^{131}Te β^- decay (25.0 min) 1975Ja03,1971Ma04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, I. Mitropolsky, A. Rodionov	NDS 107, 2715 (2006)	17-Jul-2006

Parent: ^{131}Te: E=0.0; J$^\pi$=3/2$^+$; $T_{1/2}$=25.0 min *1*; Q(β^-)=2234.9 *22*; %β^- decay=100.0

1975Ja03: ^{131}Te(β^-); measured Eγ, Iγ, $\gamma\gamma$ coincidences, ^{131}I deduced levels, J, π, log *ft*. Ge(Li) detectors. Compton suppressed spectrometer.

1971Ma04: ^{131}Te(β^-); measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma$-delayed coin , ^{131}I deduced levels, J, π, $T_{1/2}$, log *ft*. Ge(Li) detectors, plastic scintillators.

1967Ah01: ^{131}Te(β^-); measured Eγ, Iγ, $\gamma(\theta)$, ^{131}I deduced A_2, A_4, J.

1963De10: ^{131}Te(β^-); measured Eγ, Iγ, β^- and $\beta\gamma$ and $\gamma\gamma$ coin, ^{131}I deduced levels, J, π, log *ft*. NaI(Tl) detectors, β-spectrometer.

1961Be20: ^{131}Te(β^-); measured Eγ, Iγ, β^- spectrum and $\beta\gamma$ and $\gamma\gamma$ coincidences, ^{131}I deduced levels, J, π, log *ft*. NaI(Tl) detectors, β-spectrometer.

Others: 1961Fe05, 1965Wa11.

The decay scheme and all data are from 1975Ja03, unless indicated otherwise; the coincidence data are from 1971Ma04.

^{131}I Levels

E(level)†	J$^\pi$‡	$T_{1/2}$	Comments
0.0	7/2$^+$	8.02070 d *11*	$T_{1/2}$: from 1983Wa26. Others: 8.0213 d *9* (1980Ho17), 8.020 d *3* (1978La21), 8.116 d *26* (1971Zo02).
149.716 *3*	5/2$^+$	0.95 ns *5*	$T_{1/2}$: from $\gamma\gamma$(t) (1965De22). Others: 0.9 ns *1* (1956De57), 0.8 ns *1* (1959So16), and 0.76 ns *5* (1971Ma04).
492.666 *4*	3/2$^+$,5/2$^+$		
602.0413 *25*	3/2$^+$,5/2$^+$		
852.22 *5*	9/2$^+$		
876.725 *5*	1/2$^+$		
1005.783 *21*			
1098.260 *5*	3/2,5/2		
1146.948 *6*	3/2$^+$,5/2$^+$		
1148.996 *20*			
1298.224 *19*	3/2$^+$,5/2$^+$		
1346.48 *5*	1/2$^+$,3/2$^+$,5/2$^+$		
1427.154 *6*	3/2$^+$,5/2$^+$		
1444.052 *12*	1/2,3/2,5/2		
1500.624 *10*	3/2$^+$,5/2$^+$		
1677.455 *20*	1/2,3/2,5/2		
1757.87 *8*	1/2,3/2,5/2		
1800.61 *5*	3/2$^+$,5/2$^+$		
2040.83 *10*	3/2,5/2		
2072.63 *9*	3/2$^+$,5/2$^+$		

† From a least-squares fit to Eγ.
‡ From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-†‡	Log *ft*	Comments
(162.3 22)	2072.63	0.024 *4*	5.66 *8*	av Eβ=43.77 *64*
(194.1 22)	2040.83	0.013 *3*	6.17 *11*	av Eβ=53.10 *66*
(434.3 22)	1800.61	0.075 *8*	6.54 *5*	av Eβ=130.41 *76*
(477.0 22)	1757.87	0.034 *5*	7.02 *7*	av Eβ=145.27 *78*
(557.4 22)	1677.455	0.063 *4*	6.99 *3*	av Eβ=173.98 *80*

Continued on next page (footnotes at end of table)

^{131}Te β^- decay (25.0 min) 1975Ja03,1971Ma04 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^- †‡	Log *ft*	Comments
(734.3 *22*)	1500.624	1.197 *16*	6.124 *8*	av Eβ=240.11 *85*
(790.8 *22*)	1444.052	1.163 *17*	6.251 *8*	av Eβ=262.03 *86*
(807.7 *22*)	1427.154	1.340 *22*	6.222 *9*	av Eβ=268.65 *87*
(888.4 *22*)	1346.48	0.119 *9*	7.42 *4*	av Eβ=300.58 *88*
(936.7 *22*)	1298.224	0.48 *7*	6.90 *7*	av Eβ=319.96 *89*
(1088.0 *22*)	1146.948	10.0 *1*	5.822 *6*	av Eβ=381.89 *92*
(1136.6 *22*)	1098.260	2.58 *4*	6.481 *8*	av Eβ=402.12 *92*
(1358.2 *22*)	876.725	1.175 *16*	7.115 *7*	av Eβ=496.07 *95*
(1632.9 *22*)	602.0413	21.64 *14*	6.160 *4*	av Eβ=615.77 *97*
(1742.2 *22*)	492.666	0.82 *4*	7.692 *22*	av Eβ=664.19 *98*
(2085.2 *22*)	149.716	59.3 *5*	6.144 *5*	av Eβ=818.2 *10*

† From net γ feeding of each level.

‡ Absolute intensity per 100 decays.

$\gamma(^{131}I)$

Iγ normalization: Based on assuming the ground state β^- feeding to be zero and Σ(Iγ(1+α) to g.s.)=100.

E_γ[‡]	I_γ[#&]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[†]	α[a]	Comments
109.40 *4*	0.9 *1*	602.0413	$3/2^+,5/2^+$	492.666	$3/2^+,5/2^+$			
141.20 *4*	0.41 *7*	1146.948	$3/2^+,5/2^+$	1005.783				
149.716 *5*	1000	149.716	$5/2^+$	0.0	$7/2^+$	M1	0.241	α(K)=0.207 *3*; α(L)=0.0269 *4*; α(M)=0.00543 *8*; α(N+..)=0.001228 *18* α(N)=0.001099 *16*; α(O)=0.0001287 *18*
151.1 *1*	2.5 *9*	1298.224	$3/2^+,5/2^+$	1146.948	$3/2^+,5/2^+$			
221.57 *5*	0.48 *7*	1098.260	3/2,5/2	876.725	$1/2^+$			
^{x}267.5 *3*	0.06 *5*							
274.68[b] *15*	<0.1	876.725	$1/2^+$	602.0413	$3/2^+,5/2^+$			
278.17 *2*	1.43 *7*	1427.154	$3/2^+,5/2^+$	1148.996				
280.17 *12*	0.25 *7*	1427.154	$3/2^+,5/2^+$	1146.948	$3/2^+,5/2^+$			
294.75[b] *15*	<0.07	1146.948	$3/2^+,5/2^+$	852.22	$9/2^+$			
296.8 *3*	0.10 *7*	1148.996		852.22	$9/2^+$			E_γ: taken from 30h-decay data by evaluators. I_γ: sum of intensities of transition from 1149 and 1444 levels is 0.72 *7*.
297.09 *5*	0.62 *7*	1444.052	1/2,3/2,5/2	1146.948	$3/2^+,5/2^+$			
299.94 *6*	0.57 *7*	1800.61	$3/2^+,5/2^+$	1500.624	$3/2^+,5/2^+$			
342.945 *4*	10.2 *1*	492.666	$3/2^+,5/2^+$	149.716	$5/2^+$			
351.48 *7*	0.34 *6*	1500.624	$3/2^+,5/2^+$	1148.996				
353.58 *9*	0.28 *6*	1500.624	$3/2^+,5/2^+$	1146.948	$3/2^+,5/2^+$			
384.059 *3*	13.0 *1*	876.725	$1/2^+$	492.666	$3/2^+,5/2^+$	[M1,E2]	0.0193 *7*	α(K)=0.0164 *9*; α(L)=0.00228 *10*; α(M)=0.00046 *3*; α(N+..)=0.00011 *1*
402.36 *14*	0.10 *5*	1500.624	$3/2^+,5/2^+$	1098.260	3/2,5/2			
403.3 *10*	0.10 *5*	1005.783		602.0413	$3/2^+,5/2^+$			
421.32 *7*	0.61 *12*	1427.154	$3/2^+,5/2^+$	1005.783				
438.3 *2*	0.10 *5*	1444.052	1/2,3/2,5/2	1005.783				
452.323 *2*	264.5 *7*	602.0413	$3/2^+,5/2^+$	149.716	$5/2^+$	M1,E2	0.0123 *9*	α(K)=0.0105 *9*; α(L)=0.001416 *22*; α(M)=0.000286 *4*; α(N+..)=6.41×10^{-5} *12* α(N)=5.75×10^{-5} *10*; α(O)=6.6×10^{-6} *3*
469.7 *1*	0.22 *8*	1346.48	$1/2^+,3/2^+,5/2^+$	876.725	$1/2^+$			
492.66 *1*	70.2 *3*	492.666	$3/2^+,5/2^+$	0.0	$7/2^+$	[M1,E2]	0.0098 *9*	α(K)=0.0084 *9*; α(L)=0.00112 *4*; α(M)=0.000225 *7*; α(N+..)=5.06×10^{-5} *19* α(N)=4.54×10^{-5} *16*; α(O)=5.2×10^{-6} *3*
494.85 *5*	1.1 *1*	1500.624	$3/2^+,5/2^+$	1005.783				
496.23 *8*	0.5 *1*	1098.260	3/2,5/2	602.0413	$3/2^+,5/2^+$			
544.88 *1*	6.2 *2*	1146.948	$3/2^+,5/2^+$	602.0413	$3/2^+,5/2^+$			
550.4 *1*	0.4 *1*	1427.154	$3/2^+,5/2^+$	876.725	$1/2^+$			
567.33 *4*	1.49 *9*	1444.052	1/2,3/2,5/2	876.725	$1/2^+$			
574.9 *1*	0.45 *7*	1427.154	$3/2^+,5/2^+$	852.22	$9/2^+$			

$\gamma(^{131}I)$ (continued)

E_γ[‡]	I_γ[#&]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[†]	α[a]	Comments
602.039 *3*	60.9 *3*	602.0413	3/2+,5/2+	0.0	7/2+			
605.55 *2*	1.7 *1*	1098.260	3/2,5/2	492.666	3/2+,5/2+			
654.26 *1*	22.2 *2*	1146.948	3/2+,5/2+	492.666	3/2+,5/2+			
696.19 *2*	2.6 *2*	1298.224	3/2+,5/2+	602.0413	3/2+,5/2+			
702.7 *3*	0.11 *8*	1800.61	3/2+,5/2+	1098.260	3/2,5/2			
727.00 *2*	6.8 *1*	876.725	1/2+	149.716	5/2+			
744.4 *3*	0.11 *6*	1346.48	1/2+,3/2+,5/2+	602.0413	3/2+,5/2+			
805.57 *20*	0.20 *8*	1298.224	3/2+,5/2+	492.666	3/2+,5/2+			
825.0 *2*	0.4 *1*	1427.154	3/2+,5/2+	602.0413	3/2+,5/2+			
841.99 *2*	2.9 *1*	1444.052	1/2,3/2,5/2	602.0413	3/2+,5/2+			
852.21 *6*	0.64 *7*	852.22	9/2+	0.0	7/2+	M1,E2	0.0025 *4*	α(K)=0.0022 *3*; α(L)=0.00027 *3*; α(M)=5.5×10^{-5} *6*; α(N+..)=1.25×10^{-5} *14* α(N)=1.12×10^{-5} *13*; α(O)=1.31×10^{-6} *16*
853.83 *5*	1.40 *7*	1346.48	1/2+,3/2+,5/2+	492.666	3/2+,5/2+			
856.08 *3*	1.9 *1*	1005.783		149.716	5/2+			
881.15 *9*	0.37 *6*	1757.87	1/2,3/2,5/2	876.725	1/2+			
898.54 *3*	2.0 *1*	1500.624	3/2+,5/2+	602.0413	3/2+,5/2+			
934.483 *5*	12.7 *2*	1427.154	3/2+,5/2+	492.666	3/2+,5/2+			
948.542 *4*	32.8 *4*	1098.260	3/2,5/2	149.716	5/2+			
951.39 *2*	4.8 *1*	1444.052	1/2,3/2,5/2	492.666	3/2+,5/2+			
997.25 *1*	48.5 *2*	1146.948	3/2+,5/2+	149.716	5/2+			
999.26 *15*	0.4 *1*	1148.996		149.716	5/2+			
1005.76 *15*	0.2 *1*	1005.783		0.0	7/2+			
1007.96 *1*	11.6 *1*	1500.624	3/2+,5/2+	492.666	3/2+,5/2+			
1035.5 *5*	0.04 *3*	2040.83	3/2,5/2	1005.783				
1066.8 *3*	0.09 *5*	2072.63	3/2+,5/2+	1005.783				
1098.25 *2*	2.5 *1*	1098.260	3/2,5/2	0.0	7/2+			
1146.96 *1*	72.0 *4*	1146.948	3/2+,5/2+	0.0	7/2+			
1148.51 *6*	1.6 *1*	1298.224	3/2+,5/2+	149.716	5/2+			
1148.9 *10*	0.9 *1*	1148.996		0.0	7/2+			
1155.8 *2*	0.06 *3*	1757.87	1/2,3/2,5/2	602.0413	3/2+,5/2+			
1184.7 *2*	0.08 *3*	1677.455	1/2,3/2,5/2	492.666	3/2+,5/2+			
1198.3 *2*	0.08 *2*	1800.61	3/2+,5/2+	602.0413	3/2+,5/2+			
1265.2 *2*	0.07 *2*	1757.87	1/2,3/2,5/2	492.666	3/2+,5/2+			
1277.44 *1*	1.71 *7*	1427.154	3/2+,5/2+	149.716	5/2+			
1294.34 *2*	7.0 *1*	1444.052	1/2,3/2,5/2	149.716	5/2+			
1297.98 *16*	0.07 *3*	1298.224	3/2+,5/2+	0.0	7/2+			
1308.1 *2*	0.10 *1*	1800.61	3/2+,5/2+	492.666	3/2+,5/2+			
1350.91 *4*	0.88 *5*	1500.624	3/2+,5/2+	149.716	5/2+			
1427.14 *2*	1.53 *5*	1427.154	3/2+,5/2+	0.0	7/2+			
1500.62 *3*	1.67 *5*	1500.624	3/2+,5/2+	0.0	7/2+			
1527.73 *2*	0.83 *4*	1677.455	1/2,3/2,5/2	149.716	5/2+			
1548.0 *5*	0.013 *7*	2040.83	3/2,5/2	492.666	3/2+,5/2+			

$\gamma(^{131}I)$ (continued)

E_γ[‡]	I_γ[#&]	E_i(level)	J^π_i	E_f	J^π_f	Comments
1579.94 *9*	0.12 *1*	2072.63	3/2$^+$,5/2$^+$	492.666	3/2$^+$,5/2$^+$	
1650.97 *9*	0.18 *1*	1800.61	3/2$^+$,5/2$^+$	149.716	5/2$^+$	
[x]1765.2 *5*	<0.09[@]					
1800.68 *20*	0.05 *1*	1800.61	3/2$^+$,5/2$^+$	0.0	7/2$^+$	
1891.1 *3*	0.04 *2*	2040.83	3/2,5/2	149.716	5/2$^+$	
1923.6[b] *2*	0.05 *1*	2072.63	3/2$^+$,5/2$^+$	149.716	5/2$^+$	E_γ: poor fit: the level-energy difference is equal to 1922.90 *9*.
[x]1973.1 *4*	0.03 *1*					
2040.8 *1*	0.10 *1*	2040.83	3/2,5/2	0.0	7/2$^+$	
2072.8 *3*	0.09 *2*	2072.63	3/2$^+$,5/2$^+$	0.0	7/2$^+$	

[†] From adopted gammas.
[‡] An uncertainty of 10 eV for calibration should be added quadratically.
[#] An uncertainty of 2% for absolute efficiency calibration should be added quadratically.
[@] Authors report 0.02 *7* which may be a misprint.
[&] For absolute intensity per 100 decays, multiply by 0.0688 *4*.
[a] 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.
[b] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

$^{131}_{53}I_{78}$-5

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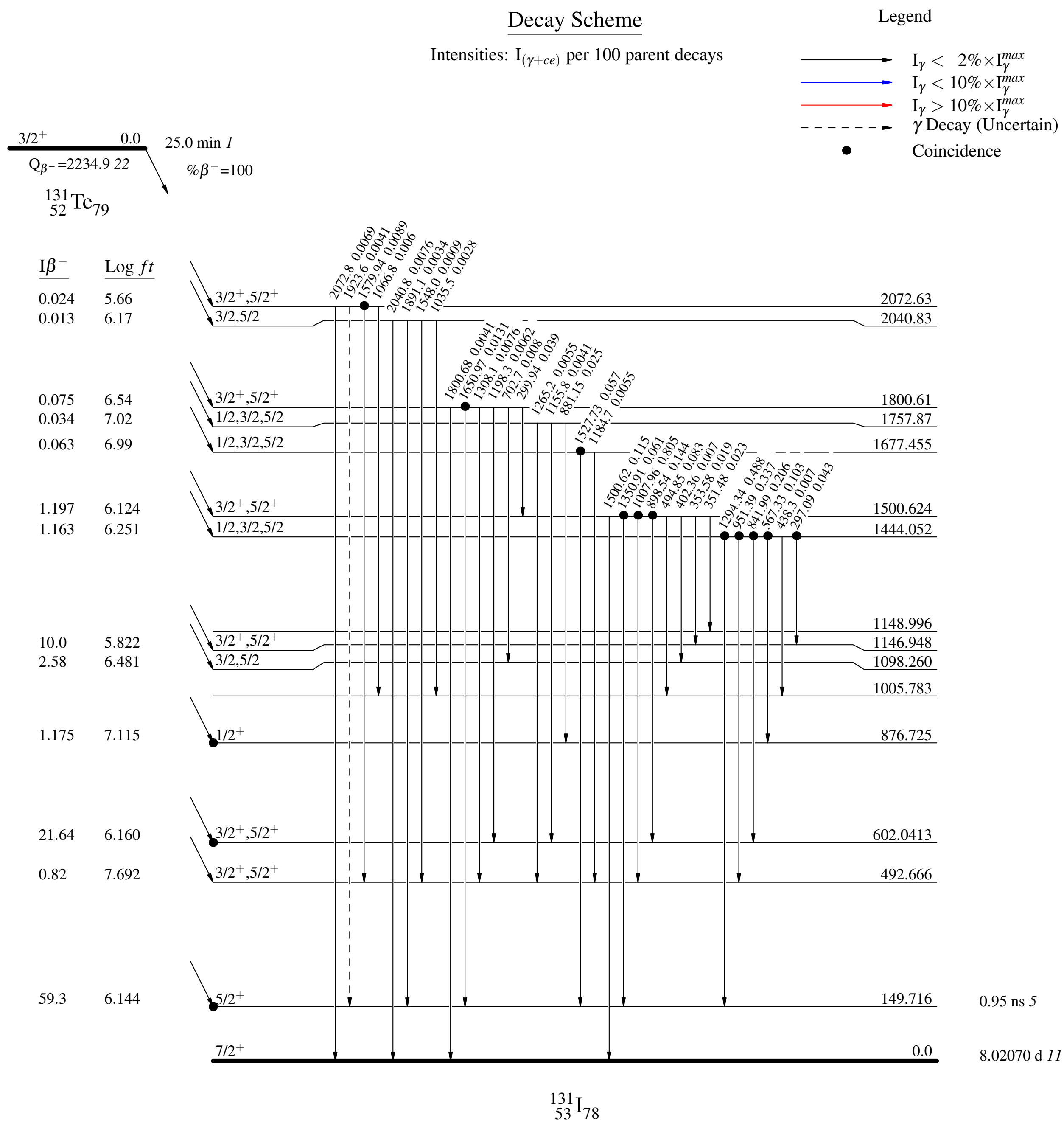


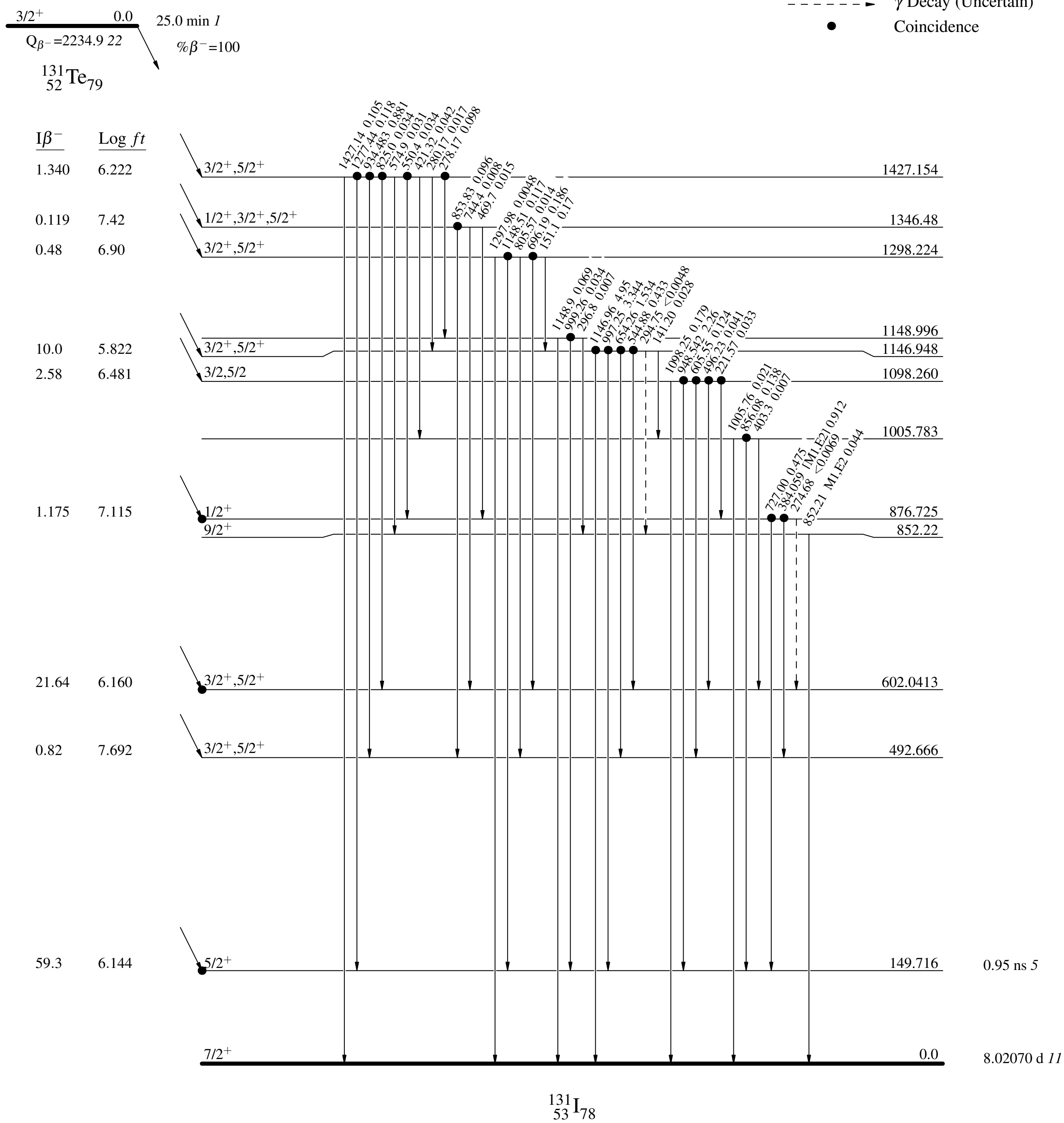
^{131}Te β^- decay (25.0 min) 1975Ja03,1971Ma04

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

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



^{131}Te β^- decay (25.0 min) 1975Ja03,1971Ma04

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays