

¹³⁴Pr ε decay (11 min) 1973Ar13,1978KoYT

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	A. A. Sonzogni	NDS 103, 1 (2004)	31-Jul-2004

Parent: ¹³⁴Pr: E=0.0+y; J^π=(6⁻); T_{1/2}≈11 min; Q(ε)=6320 40; %ε+%β⁺ decay=100.0

Preliminary data from 1978KoYT and 1973Ar13.

¹³⁴Ce Levels

E(level) [†]	J ^π [‡]	T _{1/2}	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]
0.0	0 ⁺	3.16 d 4	1643.02 19	4 ⁺	2245.7 6	(5)
409.22 10	2 ⁺		1812.14 20	(4) ⁺	2359.0 3	(6 ⁻)
965.41 14	2 ⁺		1863.0 6	6 ⁺	2361.2 4	6 ⁽⁺⁾
1048.88 18	4 ⁺		2027.44 20	(4) ⁺	2473.7 5	(6) ⁻
1382.99 19	3 ⁺		2050.1 3	5 ⁺	2654.7? 7	
1572.3? 4			2174.38 25	(5) ⁻		

[†] From least-squares fit to E_γ.

[‡] From Adopted Levels.

ε,β⁺ radiations

E(decay)	E(level)	Iβ ⁺ [‡]	Iε [‡]	Log f _i [†]	I(ε+β ⁺) [‡]	Comments
(3.67×10 ³ 4)	2654.7?	1.9	1.2	6.6	3.1	av Eβ=1194 19; εK=0.342 10; εL=0.0474 14; εM+=0.0133 4
(3.85×10 ³ 4)	2473.7	1.5	0.82	6.8	2.3	av Eβ=1278 19; εK=0.303 9; εL=0.0418 12; εM+=0.0118 4
(3.96×10 ³ 4)	2361.2	15	7.6	5.9	23	av Eβ=1330 19; εK=0.280 8; εL=0.0387 11; εM+=0.0109 3
(3.96×10 ³ 4)	2359.0	24	12	5.7	36	av Eβ=1331 19; εK=0.280 8; εL=0.0386 11; εM+=0.0109 3
(4.07×10 ³ 4)	2245.7	2.2	0.94	6.8	3.1	av Eβ=1383 19; εK=0.259 8; εL=0.0357 10; εM+=0.0101 3
(4.15×10 ³ 4)	2174.38	3.2	1.3	6.7	4.5	av Eβ=1417 19; εK=0.247 7; εL=0.0340 10; εM+=0.0096 3
(4.29×10 ³ 4)	2027.44	5.2	4.8	8.0 ^{1u}	10	av Eβ=1481 19; εK=0.406 9; εL=0.0569 13; εM+=0.0161 4
(4.46×10 ³ 4)	1863.0	2.1	0.66	7.0	2.8	av Eβ=1562 19; εK=0.200 6; εL=0.0276 8; εM+=0.00776 21
(4.51×10 ³ 4)	1812.14	0.57	0.43	9.1 ^{1u}	1.0	av Eβ=1579 19; εK=0.362 8; εL=0.0507 11; εM+=0.0143 4
(4.68×10 ³ 4)	1643.02	2.0	1.3	8.7 ^{1u}	3.3	av Eβ=1656 19; εK=0.331 8; εL=0.0462 11; εM+=0.0130 3
(4.75×10 ³ 4)	1572.3?	<0.81	<0.19	>7.6	<1.0	av Eβ=1698 19; εK=0.166 5; εL=0.0228 6; εM+=0.00642 17
(5.27×10 ³ 4)	1048.88	9.3	3.7	8.5 ^{1u}	13	av Eβ=1928 19; εK=0.240 6; εL=0.0334 8; εM+=0.00942 21

[†] Approximate values from I_γ and taking Y=0.

[‡] Absolute intensity per 100 decays.

γ(¹³⁴Ce)

I_γ normalization: From Σ I(γ+ce)=100 to g.s..

E _γ [†]	I _γ ^{‡#}	E _i (level)	J _i ^π	E _f	J _f ^π
169.2 5	0.4	1812.14	(4) ⁺	1643.02	4 ⁺
184.3 5	1.9 3	2359.0	(6 ⁻)	2174.38	(5) ⁻
188.9 5	1.4 2	1572.3?		1382.99	3 ⁺
^x 206.8 5	0.3 2				
215.3 2	8.4	2027.44	(4) ⁺	1812.14	(4) ⁺
293.5 5	1.2 3	2654.7?		2361.2	6 ⁽⁺⁾

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¹³⁴Pr ε decay (11 min) **1973Ar13,1978KoYT** (continued)

γ(¹³⁴Ce) (continued)

<u>E_γ[†]</u>	<u>I_γ^{‡#}</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.</u>	<u>δ</u>	<u>α[@]</u>	<u>Comments</u>
299.0 5	0.5 2	2473.7	(6) ⁻	2174.38	(5) ⁻	M1+E2		0.054 5	α(K)=0.045 6; α(L)=0.0072 5; α(M)=0.00151 13
309.1 3	3.8 5	2359.0	(6) ⁻	2050.1	5 ⁺				
331.8 6	7.4 10	2359.0	(6) ⁻	2027.44	(4) ⁺				
334.2 6	7.3 10	2361.2	6 ⁽⁺⁾	2027.44	(4) ⁺				
384.4 4	4.2	2027.44	(4) ⁺	1643.02	4 ⁺				
^x 392.0 6	0.4 1								
409.2 1	35	409.22	2 ⁺	0.0	0 ⁺	E2		0.0190	α(K)=0.0156 5; α(L)=0.00264 8; α(M)=0.00056 2
417.2 5	1.5	1382.99	3 ⁺	965.41	2 ⁺	M1+E2	6.0 +22-14	0.0181 1	α(K)=0.0150 1; α(L)=0.00249 1; α(M)=0.00053
429.4 4	2.1	1812.14	(4) ⁺	1382.99	3 ⁺				
446.7 6	0.4 2	2473.7	(6) ⁻	2027.44	(4) ⁺				
^x 480.4 6	1.3 3								
556.0 2	4.2	965.41	2 ⁺	409.22	2 ⁺	M1+E2		0.0102 20	α(K)=0.0086 18; α(L)=0.00119 16
594.1 3	1.5	1643.02	4 ⁺	1048.88	4 ⁺	M1+E2	10 +100-5	0.00693 10	α(K)=0.00579 9; α(L)=0.00086 1
639.6 2	23.4	1048.88	4 ⁺	409.22	2 ⁺				
644.4 4	1.5	2027.44	(4) ⁺	1382.99	3 ⁺				
667.2 2	2.5 5	2050.1	5 ⁺	1382.99	3 ⁺	(E2)		0.00515	α(K)=0.00432 13; α(L)=0.00062 2
677.6 2	4.6	1643.02	4 ⁺	965.41	2 ⁺	E2		0.00496	α(K)=0.00416 13; α(L)=0.00060 2
^x 685.7 3	1.0 4								
718.0 5	1.1 5	2361.2	6 ⁽⁺⁾	1643.02	4 ⁺				
763.2 2	3.8	1812.14	(4) ⁺	1048.88	4 ⁺				
786.2 5	1.0 3	2359.0	(6) ⁻	1572.3?					
^x 794.5 5	0.4 4								
814.1 5	1.1 3	1863.0	6 ⁺	1048.88	4 ⁺	E2		0.00321	α(K)=0.00271 9; α(L)=0.00038 1
846.6 5	2.4	1812.14	(4) ⁺	965.41	2 ⁺				
965.5 2	4.3	965.41	2 ⁺	0.0	0 ⁺	E2		0.00220	α(K)=0.00186 6; α(L)=0.00025 1
973.9 2	6.0	1382.99	3 ⁺	409.22	2 ⁺	M1+E2	4.0 +3-2	0.00221 1	α(K)=0.00188 1; α(L)=0.00025
978.7 2	4.9	2027.44	(4) ⁺	1048.88	4 ⁺				
^x 1000.0 5	1.0 2								
1062.1 & 5	0.4	2027.44	(4) ⁺	965.41	2 ⁺				
1125.4 2	4.2 6	2174.38	(5) ⁻	1048.88	4 ⁺	(E1)		0.00068	α(K)=0.00059 2
1196.8 5	1.2 3	2245.7	(5)	1048.88	4 ⁺				
^x 1213.3 6	0.5 1								
1233.9 6	1.0	1643.02	4 ⁺	409.22	2 ⁺				
1312.0 7	1.7 7	2361.2	6 ⁽⁺⁾	1048.88	4 ⁺				
^x ≈2233	1.5 3								
^x ≈2331	2.1 4								

[†] From 1978KoYT.

[‡] From 1973Ar13; intensities suitably divided.

For absolute intensity per 100 decays, multiply by 2.55.

@ 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.

^{134}Pr ε decay (11 min) **1973Ar13,1978KoYT** (continued)

$\gamma(^{134}\text{Ce})$ (continued)

& Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

^{134}Pr ϵ decay (11 min) 1973Ar13,1978KoYT

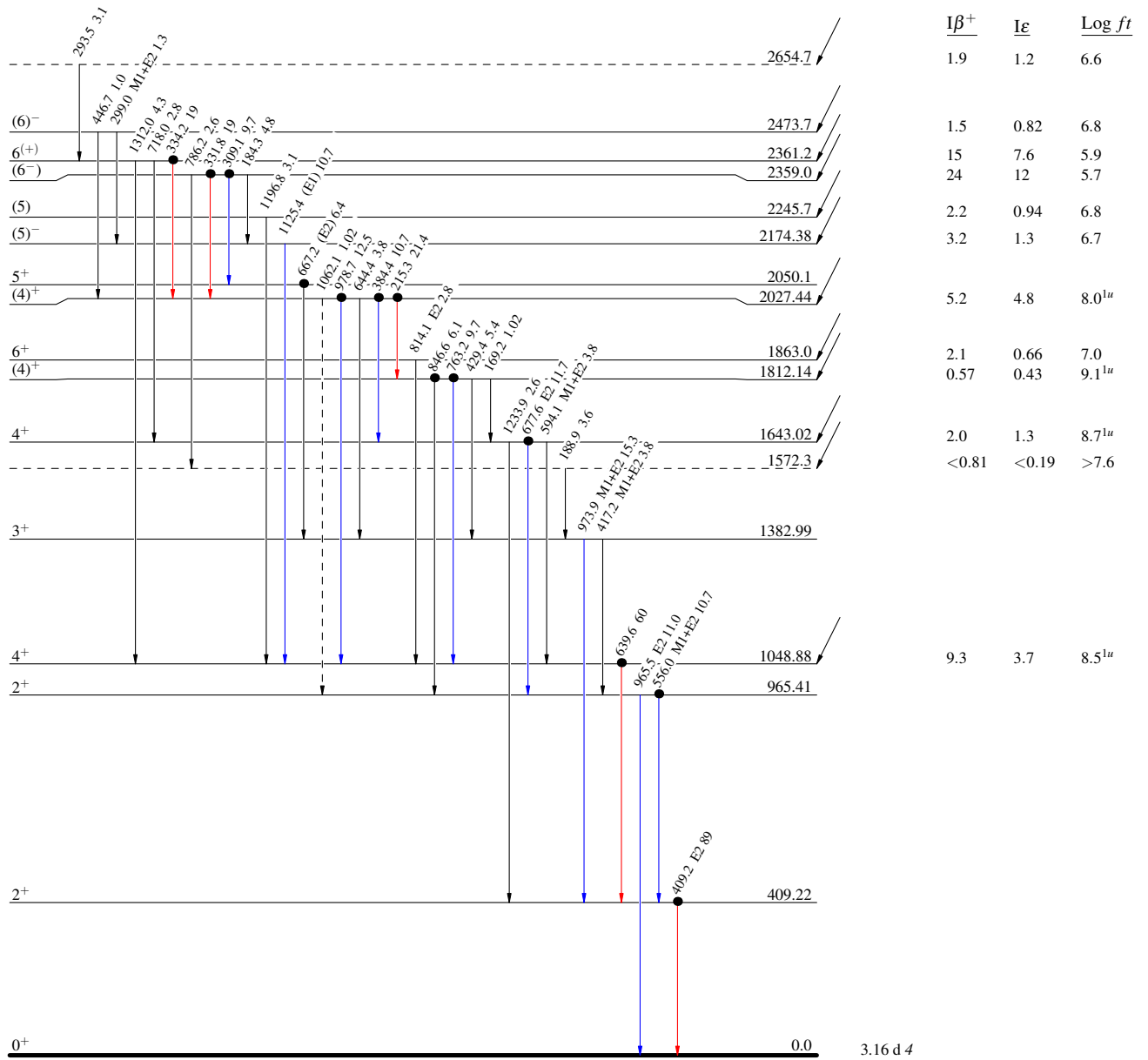
Legend

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

Decay Scheme

Intensities: I_γ per 100 parent decays

$^{134}\text{Pr}_{75}$ $^{(6^-)}_{0.0+y} \approx 11 \text{ min}$
 $Q_\epsilon = 6320.40$
 $\% \epsilon + \% \beta^+ = 100$



$^{134}_{58}\text{Ce}_{76}$

3.16 d 4