^{123}Te(n,γ) E=res: av 1991Ca13,1969Bu05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. Katakura, Z. D. Wu	NDS 109, 1655 (2008)	1-Apr-2008

1991Ca13: filtered neutron beam, E(n)=2 and 24 keV with FWHM=1 keV.

1969Bu05: neutron capture was averaged over many neutron resonances (E(n)≥100 eV) in order to average out Porter-Thomas fluctuations in the intensities of primary γ transitions resulting from capture in a single resonance. The used neutrons were only thermal ones. The average resonance capture (ARC) experiment was not performed. They analyzed ARC spectra and data provided by Bollinger and Thomas (as private communication).

S(n)=9423.97 *17* (2003Au03).

^{124}Te Levels

E(level)†	J$^\pi$	Comments
0.0	0$^+$	
602.8 *4*		
1325.6 *2*		
1656.9 *3*		
1730.4?‡		Not observed in 1991Ca13.
1736.5?‡		Not observed in 1991Ca13.
1747.4?‡ *16*		
1883.1 *3*		
1956.18‡ *11*		
2039.5 *2*		
2092.0 *3*		
2153.4 *4*		
2171.3?‡ *3*		
2182.5 *2*		
2308.0 *4*		
2322.5 *3*		
≈2329.9?		E(level): observed only in 24-keV resonance (1991Ca13).
2454.1 *4*		
2487‡ *3*		
2500.1? *8*		E(level): observed only in 24-keV resonance (1991Ca13).
2521.1 *5*		E(level): 1969Bu06 report two levels of 2519.5 and 2522.3.
2529.0 *4*		
2599.9 *6*		
2617‡ *3*		
2640‡ *3*		
2681.1‡ *23*		
2747.1‡ *5*		
2808.3‡ *24*		
2818‡ *3*		
2858.2‡ *25*		
2932‡ *3*		
2947‡ *3*		
2976‡ *3*		
2988.7‡ *6*		
3045.9‡ *24*		
3090‡ *3*		
3100.8‡ *6*		
S(n)+0.26 *24*	0$^+$,1$^+$	E(level): av res energy from experiment in private communication, stated as ranging from 20-500 eV

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^{123}Te(n,γ) E=res: av 1991Ca13,1969Bu05 (continued)

^{124}Te Levels (continued)

E(level)†	Jπ	Comments
		(1969Bu05).
		Jπ: s-wave capture in ^{123}Te, g.s. $J^\pi=1/2^+$.
S(n)+2	$0^+,1^+$	Jπ: nearly s-wave capture in ^{123}Te, g.s. $J^\pi=1/2^+$.
S(n)+24	$0^+,1^+,2^+$	Jπ: mainly p-wave capture in ^{123}Te, g.s. $J^\pi=1/2^+$.

† From 1991Ca13, unless otherwise indicated. Uncertainties are calculated from γ's.
‡ From 1969Bu05.

γ(^{124}Te)

E_γ†	I_γ#	E_i(level)	J_i^π	E_f	Mult.@
6324.3‡ *3*		S(n)+0.26	$0^+,1^+$	3100.8	E1
6334.5‡ *19*		S(n)+0.26	$0^+,1^+$	3090	
6379.0‡ *7*		S(n)+0.26	$0^+,1^+$	3045.9	
6436.0‡ *11*		S(n)+0.26	$0^+,1^+$	2988.7	(E1)
6449.3‡ *24*		S(n)+0.26	$0^+,1^+$	2976	
6477.6‡ *14*		S(n)+0.26	$0^+,1^+$	2947	(M1)
6493.0‡ *17*		S(n)+0.26	$0^+,1^+$	2932	(M1)
6566.7‡ *12*		S(n)+0.26	$0^+,1^+$	2858.2	(M1)
6607.1‡ *12*		S(n)+0.26	$0^+,1^+$	2818	(E1)
6616.6‡ *7*		S(n)+0.26	$0^+,1^+$	2808.3	(E1)
6677.3‡ *17*		S(n)+0.26	$0^+,1^+$	2747.1	(E1)
6743.8‡ *10*		S(n)+0.26	$0^+,1^+$	2681.1	(M1)
6785.4‡ *12*		S(n)+0.26	$0^+,1^+$	2640	
6808.0‡ *24*		S(n)+0.26	$0^+,1^+$	2617	(M1)
6824.6‡ *12*		S(n)+0.26	$0^+,1^+$	2599.9	(M1)
6826.1 *3*	3.2 *3*	S(n)+2	$0^+,1^+$	2599.9	
6847.8 *6*	0.78 *9*	S(n)+24	$0^+,1^+,2^+$	2599.9	
6894.7‡ *24*		S(n)+0.26	$0^+,1^+$	2529.0	(M1)
6898.4 *4*	1.27 *17*	S(n)+2	$0^+,1^+$	2529.0	
6902.6‡ *18*		S(n)+0.26	$0^+,1^+$	2521.1	(M1)
6905.3 *3*	1.82 *14*	S(n)+2	$0^+,1^+$	2521.1	
6905.4‡ *20*		S(n)+0.26	$0^+,1^+$		(M1)
6917.3 *3*	1.18 *7*	S(n)+24	$0^+,1^+,2^+$	2529.0	
6926.2 *5*	0.76 *7*	S(n)+24	$0^+,1^+,2^+$	2521.1	
6937.5‡ *25*		S(n)+0.26	$0^+,1^+$	2487	(E1)
6947.7 *8*	0.42 *6*	S(n)+24	$0^+,1^+,2^+$	2500.1?	
6971.8 *3*	1.96 *14*	S(n)+2	$0^+,1^+$	2454.1	
6972.0‡ *9*		S(n)+0.26	$0^+,1^+$	2454.1	(M1)
6993.8 *4*	0.59 *5*	S(n)+24	$0^+,1^+,2^+$	2454.1	
7102.1‡ *3*		S(n)+0.26	$0^+,1^+$	2322.5	(M1)
7103.1 *3*	2.25 *16*	S(n)+2	$0^+,1^+$	2322.5	
7117.6 *3*	1.75 *14*	S(n)+2	$0^+,1^+$	2308.0	
≈7117.9&	0.10 *4*	S(n)+24	$0^+,1^+,2^+$	≈2329.9?	
7125.5 *3*	0.37 *3*	S(n)+24	$0^+,1^+,2^+$	2322.5	
7140.2 *4*	0.26 *3*	S(n)+24	$0^+,1^+,2^+$	2308.0	
7243.3 *2*	2.51 *14*	S(n)+2	$0^+,1^+$	2182.5	

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^{123}Te(n,γ) E=res: av 1991Ca13,1969Bu05 (continued)

γ(^{124}Te) (continued)

E_γ [†]	I_γ [#]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	Comments
7244.1[‡] *10*		S(n)+0.26	$0^+,1^+$	2182.5			
7253.6[‡&] *12*		S(n)+0.26	$0^+,1^+$	2171.3?		(M1)	
7265.3 *2*	0.74 *3*	S(n)+24	$0^+,1^+,2^+$	2182.5			
7272.1 *2*	2.04 *13*	S(n)+2	$0^+,1^+$	2153.4			
7272.6[‡] *8*		S(n)+0.26	$0^+,1^+$	2153.4		(M1)	
7294.8 *4*	0.37 *3*	S(n)+24	$0^+,1^+,2^+$	2153.4			
7333.6 *2*	1.86 *12*	S(n)+2	$0^+,1^+$	2092.0			
7334.4[‡] *7*		S(n)+0.26	$0^+,1^+$	2092.0		(M1)	
7356.1 *3*	0.43 *3*	S(n)+24	$0^+,1^+,2^+$	2092.0			
7386.3 *2*	1.74 *11*	S(n)+2	$0^+,1^+$	2039.5			
7386.6[‡] *6*		S(n)+0.26	$0^+,1^+$	2039.5		(M1)	
7408.3 *2*	0.67 *4*	S(n)+24	$0^+,1^+,2^+$	2039.5			
7469[‡&]		S(n)+0.26	$0^+,1^+$	1956.18			
7542.5 *3*	1.25 *10*	S(n)+2	$0^+,1^+$	1883.1			
7565.0 *3*	0.32 *2*	S(n)+24	$0^+,1^+,2^+$	1883.1			
7666.1[‡] *25*		S(n)+0.26	$0^+,1^+$				
7678.6[‡&] *25*		S(n)+0.26	$0^+,1^+$	1747.4?			In wing of contaminant line (1969Bu05).
7687.4[‡] *25*		S(n)+0.26	$0^+,1^+$	1736.5?		(M1)	
7694.5[‡&]		S(n)+0.26	$0^+,1^+$	1730.4?			Buried under contaminant line.
7768.9 *3*	0.99 *7*	S(n)+2	$0^+,1^+$	1656.9			
7771[‡] *3*		S(n)+0.26	$0^+,1^+$	1656.9		(M1)	
7790.9 *3*	0.40 *3*	S(n)+24	$0^+,1^+,2^+$	1656.9			
8100.1[‡] *8*		S(n)+0.26	$0^+,1^+$	1325.6		(M1)	
8100.2 *2*	1.93 *9*	S(n)+2	$0^+,1^+$	1325.6			
8122.2 *2*	0.56 *2*	S(n)+24	$0^+,1^+,2^+$	1325.6			
8822.5[‡] *8*		S(n)+0.26	$0^+,1^+$	602.8		(M1)	
8823.1 *2*	1.59 *7*	S(n)+2	$0^+,1^+$	602.8			
8845.1 *4*	0.50 *3*	S(n)+24	$0^+,1^+,2^+$	602.8			
9424.9[‡] *8*		S(n)+0.26	$0^+,1^+$	0.0	0^+	(M1)	
9425.8 *2*	0.80 *4*	S(n)+2	$0^+,1^+$	0.0	0^+		

[†] From 1991Ca13, unless otherwise indicated.
[‡] From 1969Bu05.
[#] Reduced photon intensity ($I\gamma/E\gamma^5$) (1991Ca13).
[@] From relative intensities with $E\gamma^3$ correction removed (1969Bu05).
[&] Placement of transition in the level scheme is uncertain.

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Level Scheme

Intensities: Relative I_γ

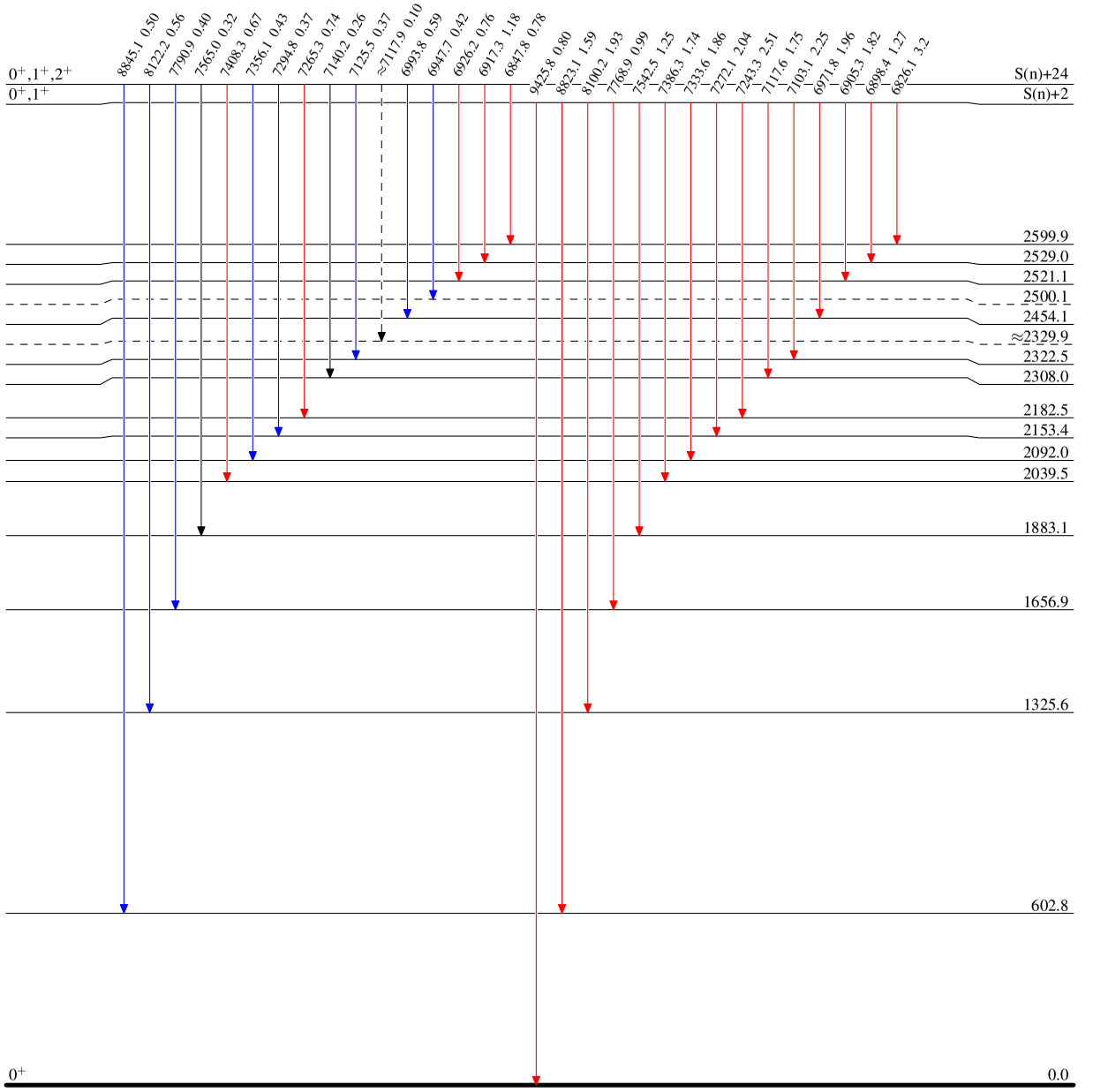
Legend

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

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

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

γ Decay (Uncertain)



$^{124}_{52}Te_{72}$

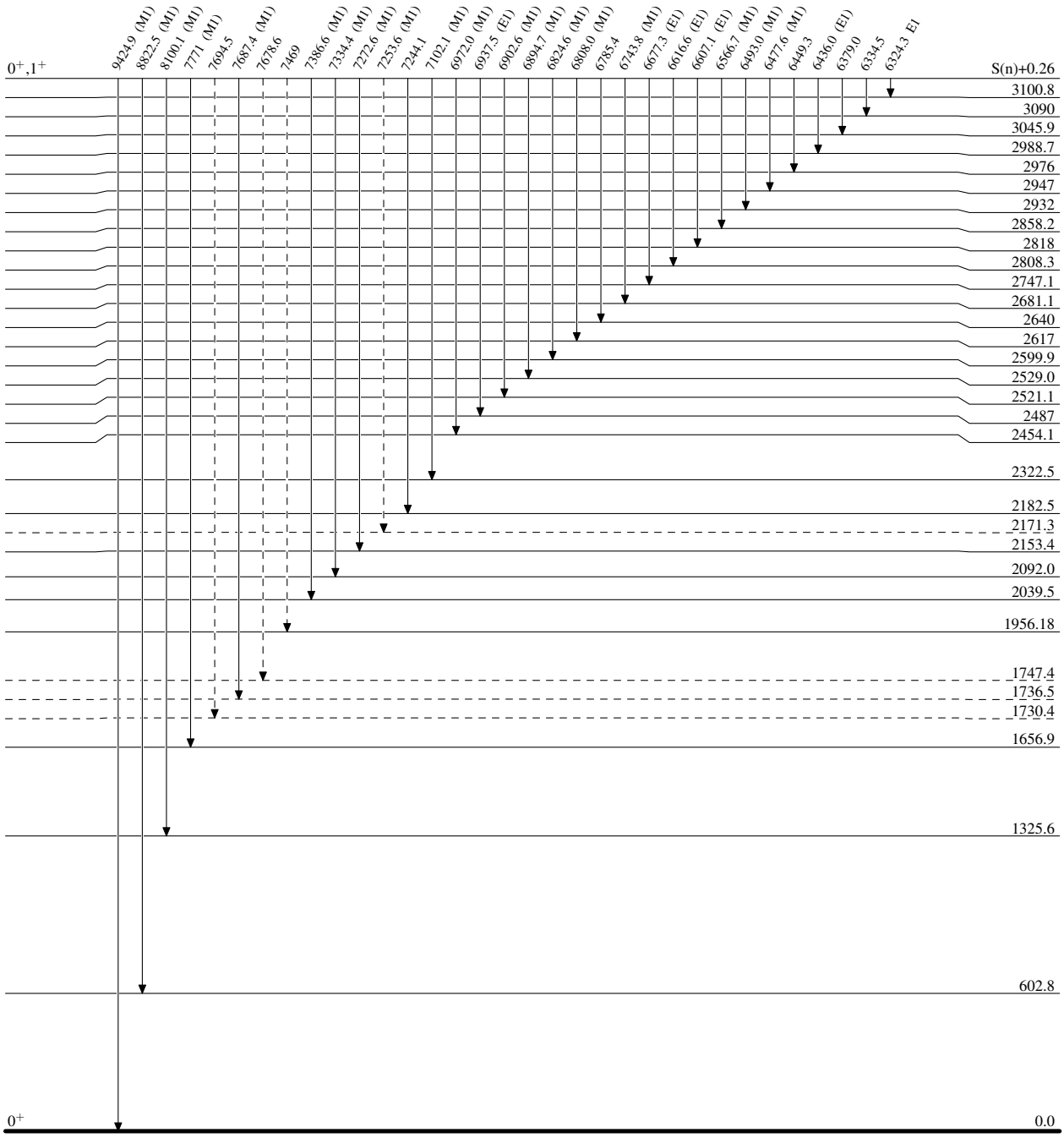
^{123}Te(n,γ) E=res: av 1991Ca13,1969Bu05

Legend

Level Scheme (continued)

Intensities: Relative I_γ

- - - - - - ► γ Decay (Uncertain)



$^{124}_{52}Te_{72}$