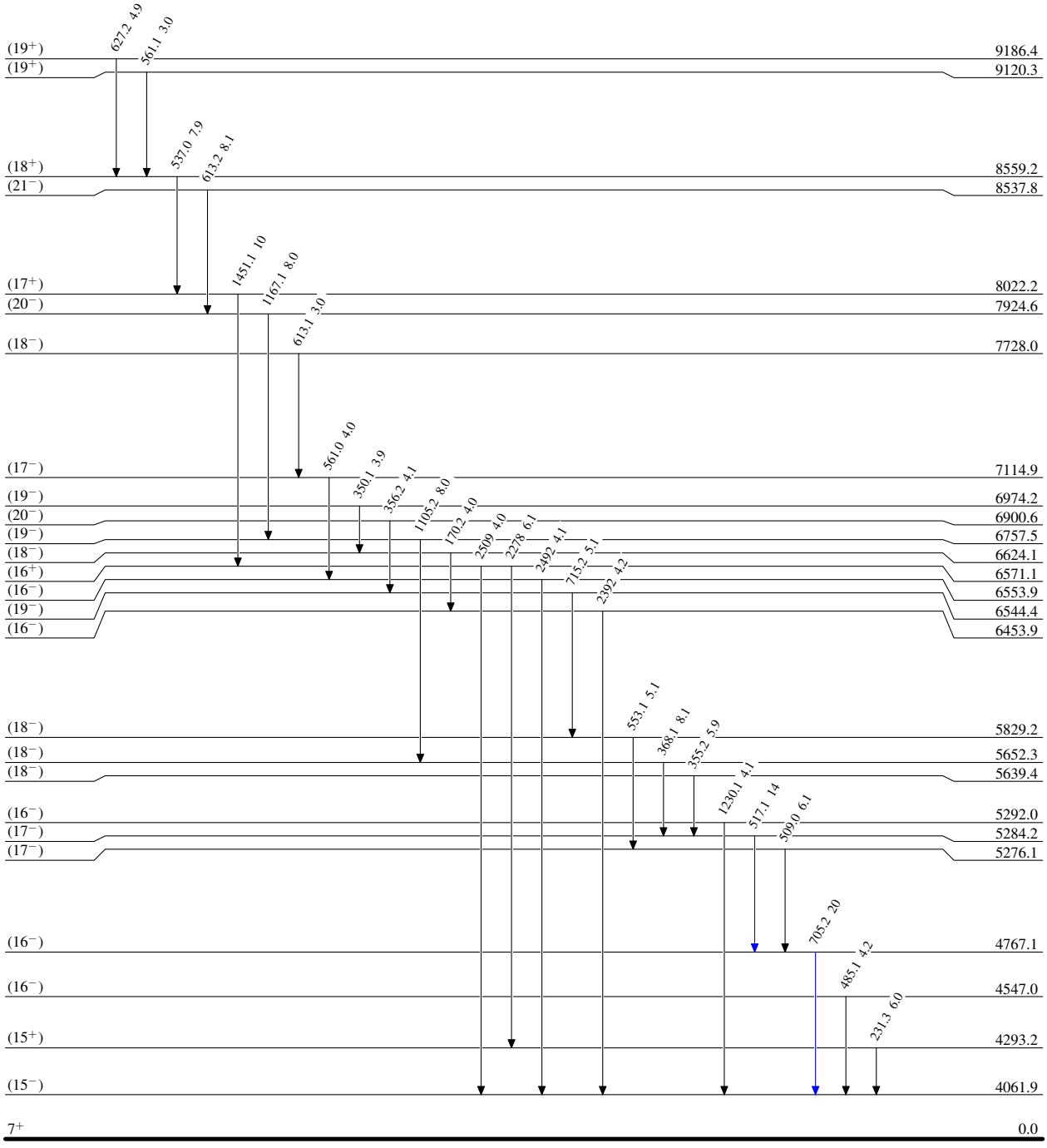
Intensities: Relative I_γ

Legend

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

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

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

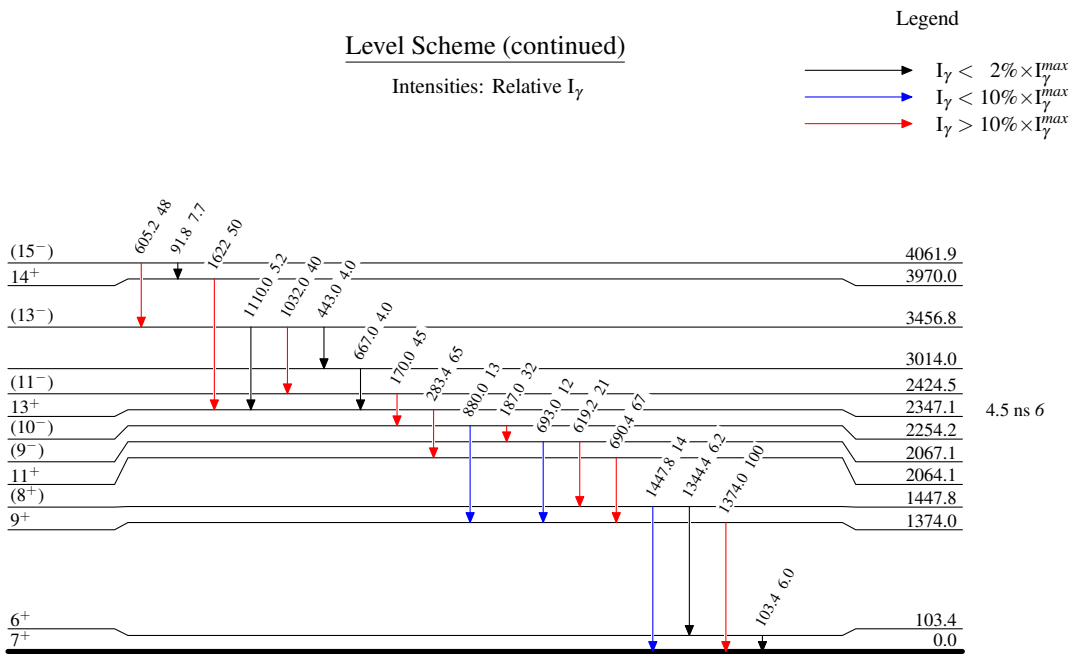


$^{94}_{43}Tc_{51}$

(HI,xnγ) 2000Gh01

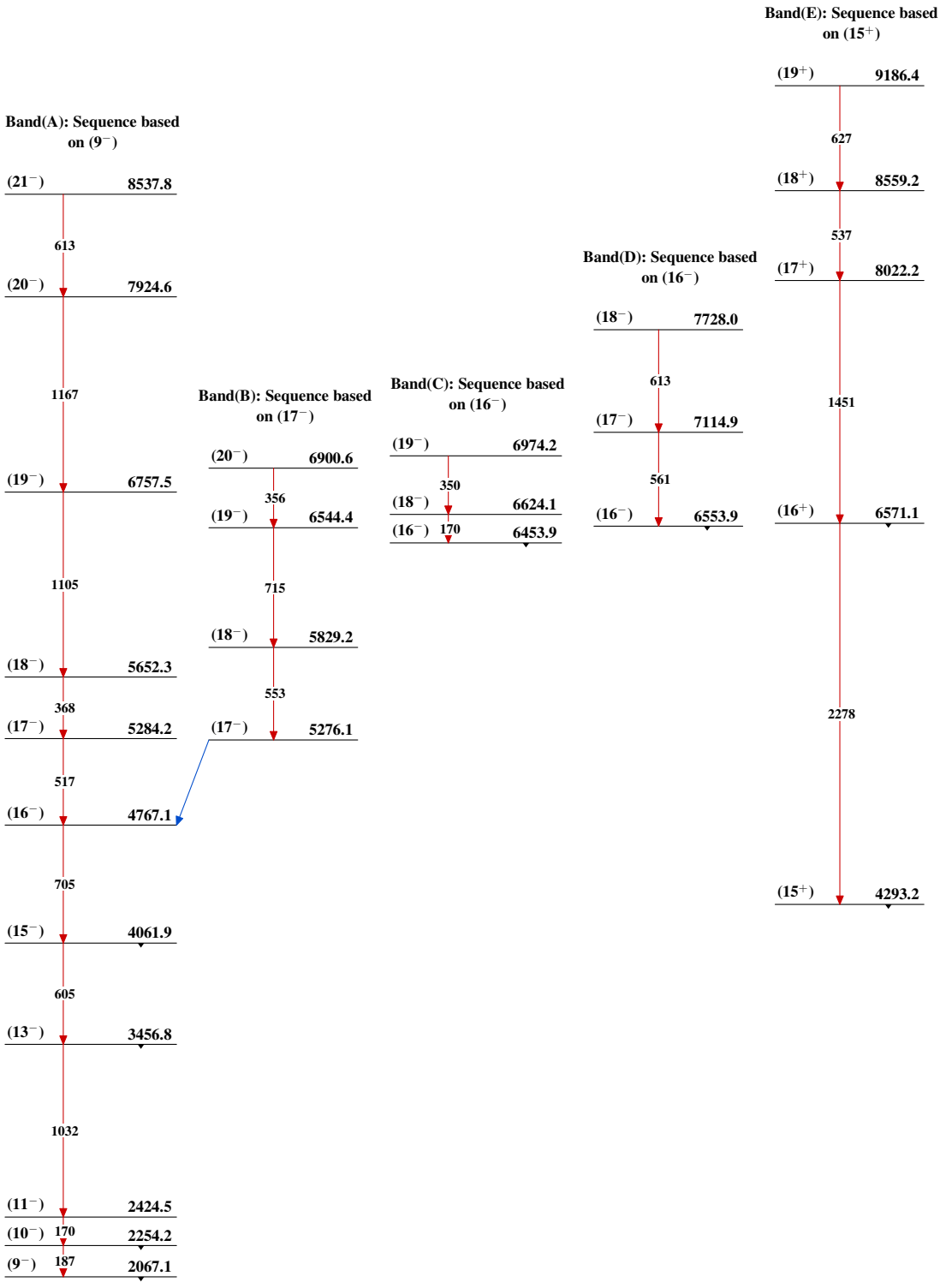
Level Scheme (continued)

Intensities: Relative I_γ



$^{94}_{43}Tc_{51}$

(HI,xnγ) 2000Gh01



$^{94}_{43}Tc_{51}$