

$^{252}\text{Cf}, ^{242}\text{Pu}$ SF decay **1995Zh34**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	A. A. Sonzogni	NDS 93, 599 (2001)	1-Dec-2000

Parent: ^{252}Cf : $E=0.0$; $J^\pi=0^+$; $T_{1/2}=2.645$ y 8; %SF decay=3.09

Parent ^{242}Pu : $E=0.0$; $J^\pi=0^+$; $T_{1/2}=3.733\times 10^5$ y 12; %SF decay= 5.5×10^{-4} .

1995Zh34, 1997Ha64: mixed ^{252}Cf and ^{242}Pu source. Measured E_γ , $\gamma(\theta)$, $\gamma\gamma$ coin using an array of 20 Compton-suppressed Ge detectors and Gammasphere array of 36 Ge detectors.

1989MoZQ: $^{232}\text{Th}(^{18}\text{O},\text{F})$, $E=120$ MeV; $^{238}\text{U}(^7\text{Li},\text{F})$, $E=36$ MeV; measured $\gamma(\theta)$, $\gamma\gamma$, using ESSA30 and TESSA3 Ge arrays.

Proposed level scheme similar to that of **1995Zh34**, however, there are significant differences in E_γ 's. The refereed publication data from **1995Zh34** are preferred here, while the **1989MoZQ** are given as comments.

 ^{144}Ce Levels

$E(\text{level})^\dagger$	$J^\pi^\ddagger$
0 [#]	0 ⁺
397.20 [#] 10	2 ⁺
938.20 [#] 13	4 ⁺
1242.00 [@] 13	3 ⁻
1523.10 [@] 17	5 ⁻
1646.80 [#] 17	(6 ⁺)
1994.34 [@] 19	(7 ⁻)
2368.77 [#] 19	(8 ⁺)
2636.74 [@] 21	(9 ⁻)
3335.74 [@] 23	(11 ⁻)

[†] From least-squares fit to E_γ 's, assuming $\Delta(E_\gamma)=0.1$ keV.

[‡] On the basis of decay and branching ratio systematics.

[#] Band(A): Ground-state band.

[@] Band(B): Octupole band.

 $\gamma(^{144}\text{Ce})$

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
267.9 [‡]		2636.74	(9 ⁻)	2368.77	(8 ⁺)	
303.8	1.5	1242.00	3 ⁻	938.20	4 ⁺	
347.6	0.33	1994.34	(7 ⁻)	1646.80	(6 ⁺)	E_γ : 347.2 (1989MoZQ).
374.5	0.18	2368.77	(8 ⁺)	1994.34	(7 ⁻)	
397.2	100	397.20	2 ⁺	0	0 ⁺	E_γ : 397.6 (1989MoZQ).
471.1 [‡]		1994.34	(7 ⁻)	1523.10	5 ⁻	E_γ : 471.0 (1989MoZQ).
541.0	41	938.20	4 ⁺	397.20	2 ⁺	E_γ : 541.4 (1989MoZQ).
584.9	13	1523.10	5 ⁻	938.20	4 ⁺	E_γ : 585.2 (1989MoZQ).
642.4	0.15	2636.74	(9 ⁻)	1994.34	(7 ⁻)	E_γ : 643.5 (1989MoZQ).
699.0	0.09	3335.74	(11 ⁻)	2636.74	(9 ⁻)	E_γ : 609.5 (1989MoZQ).
708.6	1.1	1646.80	(6 ⁺)	938.20	4 ⁺	E_γ : 709.3 (1989MoZQ).
721.9	0.12	2368.77	(8 ⁺)	1646.80	(6 ⁺)	
844.8	21	1242.00	3 ⁻	397.20	2 ⁺	E_γ : 844.5 (1989MoZQ).

[†] From **1995Zh34**.

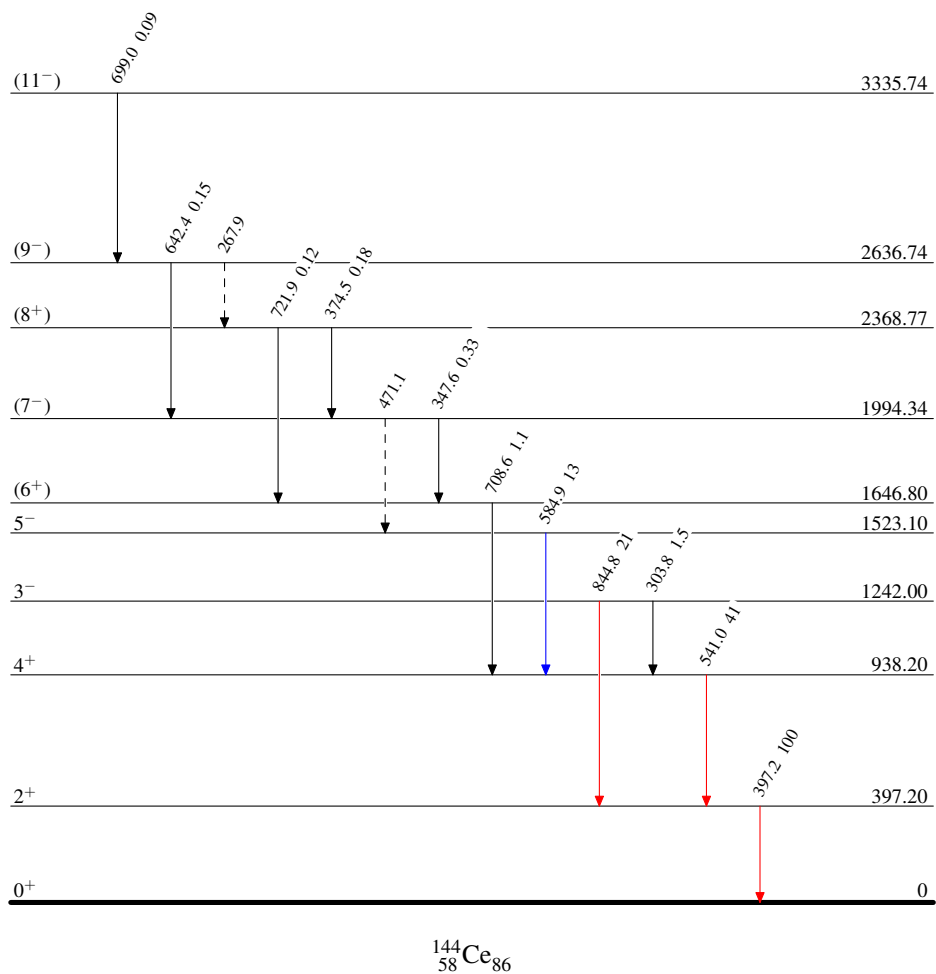
[‡] Placement of transition in the level scheme is uncertain.

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Legend

Level Scheme
Intensities: Type not specified

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



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