^{249}Cf α decay 2015Ah03,1982Ah04,1997Ar31

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 189,1 (2023)	14-Feb-2023

Parent: ^{249}Cf: E=0.0; J$^{\pi}$=9/2^{-}; $T_{1/2}$=351 y *2*; Q(α)=6293.3 *5*; %α decay=100
^{249}Cf-J$^{\pi}$,$T_{1/2}$: From Adopted Levels in ^{249}Cf (2011Ab07).
^{249}Cf-Q(α): From 2021Wa16.

2015Ah03: α spectra from the decay ^{249}Cf were measured using the Argonne double-focusing magnetic spectrometer in the early 1970s. Precise energies of α groups in the decay of ^{249}Cf were determined with respect to the known energy of ^{250}Cf by 2015Ah03. Measured Eα, Iα, E(ce), I(ce), Eγ, Iγ, $\alpha\gamma$-coin, α(ce)-coin, $\gamma\gamma$-coin using the magnetic spectrometer, passivated implanted planar silicon (PIPS) detector (FWHM=9.0 keV for α and 2.3 keV for the electron spectrum measurements), cooled Si(Li) spectrometer (FWHM=1.2 keV for 100 keV electron line), and the high-resolution low energy photon spectrometer (LEPS) detector. Deduced levels, J, π, conversion coefficients for K- and higher shells, multipolarity, alpha branching ratios and hindrance factors, bands, configurations, anomalous E1 conversion coefficients. Systematics of anomalous E1 conversion coefficients for E1 transitions in ^{227}Ac,^{231},^{233}Pa,^{237}Np,^{239}Pu,^{243}Am, and ^{245}Cm.

1997Ar31 (same group as 1996Ko73 and 1996Ko29): α decay was re-investigated using HPGe detectors. 43 γ lines were measured and the Eγ and Iγ were reported. Assigned 4 rotational bands and deduced a level scheme.

1996Ko73: Gammas were investigated using high resolution coaxial and planar HPGe detectors. Energy and intensities of 44 γ-rays were measured.

1996Ko29: Gammas were investigated using high resolution coaxial and planar HPGe detectors. Energy and intensities of 30 γ-rays were measured. Assigned 4 rotational bands.

1986Ah02: ^{249}Cf source was prepared at the Argonne electromagnetic isotope separator. Iα of α groups measured with high precision using the passivated ion implanted silicon detectors.

1982Ah04: ^{249}Cf source was prepared at the Argonne electromagnetic isotope separator. Absolute intensities of γ-rays and K X-rays were measured with two high-resolution Ge detectors.

1977Ba67: γ-rays and conversion electrons were measured using a Ge detector and a low background β- spectrometer. Measured Eγ, Iγ, I(ce). Determined multipolarities and defined level scheme from previous measurements.

1973Ba80: α spectrum measured with a precision magnetic α spectrograph. 23 α groups were observed for levels between 0.5-1.0 MeV. Gammas were measured with a Ge(Li) detector. Determined Eα, Iα, hindrance factor, Eγ, and Iγ. Deduced decay scheme and rotational bands.

1971Bb10: Re-determined energies of α group due to change in energy standard ^{242}Cm used in the 1969Ba57 measurement. The standard used; Eα_0(^{242}Cm)=6112.90 keV *25*.

1971Sc14: ^{249}Cf was produced by the β- decay of ^{249}Bk. Gamma ray following the α decay of ^{249}Cf was measured with Ge(Li) detectors. Measured γ, $\gamma\gamma$ coin, and K x-ray.

1969Ba59: α spectrum measured with a precision magnetic α spectrograph. Sixteen α group were observed and a level scheme was deduced.

1969Ba57: α spectrum measured with a precision magnetic α spectrograph. The standard used; Eα_0(^{242}Cm)=6111.30 keV *25*.

1966Ah02: ^{249}Cf α groups were measured by α-singles and $\alpha\gamma$- coincidence experiments using a cooled Au-Si surface-barrier detector. The α particle energies have been measured with respect to the 5805 keV of the ^{244}Cm a_0 group. The gamma rays were measured with a Ge(Li) detector. Conversion electrons were measured with a semiconductor detector. Determined Eα, Iα, hindrance factor, Eγ, Iγ, $\alpha\gamma$-coin and conversion electrons. Deduced level scheme.

Others:
1991Po17, 1990Po14, 1972Sc44, 1972Sc44, 1970Fa10, 1967Ko03, 1957St70.

^{249}Cf α decay 2015Ah03,1982Ah04,1997Ar31 (continued)

^{245}Cm Levels

E(level)[†]	Jπ[‡]	T1/2[‡]	Comments
0.0[#]	7/2+	8423 y *74*	
54.784[#] *12*	9/2+	≤0.10 ns	
121.574[#] *15*	11/2+		
199.8[#] *5*	13/2+		
252.838[@] *17*	5/2+		
295.705[@] *13*	7/2+		
350.64[@] *3*	9/2+		
388.170[&] *12*	9/2−	0.450 ns *20*	
416.59[@] *4*	11/2+		
442.892[&] *20*	11/2−		
495.8[@] *5*	13/2+		
508.84[&] *3*	13/2−		
554.7 *3*	(11/2+)		Configuration=1/2[631].
585.4[&] *5*	15/2−		
643.632[a] *19*	7/2−		
674.2[&]	17/2−		
701.831[a] *20*	9/2−		
736.3 *5*			
771.85[a] *4*	(11/2−)		
774.3 *7*			Jπ=(11/2−) reported by 1997Ar31.
785.22 *8*	(9/2+)		Configuration=7/2−[613].
841.1 *5*			
849.2 *3*			
852.58[a] *10*	(13/2−)		
890.61 *9*	(9/2+)		
900.1 *5*			
906.6 *5*			
971.379 *21*	(7/2+,9/2+)		
1054.7 *8*			
1102.3 *5*			

[†] From least-squares fit to Eγ data by the evaluator.
[‡] From Adopted Levels.
[#] Band(A): ν7/2[624].
[@] Band(B): ν5/2[622].
[&] Band(C): ν9/2[734].
[a] Band(D): ν7/2[743].

α radiations

Eα[†]	E(level)	Iα[#a]	HF[&]	Eα[†]	E(level)	Iα[#a]	HF[&]
5107.6[‡] *7*	1102.3	0.000003[@]	2524	5353.3 *10*	852.58	0.0020 *3*	149 *23*
5154.5[‡] *9*	1054.7	0.000002[@]	7787	5356.7[‡] *6*	849.2	0.0001[@]	3131
5236.2 *10*	971.379	0.0015 *3*	36 *8*	5364.6[‡] *7*	841.1	0.000074[@]	4745
5300.2[‡] *7*	906.6	0.000007[@]	19690	5419.6[‡] *5*	785.22	0.00014[@]	5493
5306.6[‡] *7*	900.1	0.00008[@]	1892	5430.3[‡] *8*	774.3	0.00002[@]	44756
5315.9[‡] *5*	890.61	0.000025[@]	6938	5432.8 *5*	771.85	0.0103 *7*	90 *7*

Continued on next page (footnotes at end of table)

^{249}Cf α decay 2015Ah03,1982Ah04,1997Ar31 (continued)

α radiations (continued)

Eα[†]	E(level)	Iα[#a]	HF[&]	Eα[†]	E(level)	Iα[#a]	HF[&]
5467.7[‡] *7*	736.3	0.00008[@]	18908	5782.4 *5*	416.59	0.35 *1*	289 *9*
5502.0 *5*	701.831	0.044 *2*	55 *3*	5810.5 *5*	388.170	82.4 *3*	1.756 *15*
5529.0 *10*	674.2	0.0022 *3*	1.60×10^3 *22*	5847.5 *5*	350.64	1.44 *3*	160 *4*
5559.3 *5*	643.632	0.115 *5*	46.2 *21*	5901.5 *5*	295.705	3.17 *5*	143 *3*
5616.4 *5*	585.4	0.022 *1*	523 *25*	5943.8 *5*	252.838	3.29 *5*	232 *4*
5647.0 *10*	554.7	0.0026 *4*	6.6×10^3 *11*	5995.8 *5*	199.8	0.040 *2*	3.60×10^4 *19*
5692.3 *5*	508.84	0.29 *1*	108 *4*	6072.8 *5*	121.574	0.34 *1*	1.064×10^4 *33*
5704.6 *10*	495.8	0.048 *3*	770 *49*	6138.5 *5*	54.784	1.32 *3*	5.94×10^3 *15*
5756.9 *5*	442.892	4.68 *7*	15.5 *3*	6192.4 *5*	0.0	2.44 *5*	6.00×10^3 *14*

[†] From 2015Ah03, except as noted. The energies were determined with respect to the energy of the ^{250}Cf α_0 group known with high precision of 6030.22 keV *20* as recommended by 1991Ry01. It is however noted that the Eα from the ^{249}Cf α decay obtained by 2015Ah03 is ≈ 2 keV lower than recommended by 1991Ry01.

[‡] Estimated by the evaluator from level energies populated by ^{249}Cf α decay and Qα=6293.3 keV *5* for α branches in 1997Ar31.

[#] Except as noted, Iα is a combination of results from measurements with the magnetic spectrometer and the passivated implanted planar silicon (PIPS) detector (FWHM=9.0 keV) by 2015Ah03. Values are in agreement with 1986Ah02 and 1966Ah02 but differ with the 1973Ba80, 1971Bb10, and 1969Ba59 values.

[@] From 1997Ar31.

[&] The nuclear radius parameter r_0(^{245}Cm)=1.4838 *14* is deduced from interpolation (or unweighted average) of radius parameters of the adjacent even-even nuclides.

[a] Absolute intensity per 100 decays.

$\gamma(^{245}Cm)$

Iγ normalization: From absolute intensities reported in 2015Ah03, 1982Ah04, and 1997Ar31.

```
--------------------------------------------------
       Measured x-rays intensities (1982Ah04)
 Energy        Intensity        x-ray

 14.95 4        6.5 4           Cm Lα      x ray
 19.46 4        7.8 5           Cm Lβ      x ray
 22.79 4        2.00 10         Cm Lγ      x ray
 104.59 2        2.15 6         Cm Kα2       x ray
 109.27 2        3.40 10        Cm Kα1       x ray
 122.29 2        0.413 18       Cm Kβ3     x ray
 123.38 2        0.78 3         Cm Kβ1     x ray
 123.97 4        0.055 5        Cm Kβ5     x ray
 126.82 4a                      Cm Kβ2     x ray
                 0.33 1a
 127.16 4a                      Cm Kβ4     x ray
 128.00 3        0.097 4        Cm KO23    x ray

 a    I(x-ray) for 126.82+127.16

Others: 1990Po14 (relative experimental intensities of
L and M x-rays.)
--------------------------------------------------
```

E_γ	I_γ[j]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[g]	δ[g]	α[i]	Comments
37.55[‡] 3	0.0147[f] 7	388.170	9/2⁻	350.64	9/2⁺				E_γ: 37.57 4 (1997Ar31), 37.54 3 (1982Ah04). I_γ: 0.0145 8 (1997Ar31), 0.0148 7 (1982Ah04).
42.87[‡] 2	0.0360[b] 15	295.705	7/2⁺	252.838	5/2⁺				E_γ: 42.86 3 (1997Ar31), 42.88 2 (1982Ah04).
54.77 2	0.083[c] 13	54.784	9/2⁺	0.0	7/2⁺	M1+E2	1.3 +4−2	219 33	α(L)=159 24; α(M)=44 7 α(N)=12.3 19; α(O)=3.0 5; α(P)=0.50 7; α(Q)=0.0040 6 E_γ: 54.77 3 (1997Ar31), 54.77 2 (1982Ah04). Mult.,δ: From E2/(M1+E2)=0.63 10 with δ= 1.3 $^{4-2}$ from L x-ray intensities in coincidence with 333- gamma ray with nuclear cascading correction made in the L x-ray spectrum (1972Sc44). I_γ: Deduced by evaluator from intensity balance at the 54.8-keV level.
54.77[‡] 2	0.0381[c] 26	442.892	11/2⁻	388.170	9/2⁻	M1+E2	0.63 4	121 8	α(L1)exp+α(L2)exp=60 4; α(L3)exp=28 2; α(M)exp=25 2; α(N)exp+α(O)exp=7.8 10 (2015Ah03) α(L)=88 5; α(M)=24.1 16 α(N)=6.7 4; α(O)=1.64 10; α(P)=0.280 17; α(Q)=0.00582 16

γ(^{245}Cm) (continued)

E_γ	I_γ[j]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[g]	δ[g]	α[i]	Comments
									E_γ: 54.77 *3* (1997Ar31), 54.77 *2* (1982Ah04). Mult.,δ: From conversion electron data measured in coincidence with α particles with energies below the 5810.5 keV (2015Ah03). Other:δ=0.69 +*16*−*15* from L x-ray intensities in coincidence with 388-keV gamma ray (1972Sc44). Note the evaluator did not include this value as the authors in 1972Sc44 were not able correct for nuclear cascading in the L x-ray spectrum. I_γ: Deduced by evaluator from intensity balance at the 442.9-keV level. Ice(L1+L2)=12.3% *9*, Ice(L3)=5.7% *4*, Ice(M)=5.1% *4*, Ice(N+O)=1.6% *2* (2015Ah03).
65.95[k‡] *2*	0.0077[kf] *7*	416.59	11/2$^+$	350.64	9/2$^+$				E_γ: 65.91 *5* (1997Ar31), 65.96 *2* (1982Ah04). I_γ: 0.0073 *7* (1997Ar31), 0.0082 *8* (1982Ah04).
65.95[k‡] *2*	0.0077[kf] *5*	508.84	13/2$^-$	442.892	11/2$^-$				E_γ: 65.91 *5* (1997Ar31), 65.96 *2* (1982Ah04). I_γ: 0.0073 *7* (1997Ar31), 0.0082 *8* (1982Ah04).
66.80[‡] *2*	0.022[f] *12*	121.574	11/2$^+$	54.784	9/2$^+$	M1+E2	0.44 +*6*−*7*	39 *4*	α(L1)exp+α(L2)exp=22 *3*; α(M)exp=7.7 *10*; α(N)exp+α(O)exp≈2.6 (2015Ah03) α(L)=28.8 *31*; α(M)=7.6 *9* α(N)=2.10 *25*; α(O)=0.52 *6*; α(P)=0.094 *10*; α(Q)=0.00357 *14* E_γ: 66.80 *4* (1997Ar31), 66.80 *2* (1982Ah04). I_γ: 0.0205 *15* (1997Ar31), 0.023 *1* (1982Ah04). Ice(L1+L2)=0.68% *8*, Ice(M)=0.24% *3*, Ice(N+O)≈0.08% (2015Ah03).
[x]76[l]									E_γ: From 1967Ko03 but its existence was considered questionable by the authors. Transition was not observed in any other measurements. 1971Sc14 could not confirm the gamma but noted that if present, its intensity should be 10 times less than the reported Iγ=0.05 normalized to I(388γ)=100 in 1967Ko03.
[x]86[l] *1*									E_γ: From 1967Ko03 but its existence was considered questionable by the authors. Transition was not observed in any other measurements. 1971Sc14 could not confirm the gamma but noted that if present, its intensity should be 50 times less than the reported Iγ=0.24 (normalized to I(388γ)=100) in 1967Ko03.
92.51[‡] *2*	0.308 *18*	388.170	9/2$^-$	295.705	7/2$^+$				E_γ: 95.51 *3* (2015Ah03), 92.51 *2* (1982Ah04). I_γ: From unweighted average of 0.290 *11* (2015Ah03) and 0.326 *10* (1982Ah04).
(97.8[d])		350.64	9/2$^+$	252.838	5/2$^+$				E_γ: The gamma was not observed. 2015Ah03 identified the L2 line from the electron spectrum with Ice(L2)=0.10% *2* (2015Ah03).

From ENSDF

γ(^{245}Cm) (continued)

E_γ	I_γ[j]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[g]	δ[g]	α[i]	Comments
121.60[‡] *4*	0.042 *6*	121.574	11/2$^+$	0.0	7/2$^+$	E2		7.60 *11*	α(L2)exp=3.0 *4*; α(L3)exp=1.9 *3* (2015Ah03) α(L)=5.49 *8*; α(M)=1.552 *22* α(N)=0.432 *6*; α(O)=0.1047 *15*; α(P)=0.01749 *25*; α(Q)=8.63×10^{-5} *12* E_γ: 121.60 *8* (1997Ar31), 121.60 *4* (1982Ah04). I_γ: From unweighted average of 0.0488 *30* (1997Ar31) and 0.036 *3* (1982Ah04). Ice(L2)=0.22% *2*, Ice(L3)=0.14% *2* (2015Ah03).
198.1[a] *3*	0.0086[a] *33*	252.838	5/2$^+$	54.784	9/2$^+$	E2		1.021 *15*	α(K)=0.1474 *21*; α(L)=0.633 *10*; α(M)=0.1774 *27* α(N)=0.0493 *8*; α(O)=0.01200 *19*; α(P)=0.002042 *31*; α(Q)=1.827×10^{-5} *27* Mult.: From Adopted Levels.
229.20[a] *8*	0.053[a] *4*	350.64	9/2$^+$	121.574	11/2$^+$				
240.90 *4*	0.213[f] *8*	295.705	7/2$^+$	54.784	9/2$^+$	M1		2.63 *4*	α(K)exp=2.10 *17*; α(L1)exp+α(L2)exp=0.43 *4* (2015Ah03) α(K)=2.064 *29*; α(L)=0.423 *6*; α(M)=0.1033 *14* α(N)=0.0284 *4*; α(O)=0.00722 *10*; α(P)=0.001421 *20*; α(Q)=0.0001015 *14* E_γ: From unweighted average of 240.95 *3* (1997Ar31) and 240.86 *2* (1982Ah04). I_γ: 0.218 *8* (1997Ar31), 0.208 *8* (1982Ah04). Ice(K)=0.44% *3*, Ice(L1+L2)=0.090% *7* (2015Ah03).
252.82[‡] *3*	2.55[f] *8*	252.838	5/2$^+$	0.0	7/2$^+$	M1+E2	0.16 *+6−4*	2.25 *5*	α(K)exp=1.70 *7*; α(L1)exp+α(L2)exp=0.35 *3*; α(M)exp=0.091 *8*; α(N)exp+α(O)exp=0.032 *4* (2015Ah03) α(K)=1.76 *4*; α(L)=0.366 *6*; α(M)=0.0895 *14* α(N)=0.0246 *4*; α(O)=0.00626 *10*; α(P)=0.001229 *20*; α(Q)=8.66×10^{-5} *21* Mult.,δ: From Adopted Levels. E_γ: 252.86 *3* (1997Ar31), 252.80 *2* (1982Ah04). I_γ: 2.63 *10* (1997Ar31), 2.50 *8* (1982Ah04). Mult.,δ: Other: M1+E2 with δ=0.40 *+13−15* (1977Ba67). Ice(K)=4.25% *12*, Ice(L1+L2)=0.90% *7*, Ice(M)=0.23% *2*, Ice(N+O)=0.08% *1* (2015Ah03).
255.47[#] *3*	0.032[#] *3*	643.632	7/2$^-$	388.170	9/2$^-$	M1(+E2)	0.19 *23*	2.17 *21*	α(K)exp=1.7 *2*; α(L1)exp+α(L2)exp=0.34 *9* (2015Ah03) α(K)=1.69 *19*; α(L)=0.354 *17*; α(M)=0.0867 *33* α(N)=0.0238 *9*; α(O)=0.00606 *24*; α(P)=0.00119 *6*; α(Q)=8.3×10^{-5} *9* Ice(K)=0.060% *6*, Ice(L1+L2)=0.012% *3* (2015Ah03). E_γ: 255.54 *7* (2015Ah03), 255.56 *8* (1997Ar31), 255.45 *3* (1982Ah04). I_γ: 0.035 *3* (2015Ah03), 0.0343 *28* (1997Ar31), 0.026 *3* (1982Ah04).

$^{245}_{96}Cm_{149}$-6

γ(^{245}Cm) (continued)

E_γ	I_γ[j]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[g]	δ[g]	α[i]	Comments
259.0[a] *3*	0.0073[a] *20*	554.7	(11/2$^+$)	295.705	7/2$^+$				
259.15[d] *7*	0.0085[e] *9*	701.831	9/2$^-$	442.892	11/2$^-$	M1		2.143 *30*	α(K)exp=1.8 *4*; α(L1)exp+α(L2)exp≈0.5 (2015Ah03) α(K)=1.684 *24*; α(L)=0.344 *5*; α(M)=0.0842 *12* α(N)=0.02311 *32*; α(O)=0.00589 *8*; α(P)=0.001158 *16*; α(Q)=8.26×10^{-5} *12* Ice(K)=0.015% *3*, Ice(L1+L2)≈ 0.004 (2015Ah03).
266.63[‡] *2*	0.707[f] *25*	388.170	9/2$^-$	121.574	11/2$^+$	E1+M2	0.076 *+7−8*	0.094 *8*	α(K)exp=0.068 *5*; α(L1)exp+α(L2)exp=0.020 *5* (2015Ah03) α(K)=0.069 *5*; α(L)=0.0183 *18*; α(M)=0.0046 *5* α(N)=0.00128 *13*; α(O)=0.000323 *34*; α(P)=6.1×10^{-5} *7*; α(Q)=3.7×10^{-6} *4* E_γ: 266.66 *3* (1997Ar31), 266.62 *2* (1982Ah04). I_γ: 0.726 *26* (1997Ar31), 0.690 *25* (1982Ah04). Ice(K)=0.045% *3*, Ice(L1+L2)=0.014% *3* (2015Ah03).
[x]267.30 *10*									From 1977Ba67. Gamma was not reported in any other measurements. Iγ(266.8γ)+Iγ(267.3γ)=1.01 *4* (1977Ba67).
295.73[‡] *2*	0.139[f] *5*	295.705	7/2$^+$	0.0	7/2$^+$	M1+E2	0.39 *+17−24*	1.32 *14*	α(K)exp=1.03 *9*; α(L1)exp+α(L2)exp=0.21 *3*; α(M)exp=0.059 *15* (2015Ah03) α(K)=1.02 *12*; α(L)=0.223 *13*; α(M)=0.0550 *28* α(N)=0.0151 *8*; α(O)=0.00384 *20*; α(P)=0.00075 *5*; α(Q)=5.0×10^{-5} *6* E_γ: 295.74 *3* (1997Ar31), 295.72 *2* (1982Ah04). I_γ: 0.142 *5* (1997Ar31), 0.136 *6* (1982Ah04). Ice(K)=0.14% *1*, Ice(L1+L2)=0.028% *3*, Ice(M)=0.008% *2* (2015Ah03).
314.0[d] *3*	0.0029[e] *6*	701.831	9/2$^-$	388.170	9/2$^-$				
321.25[‡] *3*	0.065[f] *3*	442.892	11/2$^-$	121.574	11/2$^+$	[E1]		0.0376 *5*	α(K)=0.0296 *4*; α(L)=0.00601 *8*; α(M)=0.001464 *20* α(N)=0.000399 *6*; α(O)=0.0001000 *14*; α(P)=1.872×10^{-5} *26*; α(Q)=1.066×10^{-6} *15* E_γ: 321.26 *3* (1997Ar31), 321.24 *3* (1982Ah04). I_γ: 0.0680 *33* (1997Ar31), 0.063 *3* (1982Ah04).
333.37[‡] *2*	14.8[f] *4*	388.170	9/2$^-$	54.784	9/2$^+$	(E1)[h]		0.0348 *5*	α(K)exp=0.050 *4*; α(L1)exp+α(L2)exp=0.010 *1*; α(L3)exp=0.00064 *7* (2015Ah03) α(M)exp=0.0031 *3*; α(N)exp+α(O)exp=0.00100 *9* (2015Ah03) α(K)=0.0274 *4*; α(L)=0.00553 *8*; α(M)=0.001347 *19* α(N)=0.000367 *5*; α(O)=9.20×10^{-5} *13*; α(P)=1.726×10^{-5} *24*; α(Q)=9.91×10^{-7} *14* E_γ: 333.37 *3* (1997Ar31), 333.37 *2* (1982Ah04).

γ(^{245}Cm) (continued)

E_γ	I_γ[j]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[g]	α[i]	Comments
								I_γ: 15.3 *6* (1997Ar31), 14.6 *4* (1982Ah04). Mult.,δ: Other: E1+M2 with δ=0.084 *+14−18* (1977Ba67). Ice(K)=0.73% *5*, Ice(L1+L2)=0.15% *1*, Ice(L3)=0.009% *1*, Ice(M)=0.045% *4*, Ice(N+O)=0.014% *1* (2015Ah03).
347.8[d] *3*	0.0035[e] *5*	643.632	7/2⁻	295.705	7/2⁺			
356[a] *1*	≤0.014[a]	771.85	(11/2⁻)	416.59	11/2⁺			
[x]358.80 *5*	<0.01							E_γ: From 1977Ba67 with Iγ=0.0279 *16*. Others: 1967Ko03 with Iγ=0.08 1971Sc14 with Iγ≤0.01.
[x]365.2 *10*								E_γ: From 1967Ko03 with Iγ=0.08. Iγ≤0.01 was given in 1971Sc14.
388.15[‡] *2*	66.0[f] *20*	388.170	9/2⁻	0.0	7/2⁺	(E1)[h]	0.0254 *4*	α(K)exp=0.042 *2*; α(L1)exp+α(L2)exp=0.0097 *8*; α(L3)exp=0.000360 *45* (2015Ah03) α(M)exp=0.0026 *3*; α(N)exp+α(O)exp=0.00100 *13* (2015Ah03) α(K)=0.02012 *28*; α(L)=0.00396 *6*; α(M)=0.000962 *13* α(N)=0.000263 *4*; α(O)=6.59×10^{-5} *9*; α(P)=1.244×10^{-5} *17*; α(Q)=7.38×10^{-7} *10* E_γ: 388.13 *3* (1997Ar31), 388.16 *2* (1982Ah04). I_γ: 66.0 *20* (1997Ar31), 66.0 *20* (1982Ah04). Mult.,δ: Other: E1+M2 with δ=0.13 *+1−2* (1977Ba67). Ice(K)=2.95% *10*, Ice(L1+L2)=0.64% *5*, Ice(L3)=0.025% *3*, Ice(M)=0.17% *2*, Ice(N+O)=0.065% *8* (2015Ah03).
390.84[‡] *5*	0.0166[&] *17*	643.632	7/2⁻	252.838	5/2⁺			E_γ: 390.8 *1* (2015Ah03), 390.8 *3* (1997Ar31), 390.85 *5* (1982Ah04). I_γ: 0.016 *2* (2015Ah03), 0.0170 *17* (1982Ah04).
405.93[@] *6*	0.0048[@] *3*	701.831	9/2⁻	295.705	7/2⁺			E_γ: 405.8 *2* (2015Ah03), 405.94 *6* (1997Ar31). I_γ: 0.051 *5* (2015Ah03), 0.00469 *30* (1997Ar31).
421.0[a] *3*	0.00073[a] *7*	771.85	(11/2⁻)	350.64	9/2⁺			
483.5[ka] *5*	<0.0001[ka]	736.3		252.838	5/2⁺			
483.5[ka] *5*	<0.0001[ka]	900.1		416.59	11/2⁺			
580.27[a] *9*	0.00017[a] *2*	701.831	9/2⁻	121.574	11/2⁺			
588.79[a] *4*	0.00053[a] *4*	643.632	7/2⁻	54.784	9/2⁺			
596.1[a] *3*	0.000086[a] *13*	849.2		252.838	5/2⁺			
643.64[a] *3*	0.0071[a] *4*	643.632	7/2⁻	0.0	7/2⁺			
647.04[a] *3*	0.00158[a] *8*	701.831	9/2⁻	54.784	9/2⁺			
650.30[a] *5*	0.00022[a] *2*	771.85	(11/2⁻)	121.574	11/2⁺			
652.7[a] *7*	0.00020[a] *7*	774.3		121.574	11/2⁺			
663.65[a] *8*	0.00012[a] *1*	785.22	(9/2⁺)	121.574	11/2⁺			
[x]670[†]	≈0.001[†]							
[x]680[†]	0.007[†]							
701.84[a] *3*	0.00099[a] *9*	701.831	9/2⁻	0.0	7/2⁺			
[x]708.3[a] *5*	≤0.0002[a]							

$^{245}_{96}Cm_{149}$-8

γ(^{245}Cm) (continued)

E_γ	I_γ[j]	E_i(level)	J_i^π	E_f	J_f^π
717.04[a] *5*	0.00031[a] *2*	771.85	(11/2$^-$)	54.784	9/2$^+$
[x]718.5 *3*	0.0128 *12*				
718.50[a] *3*	0.00058[a] *4*	971.379	(7/2$^+$,9/2$^+$)	252.838	5/2$^+$
731.0[a] *1*	6.6×10^{-5}[a] *7*	852.58	(13/2$^-$)	121.574	11/2$^+$
[x]≈740[†]	0.01[†]				
[x]≈760[†]	0.03[†]				
[x]≈770[†]	≈0.04[†]				
798.0[a] *5*	1.3×10^{-5}[a] *2*	852.58	(13/2$^-$)	54.784	9/2$^+$
841.1[a] *5*	0.000007[a] *1*	841.1		0.0	7/2$^+$
849.9[ka] *5*	0.000012[ka] *2*	849.2		0.0	7/2$^+$
849.9[ka] *5*	0.000012[ka] *2*	971.379	(7/2$^+$,9/2$^+$)	121.574	11/2$^+$
890.61[a] *9*	2.3×10^{-5}[a] *2*	890.61	(9/2$^+$)	0.0	7/2$^+$
906.6[a] *5*	7.3×10^{-6}[a] *13*	906.6		0.0	7/2$^+$
916.63[a] *3*	0.00020[a] *1*	971.379	(7/2$^+$,9/2$^+$)	54.784	9/2$^+$
971.38[a] *4*	0.00119[a] *8*	971.379	(7/2$^+$,9/2$^+$)	0.0	7/2$^+$
[x]≈990[†]	≈0.0009[†]				
1054.7[a] *8*	2.0×10^{-6}[a] *13*	1054.7		0.0	7/2$^+$
1102.3[a] *5*	3.3×10^{-6}[a] *13*	1102.3		0.0	7/2$^+$

[†] Observed by 1973Ba80 only. These gamma rays are not listed in later work of same authors (1977Ba67).
[‡] Weighted average of Eγ data from 1982Ah04 and 1997Ar31. Eγ data given in comments.
[#] Weighted average of Eγ data from 1982Ah04, 1997Ar31, and 2015Ah03. Eγ data given in comments.
[@] Weighted average of Eγ data from 2015Ah03 and 1997Ar31. Eγ data given in comments.
[&] Weighted average of Iγ data from 1982Ah04 and 2015Ah03.
[a] From 1997Ar31. The relative intensities provided by the authors (1997Ar31) in Table 1, have been multiplied by 0.660 *20* to obtain the absolute intensities.
[b] From 1982Ah04.
[c] Deduced by evaluator from transition intensity balance. See comment for details. Other: 0.206 *6* (1982Ah04), 0.185 *9* (1997Ar31); the evaluator considers these values are for multiple placed gammas and the intensities given are not divided.
[d] From 2015Ah03.
[e] From 2015Ah03.
[f] Weighted average of Iγ data from 1982Ah04 and 1997Ar31.
[g] From conversion electron data in 2015Ah03, except as noted. These values are given in the Adopted Gammas.
[h] Measured L3 conversion coefficient is consistent with theoretical conversion coefficient for pure E1, but K, L1+L2, M and N conversion coefficients are about two times the theoretical conversion coefficients for pure E1, which indicates anomalous nature of E1 conversion coefficient for this transition.
[i] Additional information 1.

$^{245}_{96}$Cm$_{149}$-9

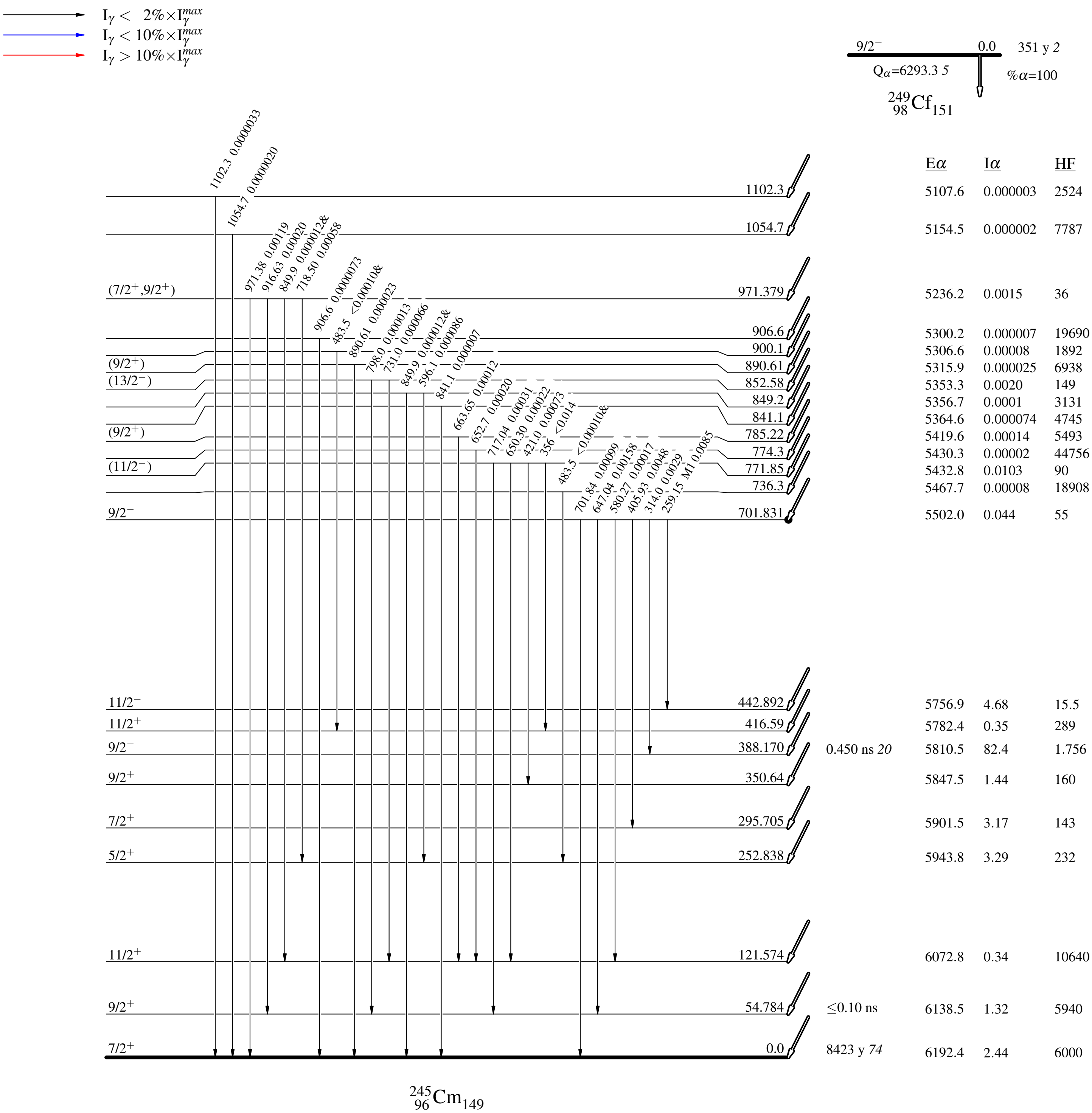
γ(^{245}Cm) (continued)

[j] Absolute intensity per 100 decays.
[k] Multiply placed with undivided intensity.
[l] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{249}Cf α decay 2015Ah03,1982Ah04,1997Ar31

Decay Scheme

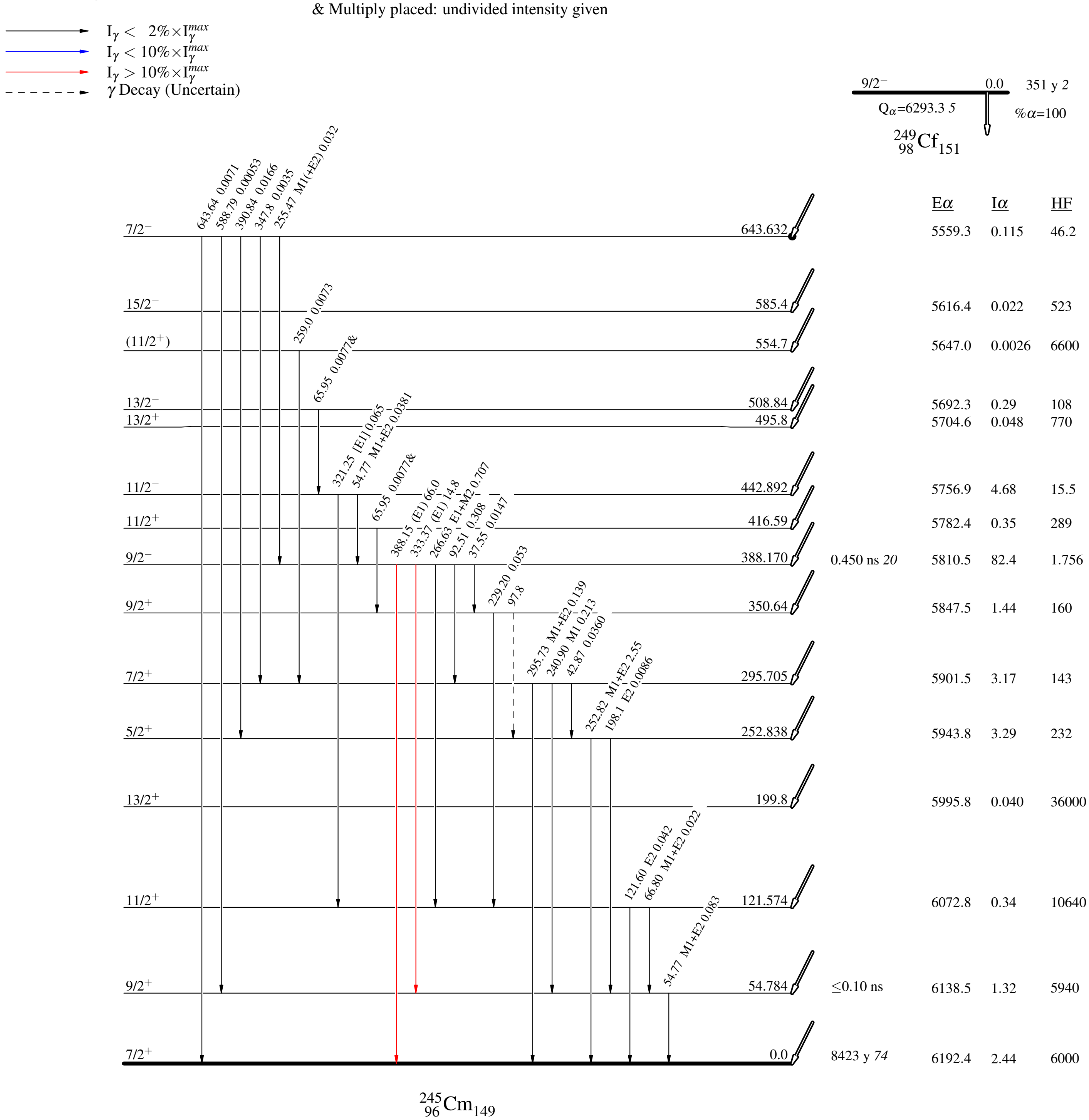
Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given

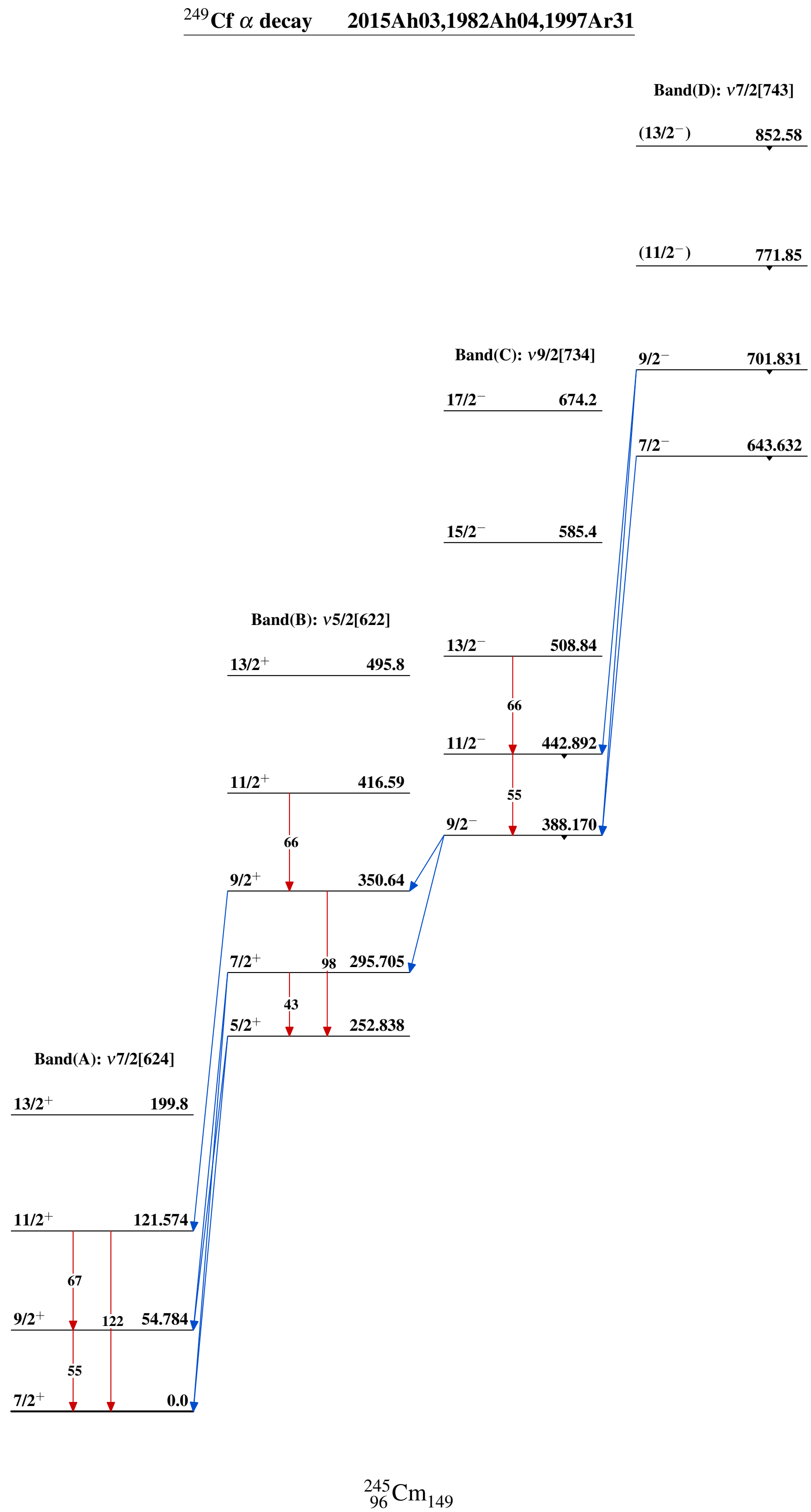


^{249}Cf α decay 2015Ah03,1982Ah04,1997Ar31

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given





^{249}Cf α decay 2015Ah03,1982Ah04,1997Ar31
Band(D): ν7/2[743]
(13/2⁻) 852.58
(11/2⁻) 771.85
9/2⁻ 701.831
7/2⁻ 643.632
Band(C): ν9/2[734]
17/2⁻ 674.2
15/2⁻ 585.4
13/2⁻ 508.84
11/2⁻ 442.892
9/2⁻ 388.170
Band(B): ν5/2[622]
13/2+ 495.8
11/2+ 416.59
9/2+ 350.64
7/2+ 295.705
5/2+ 252.838
Band(A): ν7/2[624]
13/2+ 199.8
11/2+ 121.574
9/2+ 54.784
7/2+ 0.0
66
55
66
98
43
67
122
55
$^{245}_{96}Cm_{149}$