^{126}Te(p,nγ) 1983Bu11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	H. Iimura, J. Katakura, S. Ohya	NDS 180, 1 (2022)	1-Oct-2021

1983Bu11: E=2.9-6 MeV. $\gamma(\theta)$, $\gamma\gamma$, $\gamma\gamma$(t).
1997DaZY: E=3.8-6.9 MeV, HPGe, Si(Li), measured γ, $\gamma\gamma$, ce.

^{126}I Levels

E(level)	J^{π}[&]	$T_{1/2}$	Comments
0.0	2^-		
56.43 *4*	1^+[†]	15.9[a] ns *14*	
110.85 *4*	(3^+)	56[a] ns *3*	
122.17 *5*	4^-	13.5[a] ns *11*	
166.04 *8*			
178.96 *6*			
204.28 *6*	(4^+)		
222.62 *4*	$1^+,2^+$		J^{π}: E1 γ to 2^-, M1(+E2) to 1^+.
227.78 *5*	2^+[‡]		
237.39 *6*	3^+		J^{π}: E1 γ's to 2^- and 4^-.
244.79 *6*	$(4)^+$[@]		
311.28 *6*	(2^+)		J^{π}: M1(+E2) γ to 1^+, γ to (4^+).
331.28 *7*	(3^-)		J^{π}: M1(+E2) 209 γ to 4^- 122 level, γ from 2^+.
338.49 *9*	$-$		
343.46 *5*	$-$		
348.43 *6*	2^+[‡]		
365.49 *7*	$(2^+,3^+,4^+)$		
369.57 *8*	$-$		
373.76 *6*	$+$		
393.79 *6*	$(3)^+$		
397.56 *8*	$2^-,3^-$[#]		
422.23 *7*			
434.22 *5*	$+$		
458.04? *13*			
478.99 *6*	2^+[‡]		
491.03 *11*	$+$		
506.96 *14*			
513.49 *8*	$+$		
535.62 *8*	$+$		
544.65 *8*	$+$		
566.79 *10*			
570.36 *7*			
580.64? *13*			
591.34 *7*			
617.88 *11*	$+$		
658.29 *12*			
676.68 *8*	$+$		
687.92 *9*	$2^-,3^-$[#]		
703.14 *7*	$+$		
714.70 *7*			
748.69 *12*			
800.09? *13*			
812.79 *11*			
819.48 *12*			
868.99 *9*	$(2^+,3,4^+)$		J^{π}: γ's to (4^+) and 2^+.
890.29 *12*			

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^{126}Te(p,nγ) 1983Bu11 (continued)

^{126}I Levels (continued)

E(level)	E(level)	E(level)
944.67 *21*	979.1 *3*	1002.57 *11*
956.6 *12*	1000.19 *12*	1082.69? *14*
		1102.16 *13*

[†] γ(θ) for Eγ=56γ uniquely establishes J=1 and mult. of the 56γ is E1 from intensity balance in γγ spectrum (1983Bu11).
[‡] γ(θ) (1983Bu11) and ce (1997DaZY) for Eγ to the 1^+ 56 level uniquely establish Jπ=2^+.
[#] γ(θ) (1983Bu11) and ce (1997DaZY) for Eγ to the 2^- gs give $J^\pi=3^-$, however $J^\pi=2^-$ is not rule out (1983Bu11).
[@] This level is fed from the 479 2^+ level by M1,E2 γ and deexcites by the 227.2 γ to 4^-. This gives $J^\pi=(3,4)^+$. γ from (6^+) in (^{7}Li,5nγ) rule out 3^+.
[&] From Adopted Levels, gammas except where noted otherwise.
[a] From γγ(t) in 1983Bu11.

γ(^{126}I)

E_γ[†]	I_γ[#]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[&]	Comments
(7.5)		244.79	$(4)^+$	237.39	3^+			Not observed, but required by γγ data.
54.65 *15*	120 *20*	110.85	(3^+)	56.43	1^+			
56.45 *8*	951 *25*	56.43	1^+	0.0	2^-	E1	0.995 *15*	α(K)=0.852; α(L)=0.1195; α(M)=0.02369; α(N+..)=0.00542 Mult.: from intensity balance in γγ spectrum, A_2=−0.016 *11* (1983Bu11). An M2 admixture of the transition probaility rate is upper limit of 0.01% from the measured lifetime.(1983Bu11). A_2=−0.016 *11* (1983Bu11).
56.75[‡] *15*	49[‡] *25*	178.96		122.17	4^-			
62.56 *18*	21.8 *26*	373.76	+	311.28	(2^+)			
[x]81.00 *10*	5.0 *12*							
83.50 *10*	9.7 *14*	311.28	(2^+)	227.78	2^+			
86.34 *17*	30.0 *16*	331.28	(3^-)	244.79	$(4)^+$			Mult.: 1983Bu11 propose M1 for the 86 γ to 245 $(4)^+$ level from intensity balance in γγ spectrum. However, it is inconsistent with the negative parity of the 331 level. Mult.: From intensity balance in γγ spectrum (1983Bu11).
88.70 *9*	4.4 *13*	311.28	(2^+)	222.62	$1^+,2^+$			
93.45 *6*	39.3 *20*	204.28	(4^+)	110.85	(3^+)	M1,E2	1.6 *7*	A_2=+0.030 *5* (1983Bu11). Mult.: from (^{7}Li,5nγ) data set.
107.00 *7*	25.3 *17*	311.28	(2^+)	204.28	(4^+)			
109.60[‡] *20*	7.7[‡] *22*	166.04		56.43	1^+			
110.85 *6*	538.6 *25*	110.85	(3^+)	0.0	2^-	E1	0.153 *2*	A_2=−0.039 *10* (1983Bu11).
111.80[‡] *6*	31.5[‡] *20*	222.62	$1^+,2^+$	110.85	(3^+)			
115.14 *8*	38.0 *13*	237.39	3^+	122.17	4^-	E1	0.137 *2*	
117.05 *7*	34.9 *14*	227.78	2^+	110.85	(3^+)	M1(+E2)	0.7 *3*	
120.66 *10*	6.7 *10*	348.43	2^+	227.78	2^+			
122.20 *10*	210 *4*	122.17	4^-	0.0	2^-	E2	0.863 *13*	A_2=−0.004 *6* (1983Bu11). Mult.: α(K)exp (1997DaZY) support M1,E2. But 122.20 keV transition of E2

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^{126}Te(p,nγ) 1983Bu11 (continued)

γ(^{126}I) (continued)

Eγ[†]	Iγ[#]	Ei(level)	J^{π}_i	Ef	J^{π}_f	Mult.[@]	α[&]	Comments
								is doublet with 122.70 keV E1 transition. α(K)exp is consistent with the multis required by the level scheme E2 for 122.20 γ and E1 for 122.70 γ.
122.70[‡] *20*	108[‡] *4*	244.79	(4)$^+$	122.17	4$^-$			
125.78 *9*	7.8 *14*	348.43	2$^+$	222.62	1$^+$,2$^+$			
132.20[‡] *10*	5.4[‡] *12*	369.57	$^-$	237.39	3$^+$			
133.20 *12*	5.2 *12*	506.96		373.76	$^+$			
140.70 *20*	10.8 *14*	478.99	2$^+$	338.49	$^-$			
142.90 *7*	25.5 *14*	365.49	(2$^+$,3$^+$,4$^+$)	222.62	1$^+$,2$^+$			
146.00 *6*	44.1 *16*	373.76	$^+$	227.78	2$^+$	M1,E2	0.36 *11*	
147.70[‡] *10*	2.7[‡] *14*	478.99	2$^+$	331.28	(3$^-$)			
149.00[‡] *11*	10.2[‡] *14*	393.79	(3)$^+$	244.79	(4)$^+$			
166.00 *17*	15.6 *26*	166.04		0.0	2$^-$			
166.20 *5*	156.0 *26*	222.62	1$^+$,2$^+$	56.43	1$^+$	M1(+E2)	0.24 *6*	A_2=−0.002 *8* (1983Bu11).
171.42 *7*	131.6 *22*	227.78	2$^+$	56.43	1$^+$	M1(+E2)	0.22 *5*	A_2=−0.085 *11* (1983Bu11).
178.95 *7*	8.7 *17*	178.96		0.0	2$^-$			A_2=+0.03 *28* (1983Bu11).
187.15 *8*	4.3 *16*	535.62	$^+$	348.43	2$^+$			
189.50 *5*	5.2 *17*	393.79	(3)$^+$	204.28	(4$^+$)			
194.45 *5*	8.3 *19*	422.23		227.78	2$^+$			
196.60[‡] *10*	2.9[‡] *15*	570.36		373.76	$^+$			
201.30 *7*	57.7 *22*	566.79		365.49	(2$^+$,3$^+$,4$^+$)	M1(+E2)	0.13 *2*	A_2=−0.15 *4* (1983Bu11).
206.60 *10*	6.3 *18*	434.22	$^+$	227.78	2$^+$			
209.12 *6*	13.0 *18*	331.28	(3$^-$)	122.17	4$^-$	M1(+E2)	0.12 *2*	
211.65 *10*	8.5 *22*	434.22	$^+$	222.62	1$^+$,2$^+$			
216.35 *8*	27.7 *20*	338.49	$^-$	122.17	4$^-$	M1(+E2)	0.10 *2*	A_2=−0.004 *60* (1983Bu11).
222.60 *6*	64.0 *24*	222.62	1$^+$,2$^+$	0.0	2$^-$	E1		A_2=−0.005 *30* (1983Bu11).
226.80[‡] *13*	3.7[‡] *20*	570.36		343.46	$^-$			
227.70 *10*	6.3 *20*	227.78	2$^+$	0.0	2$^-$			
233.30[‡] *8*	9.4[‡] *22*	800.09?		566.79				
234.20 *6*	14.4 *22*	478.99	2$^+$	244.79	(4)$^+$	(E2)	0.0909	Mult.: γ from 2$^+$ to (4)$^+$, M1,E2 from α(K)exp (1997DaZY).
237.47 *8*	10.7 *21*	237.39	3$^+$	0.0	2$^-$	E1	0.0185 *3*	
247.40 *10*	19.2 *25*	369.57	$^-$	122.17	4$^-$	M1(+E2)	0.069 *7*	A_2=−0.22 *11* (1983Bu11).
254.65[‡] *11*	15[‡] *7*	365.49	(2$^+$,3$^+$,4$^+$)	110.85	(3$^+$)	M1(+E2)		A_2=−0.005 *4* (1983Bu11). Mult.: includes 254.75 γ.
254.75[‡] *11*	43[‡] *7*	311.28	(2$^+$)	56.43	1$^+$	M1(+E2)	0.063 *6*	Mult.: includes 254.65 γ.
262.80 *12*	3.9 *23*	373.76	$^+$	110.85	(3$^+$)			
264.50 *10*	4.9 *23*	658.29		393.79	(3)$^+$			
275.35 *10*	12.5 *30*	397.56	2$^-$,3$^-$	122.17	4$^-$			
287.87 *8*	12.2 *27*	1002.57		714.70				A_2=−0.15 *9* (1983Bu11).
292.00[a] *5*	51[a] *8*	348.43	2$^+$	56.43	1$^+$	M1,E2	0.0420 *20*	A_2=−0.08 *4* (1983Bu11).
292.00[a‡] *10*	28[a‡] *8*	458.04?		166.04				
306.60 *10*	26 *4*	617.88	$^+$	311.28	(2$^+$)	M1,E2	0.0364 *13*	
309.30 *12*	16.8 *30*	513.49	$^+$	204.28	(4$^+$)			
311.20 *5*	49 *4*	676.68	$^+$	365.49	(2$^+$,3$^+$,4$^+$)			
312.90[‡] *10*	29[‡] *4*	478.99	2$^+$	166.04				
317.00 *15*	12 *5*	544.65	$^+$	227.78	2$^+$			
318.40[‡] *15*	16[‡] *4*	687.92	2$^-$,3$^-$	369.57	$^-$	M1,E2	0.0326 *8*	
322.00 *8*	24 *5*	544.65	$^+$	222.62	1$^+$,2$^+$	M1,E2	0.0316 *7*	
323.35 *5*	20 *5*	434.22	$^+$	110.85	(3$^+$)			

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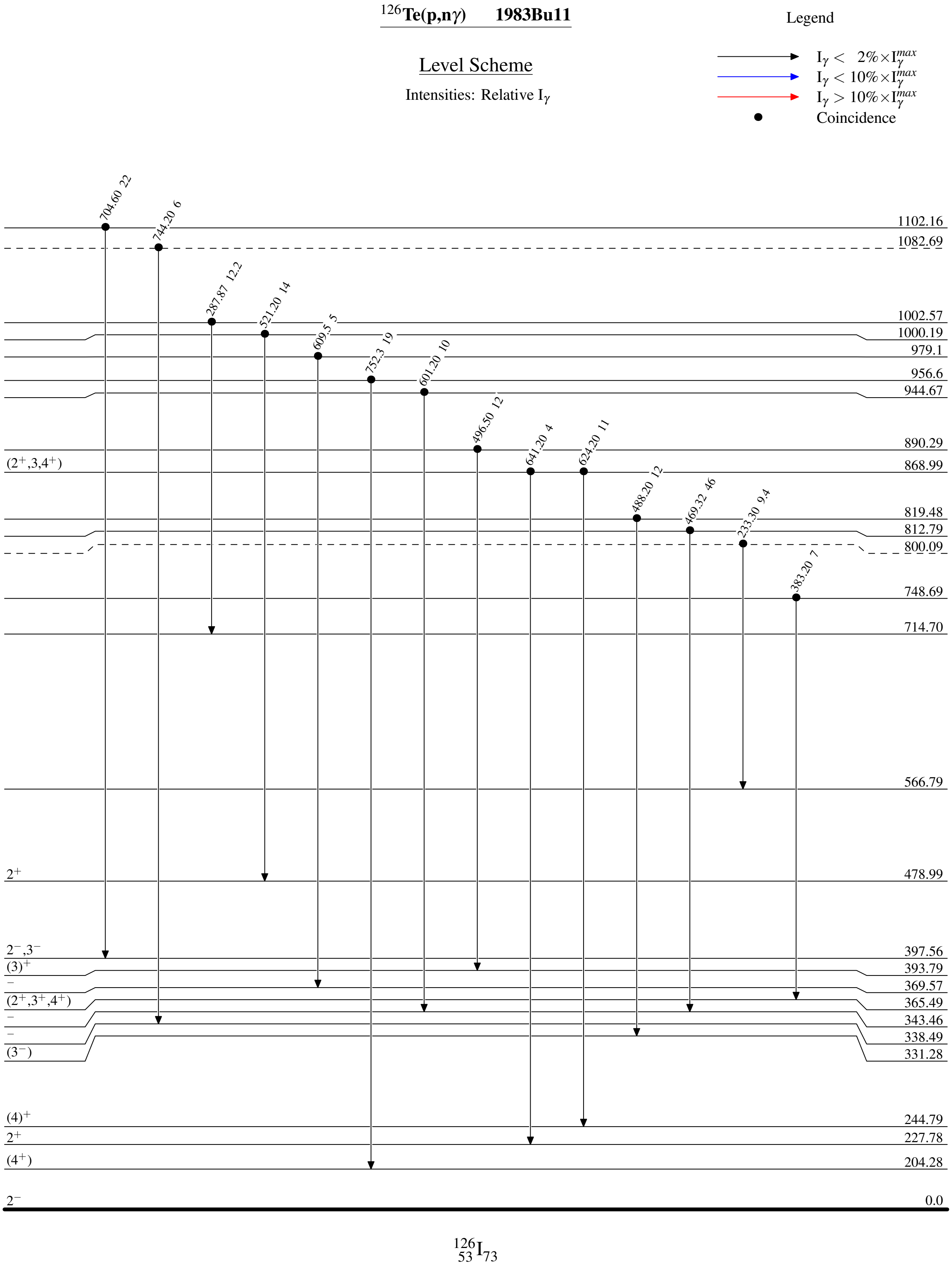
^{126}Te(p,nγ) 1983Bu11 (continued)

γ(^{126}I) (continued)

E_γ [†]	I_γ [#]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	α [&]	Comments
325.60 *7*	9.7 *30*	570.36		244.79	(4)$^+$			
[x]328.60 *10*	8.9 *30*							
337.40 *10*	14 *4*	393.79	(3)$^+$	56.43	1$^+$	(E2)	0.0276	Mult.: γ from (3)$^+$ to 1$^+$, M1,E2 from α(K)exp (1997DaZY).
343.45 *5*	134 *5*	343.46	$^-$	0.0	2$^-$	M1,E2	0.0262 *4*	A_2=+0.102 *22* (1983Bu11).
356.90 *10*	4.4 *39*	478.99	2$^+$	122.17	4$^-$			
363.50[‡] *10*	4.4[‡] *40*	591.34		227.78	2$^+$			
368.74 *6*	21 *4*	591.34		222.62	1$^+$,2$^+$			
377.75 *5*	34 *5*	434.22	$^+$	56.43	1$^+$	M1,E2	0.0201 *7*	
383.20 *10*	7 *4*	748.69		365.49	(2$^+$,3$^+$,4$^+$)			
391.85 *5*	22 *5*	703.14	$^+$	311.28	(2$^+$)	M1(+E2)	0.018 *1*	
397.60 *10*	51 *5*	397.56	2$^-$,3$^-$	0.0	2$^-$	M1,E2	0.0174 *8*	A_2=−0.12 *7* (1983Bu11) Author's value of −120 *70* is a typo.
402.60 *8*	20 *5*	513.49	$^+$	110.85	(3$^+$)	M1,E2	0.0168 *8*	
414.60[‡] *10*	36[‡] *6*	580.64?		166.04		M1,E2	0.0155 *9*	
422.42 *14*	39 *6*	478.99	2$^+$	56.43	1$^+$	M1	0.0147 *9*	Mult.: from spin-parity change of 2$^+$ to 1$^+$. M1,E2 from α(K)exp (1997DaZY). A_2=−0.13 *9* (1983Bu11).
434.60 *10*	64 *7*	491.03	$^+$	56.43	1$^+$	M1,E2	0.0137 *9*	A_2=−0.01 *8* (1983Bu11).
459.50 *15*	12 *5*	570.36		110.85	(3$^+$)			
469.32 *10*	46 *6*	812.79		343.46	$^-$			A_2=−0.13 *8* (1983Bu11).
475.40 *10*	16 *6*	703.14	$^+$	227.78	2$^+$			
479.25 *10*	67 *6*	535.62	$^+$	56.43	1$^+$	M1,E2	0.0105 *9*	
488.20 *10*	12 *6*	819.48		331.28	(3$^-$)			
496.50 *10*	12 *6*	890.29		393.79	(3)$^+$			
507.0[‡] *3*	31[‡] *9*	617.88	$^+$	110.85	(3$^+$)			
521.20 *10*	14 *6*	1000.19		478.99	2$^+$			
535.70 *10*	89 *7*	714.70		178.96		M1,E2	0.0079 *8*	
548.70 *10*	13 *6*	714.70		166.04		M1,E2	0.0074 *8*	
565.60 *20*	20 *6*	676.68	$^+$	110.85	(3$^+$)	E2(+M1)	0.0068 *8*	A_2=−0.14 *14* (1983Bu11).
601.20 *20*	10 *7*	944.67		343.46	$^-$			
609.5[‡] *3*	5[‡] *7*	979.1		369.57	$^-$			
624.20 *10*	11 *7*	868.99	(2$^+$,3,4$^+$)	244.79	(4)$^+$			
641.20 *10*	4 *7*	868.99	(2$^+$,3,4$^+$)	227.78	2$^+$			
687.90 *10*	47 *8*	687.92	2$^-$,3$^-$	0.0	2$^-$			A_2=−0.20 *11* (1983Bu11).
704.60 *10*	22 *8*	1102.16		397.56	2$^-$,3$^-$			A_2=+0.06 *45* (1983Bu11).
714.70 *10*	14 *8*	714.70		0.0	2$^-$			
744.20 *10*	6 *9*	1082.69?		338.49	$^-$			
752.3 *12*	19 *9*	956.6		204.28	(4$^+$)			

† From 1983Bu11.
‡ Observed in coincidence measurement with Iγ deduced from the coincidence measurement.
\# From 1983Bu11. Relative intensities at 90° are given.
@ From α(K)exp (1997DaZY). Numerical values are not given but graphical representation is given.
& Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
^{a} Multiply placed with intensity suitably divided.
^{x} γ ray not placed in level scheme.


^{126}Te(p,nγ) 1983Bu11
Level Scheme
Intensities: Relative Iγ
Legend
Iγ < 2%×Iγ^max
Iγ < 10%×Iγ^max
Iγ > 10%×Iγ^max
Coincidence
704.60 22
744.20 6
287.87 12.2
521.20 14
609.5 5
752.3 19
601.20 10
496.50 12
641.20 4
624.20 11
488.20 12
469.32 46
233.30 9.4
383.20 7
1102.16
1082.69
1002.57
1000.19
979.1
956.6
944.67
890.29
(2+,3,4+) 868.99
819.48
812.79
800.09
748.69
714.70
566.79
2+ 478.99
2−,3− 397.56
(3)+ 393.79
− 369.57
(2+,3+,4+) 365.49
− 343.46
− 338.49
(3−) 331.28
(4)+ 244.79
2+ 227.78
(4+) 204.28
2− 0.0
$^{126}_{53}I_{73}$

^{126}Te(p,nγ) 1983Bu11

Level Scheme (continued)

Intensities: Relative I_γ

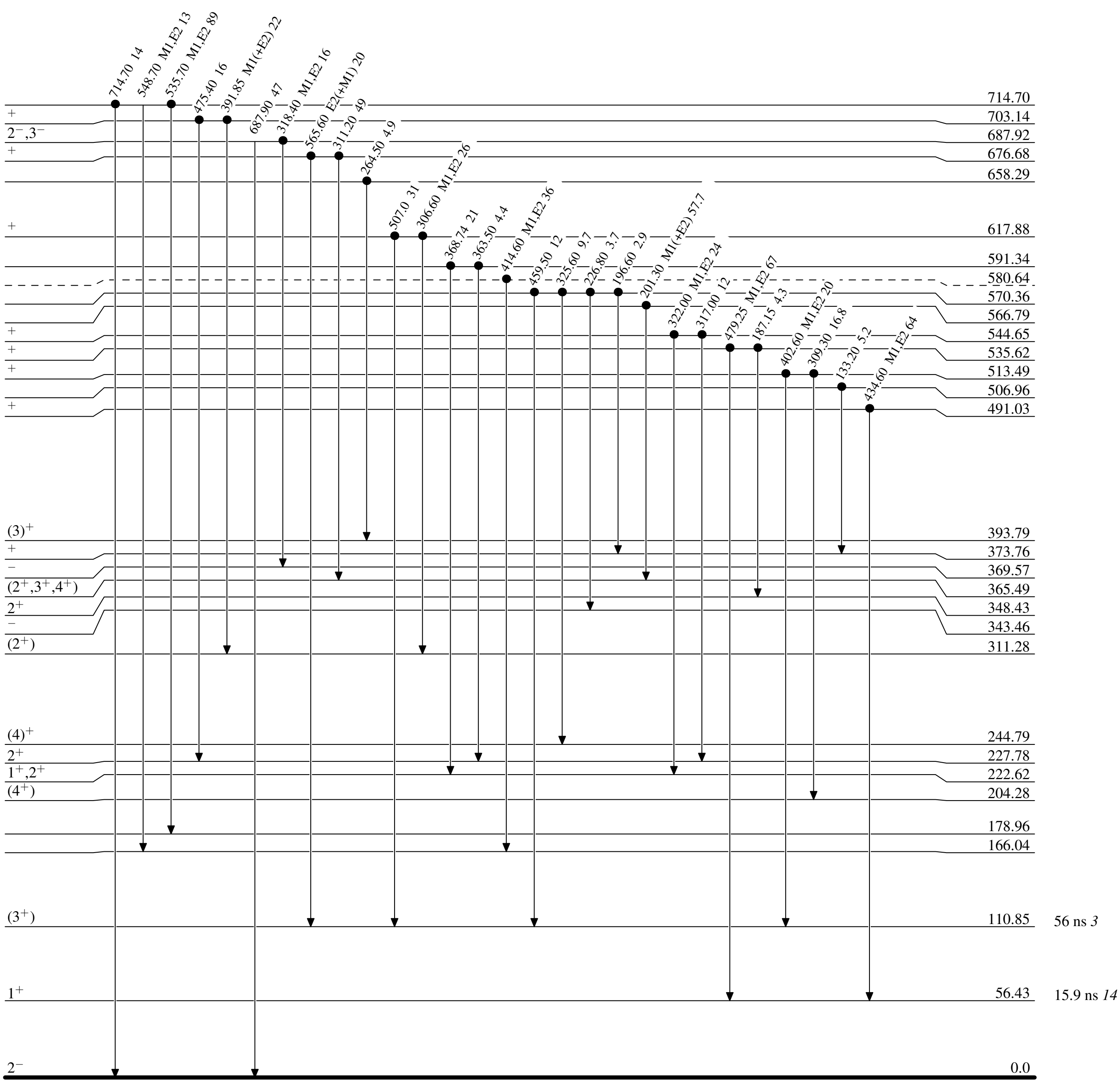
Legend

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

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

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

Coincidence



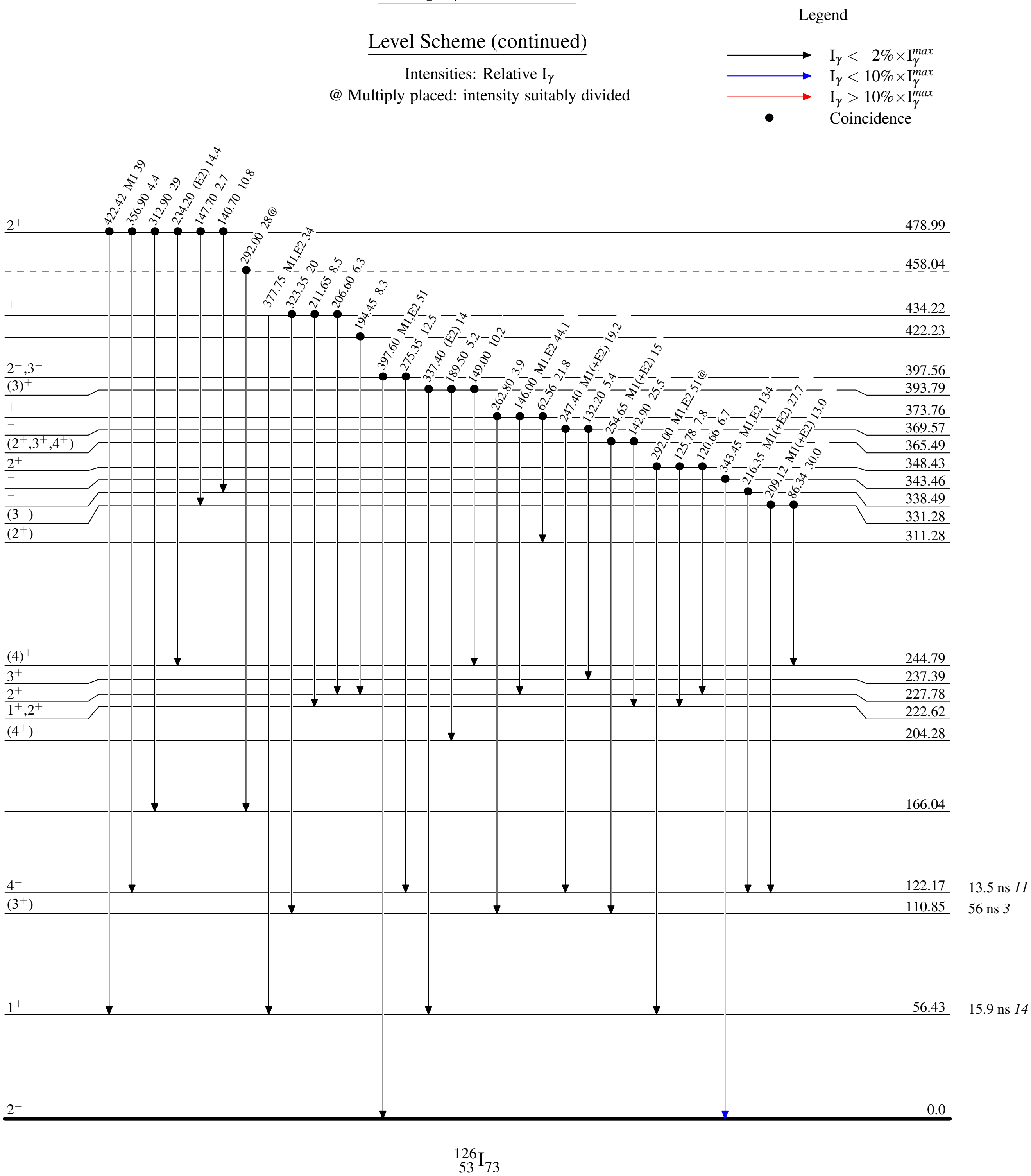
$^{126}_{53}I_{73}$

^{126}Te(p,nγ) 1983Bu11

Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided



^{126}Te(p,nγ) 1983Bu11

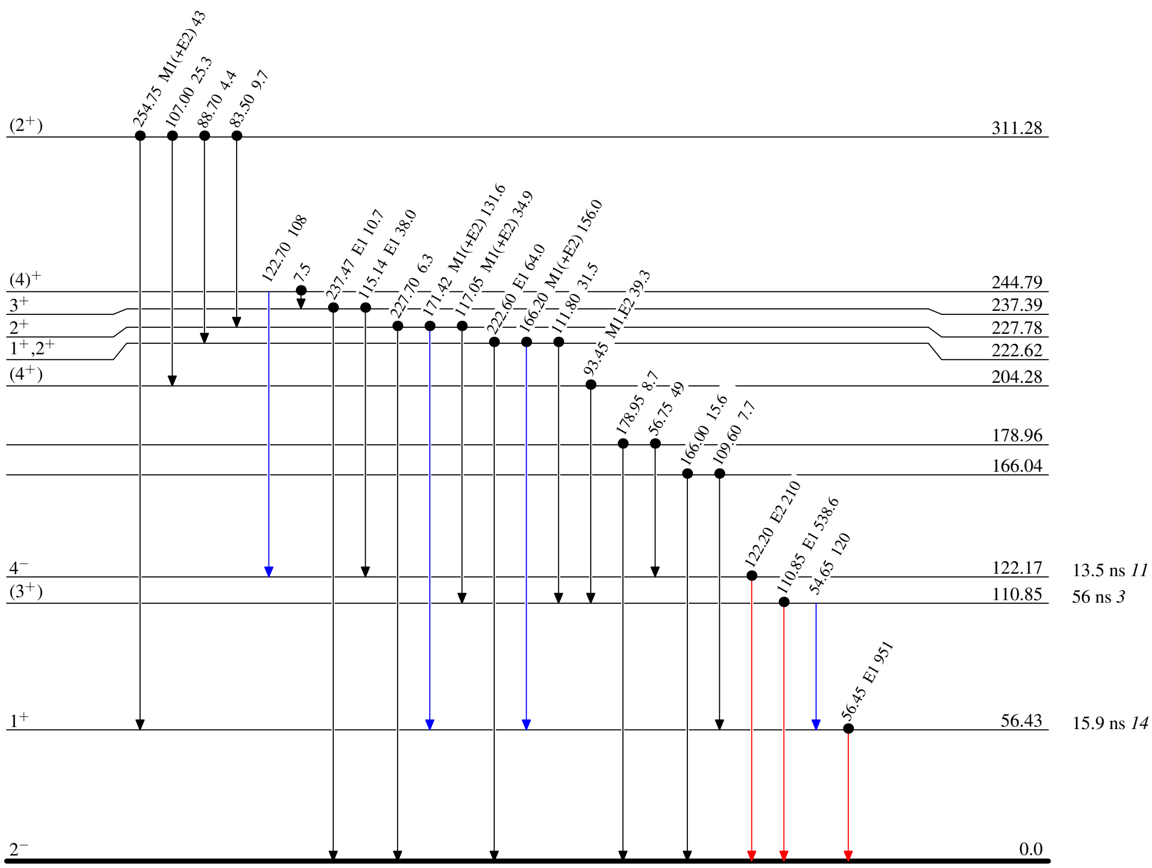
Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence



$^{126}_{53}I_{73}$