^{142}Xe β^- decay 1974WrZY

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson, D. Symochko(a), M. Fadil(b), and J. K. Tuli	NDS 112, 1949 (2011)	1-Jun-2010

Parent: ^{142}Xe: E=0.0; $J^\pi=0^+$; $T_{1/2}$=1.23 s *2*; Q(β^-)=5.286 *11*; %β^- decay=100.0

Measured: γ, $\gamma\gamma$ (1974WrZY) semi, γ (1979Bo26) cryst, $\beta\gamma$ (1973Ad04,1978Wo15); others: 1972Ho08, 1971Kr22, 1971La04, 1969WiZX, 1968Al06.

Decay scheme is as proposed by 1974WrZY.

Measured Iβ(657 level)/Iβ(1195 level)=81/19 ($\beta\gamma$) (1972AdZP).

Delayed neutron emission probability=0.406% *34* (1975As05); other: 0.45% *8* (1969Ta04); see also 1982Ru01, 1974CrZT, 1975Iz03, 1977Sh01.

^{142}Cs Levels

E(level)‡	J^π†	$T_{1/2}$	E(level)‡	E(level)‡
0.0	0^-	1.70 s *2*	597.64 *10*	1089.55 *10*
12.33 *4*			599.95 *16*	1195.26 *7*
38.84 *4*			657.00 *4*	1312.37 *5*
70.36 *15*			718.74 *9*	1614.06 *9*
85.38 *4*			732.42 *6*	1875.61 *12*
203.40 *4*			756.92 *10*	1961.08 *14*
209.51 *4*			776.45 *11*	1984.34 *24*
242.87 *4*			886.52 *14*	2095.3? *6*
250.59 *7*			944.16 *5*	2281.4? *6*
304.23 *6*			1066.58? *16*	2499.80 *13*
418.76 *9*			1068.15 *16*	

† From Adopted Levels.

‡ From least-squares fit to Eγ's. Uncertainties of several Eγ's adjusted by evaluators to perform fit.

β^- radiations

E(decay)	E(level)
3.7×10^3 *1*	1195.26
4.2×10^3 *1*	657.00

γ(^{142}Cs)

Normalization was not calculated since g.s. feeding is unknown and there are many highly converted gamma rays with unknown multipolarity.

E_γ	I_γ	E_i(level)	E_f	J^π_f	E_γ	I_γ	E_i(level)	E_f	J^π_f
(12.9)	<1.5	12.33	0.0	0^-	(57.50@)	<0.14@†	657.00	599.95	
19.77 *13*	32 *9*	776.45	756.92		70.1 *4*	24 *10*	70.36	0.0	0^-
x20.80 *8*	135 *12*				72.86 *12*	274 *17*	85.38	12.33	
x23.95 *4*	40 *12*				94.6 *3*	15 *9*	304.23	209.51	
(33.0)	<0.3	242.87	209.51		100.8@ *6*	3.7@† *12*	304.23	203.40	
38.83& *7*	22&† *3*	38.84	0.0	0^-	100.8@ *6*	3.7@† *12*	756.92	657.00	
38.83& *40*	233&† *17*	242.87	203.40		105.61 *24*	20 *3*	1195.26	1089.55	
46.13 *20*	50 *8*	85.38	38.84		x113.36 *25*	18 *3*			
(57.50@)	<0.14@†	70.36	12.33		x117.5 *3*	23 *5*			

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^{142}Xe β^- decay 1974WrZY (continued)

$\gamma(^{142}Cs)$ (continued)

E_γ	I_γ	E_i(level)	E_f	J^π_f
119.9 *4*	25 *4*	776.45	657.00	
124.52 *25*	86 *18*	209.51	85.38	
157.485‡ *7*	174 *11*	242.87	85.38	
x161.70 *23*	33 *5*			
164.563‡ *7*	218 *13*	203.40	38.84	
167.4 *6*	17 *6*	944.16	776.45	
170.677‡ *7*	15 *4*	209.51	38.84	
191.069‡ *7*	357 *20*	203.40	12.33	
197.44 *14*	68 *8*	209.51	12.33	
203.79 *20*	276 *14*	203.40	0.0	0⁻
204.034‡ *6*	645† *29*	242.87	38.84	
211.7 *4*	39 *9*	250.59	38.84	
219.1 *3*	54 *10*	304.23	85.38	
x239.5 *4*	40 *12*			
242.8 *6*	27 *13*	242.87	0.0	0⁻
250.68 *9*	320 *22*	250.59	0.0	0⁻
264.3 *6*	16 *4*	304.23	38.84	
287.160‡ *19*	171 *9*	944.16	657.00	
291.95 *7*	175 *10*	304.23	12.33	
304.3 *4*	18 *5*	304.23	0.0	0⁻
x308.55‡ *7*	272 *15*			
312.99 *35*	31 *5*	732.42	418.76	
x330.22 *22*	23 *3*			
x334.73 *10*	123 *8*			
x337.1 *5*	21 *5*			
349.0 *3*	58 *12*	599.95	250.59	
352.74‡ *6*	127 *14*	657.00	304.23	
x373.4 *5*	9 *4*			
379.90 *8*	103 *6*	418.76	38.84	
394.20 *10*	175 *12*	597.64	203.40	
404.5 *5*	20 *5*	2499.80	2095.3?	
406.47 *10*	110 *8*	657.00	250.59	
414.52 *20*	468 *25*	657.00	242.87	
418.5 *3*	36 *6*	418.76	0.0	0⁻
x421.8 *11*	12 *6*			
428.20‡ *4*	55 *7*	732.42	304.23	
432.36 *16*	116 *12*	1089.55	657.00	
438.19 *17*	63 *7*	1195.26	756.92	
447.048‡# *21*	70 *7*	657.00	209.51	
453.15 *25*	199 *12*	657.00	203.40	
468.17& *7*	203&† *12*	718.74	250.59	
468.17& *7*	34&† *2*	1068.15	599.95	
x497.5 *3*	23 *5*			
524.44 *11*	76 *6*	1614.06	1089.55	
538.24 *7*	769 *41*	1195.26	657.00	
547.69 *21*	67 *11*	756.92	209.51	
x557.82 *19*	75 *9*			
x562.2 *4*	25 *7*			
571.26‡ *20*	1000 *52*	657.00	85.38	
x577.9 *3*	34 *7*			
582.49 *24*	44 *7*	886.52	304.23	
587.1 *4*	30 *8*	657.00	70.36	
x605.56 *8*	220 *14*			
618.06‡# *7*	721 *41*	657.00	38.84	
x627.4 *19*	8 *11*			
644.80 *7*	633 *35*	657.00	12.33	
657.05 *6*	791 *41*	657.00	0.0	0⁻
661.9 *5*	30 *8*	732.42	70.36	
x664.58 *11*	168 *12*			
x669.1 *4*	28 *6*			
672.20 *40*	74 *7*	756.92	85.38	
693.60 *10*	52 *4*	732.42	38.84	
x709.1 *3*	20 *5*			
718.2@ *4*	7.1@† *24*	718.74	0.0	0⁻
718.2@ *4*	7.1@† *24*	756.92	38.84	
x724.3 *7*	13 *6*			
x727.1 *4*	19 *6*			
x735.5 *4*	64 *14*			
737.37 *17*	126 *17*	776.45	38.84	
x741.0 *3*	33 *5*			
744.36 *24*	31 *5*	756.92	12.33	
x761.7 *4*	18 *4*			
765.66 *21*	34 *4*	1961.08	1195.26	
776.05 *20*	28 *4*	776.45	0.0	0⁻
x792.2 *3*	23 *5*			
801.24 *19*	62 *7*	886.52	85.38	
807.4 *3*	57 *9*	1875.61	1068.15	
815.88 *21*	36 *6*	886.52	70.36	
x823.52 *19*	34 *4*			
x829.7 *4*	13 *4*			
862.90 *21*	27 *4*	1066.58?	203.40	
891.40 *20*	112 *9*	1195.26	304.23	
917.6 *3*	30 *6*	1984.34	1066.58?	
x930.3 *3*	24 *5*			
943.8 *5*	29 *10*	944.16	0.0	0⁻
957.27 *21*	67 *10*	1614.06	657.00	
983.5 *5*	25 *6*	1068.15	85.38	
991.23 *30*	88 *7*	1195.26	203.40	
996.41 *21*	36 *5*	1066.58?	70.36	
x1020.2 *3*	26 *5*			
1040.4 *5*	16 *4*	1984.34	944.16	
1068.3 *3*	27 *5*	1068.15	0.0	0⁻
1089.7 *5*	13 *4*	1089.55	0.0	0⁻
1108.3 *6*	7.1 *3*	1312.37	203.40	
1156.80 *14*	66 *5*	1875.61	718.74	
x1164.72 *22*	31 *4*			
1183.5 *4*	27 *5*	1195.26	12.33	
1187.39 *18*	58 *6*	2499.80	1312.37	
1195.4 *3*	45 *7*	1195.26	0.0	0⁻
1219.23 *32*	62 *9*	1875.61	657.00	
1227.01 *7*	189 *11*	1312.37	85.38	
x1232.99 *16*	48 *5*			
x1257.96 *11*	77 *6*			
1300.09 *6*	306 *16*	1312.37	12.33	
1304.0 *3*	24 *4*	1961.08	657.00	
1312.29 *6*	214 *12*	1312.37	0.0	0⁻

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^{142}Xe β^- decay 1974WrZY (continued)

$\gamma(^{142}Cs)$ (continued)

E_γ	I_γ	E_i(level)	E_f	E_γ	I_γ	E_i(level)	E_f	J_f^π
1338.3[a] *3*	29 *6*	2095.3?	756.92	1624.8 *7*	8 *3*	1875.61	250.59	
1363.3 *3*	18 *4*	1961.08	597.64	1632.9 *4*	14 *4*	1875.61	242.87	
1376.6[a] *3*	22 *3*	2095.3?	718.74	1710.9 *3*	21 *4*	1961.08	250.59	
1384.5 *4*	17 *3*	1984.34	599.95	1718.9 *8*	9 *4*	1961.08	242.87	
1395.0[a] *3*	17 *3*	2281.4?	886.52	[x]1773.3 *7*	13 *5*			
1410.60 *10*	59 *5*	1614.06	203.40	1781.7 *4*	17 *6*	2499.80	718.74	
1431.7 *6*	12 *4*	2499.80	1068.15	1789.5 *8*	11 *4*	1875.61	85.38	
1456.5 *6*	12 *4*	1875.61	418.76	1804.6 *5*	12 *4*	1875.61	70.36	
[x]1486.9 *10*	7 *4*			1837.1 *5*	19 *5*	1875.61	38.84	
[x]1511.7 *8*	7 *3*			1844.5[a] *3*	20 *4*	2095.3?	250.59	
[x]1520.4 *5*	12 *3*			1862.2[a] *6*	15 *5*	2281.4?	418.76	
[x]1595.1 *5*	14 *4*			1875.8 *5*	17 *5*	1875.61	0.0	0^-
1602.2 *3*	19 *4*	1614.06	12.33	1902.05 *18*	76 *7*	2499.80	597.64	
[x]1607.01 *22*	35 *4*			1972.1 *15*	6 *5*	1984.34	12.33	
[x]1616.3 *6*	10 *3*			2077.7[a] *5*	17 *5*	2281.4?	203.40	

† Intensity from $\gamma\gamma$ data.
‡ From 1979Bo26.
# From 1974WrZY.
@ Multiply placed with undivided intensity.
& Multiply placed with intensity suitably divided.
[a] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{142}Xe β^- decay 1974WrZY

Decay Scheme

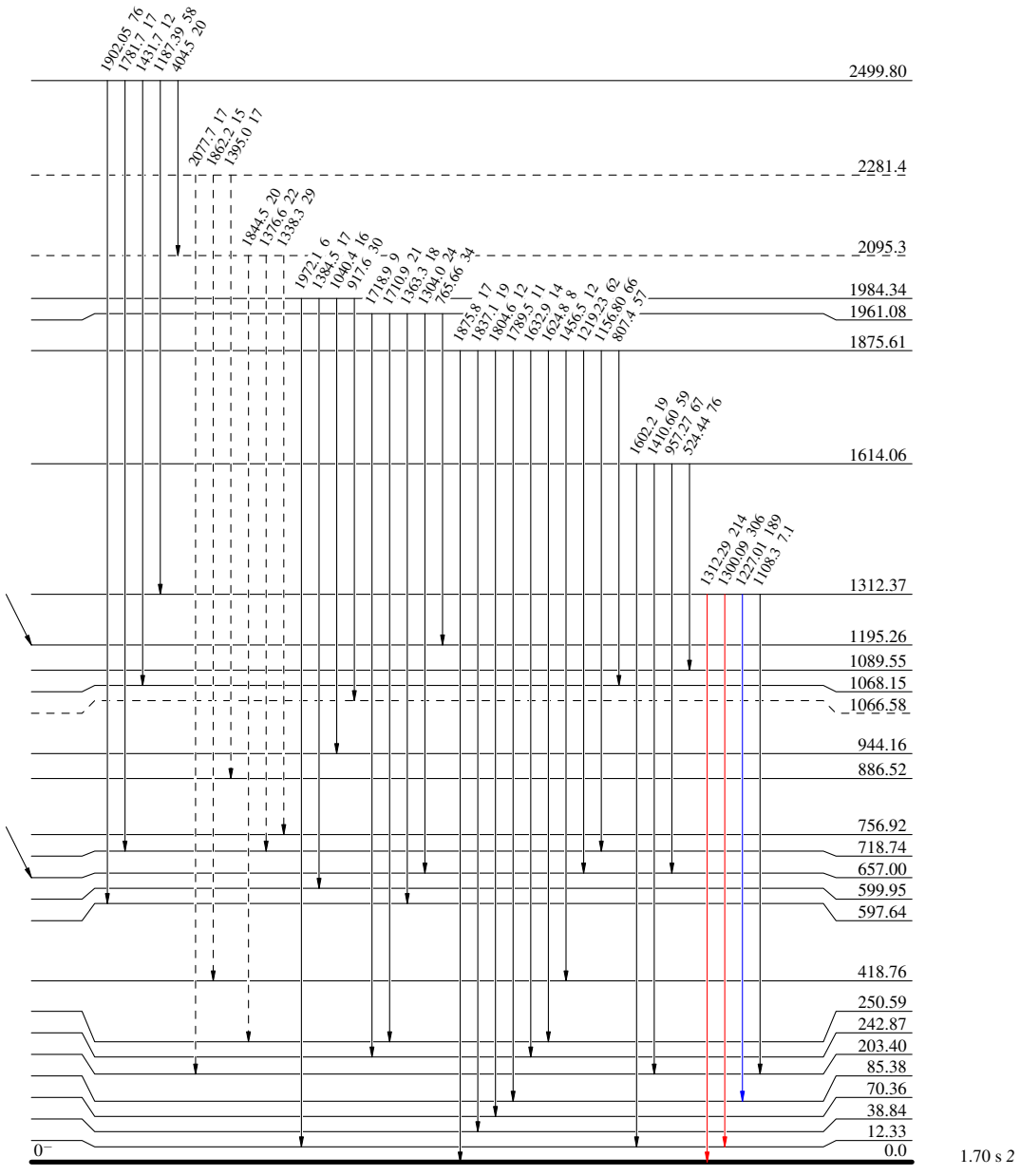
Intensities: Relative I_γ

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)

0^+ 0.0 1.23 s *2*

Q_{β^-}=5.286 *11* $\%\beta^-$=100

$^{142}_{54}Xe_{88}$

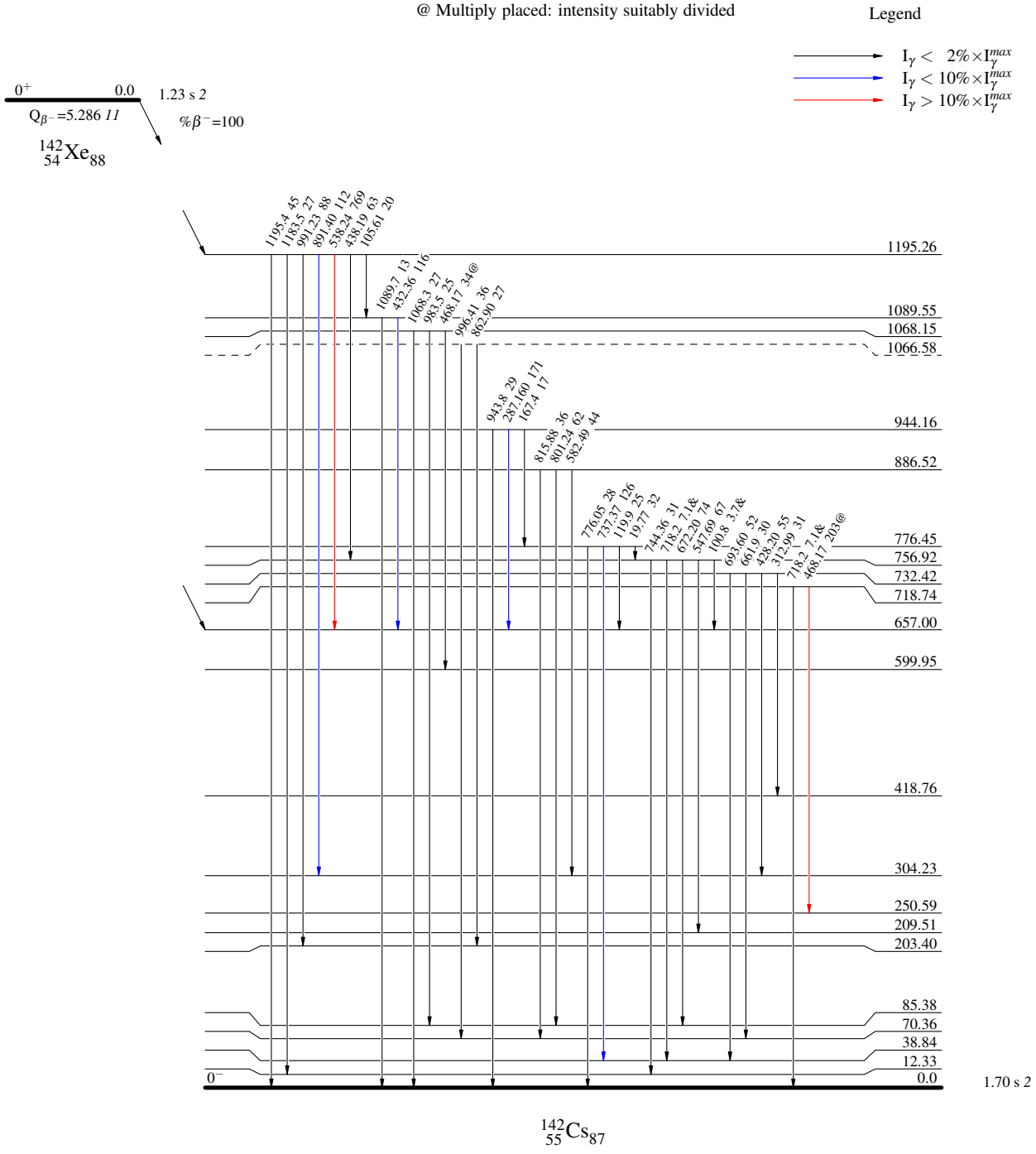


$^{142}_{55}Cs_{87}$

^{142}Xe β^- decay 1974WrZY

Decay Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



^{142}Xe β^- decay 1974WrZY

Decay Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided