

²⁵²Cf SF decay 1999Ha10

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

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

1999Ha10: Gammasphere array experiment. Previous publications from the same group, using a large number of Ge detectors and which are superseded by 1999Ha10: 1997Ha64, 1995Zh34, 1995Zh39, 1995ZhZW.

1988PhZY, 1987PhZY, 1986Ph02: measured E_γ, I_γ, γγ, γ-x-ray, γγ(θ), seven BGO-suppressed Ge detectors, and low-energy photon detector.

1970Wi16, 1971Ch44, 1972Wi15 established g.s. band levels up to 8⁺. They measured: γ, γγ, Xγ, γ(θ) semi.

1996Te04: Measured yield of ¹⁴⁴Ba correlated with Mo fission fragments, 4.0% 3 per ²⁵²Cf fission event.

Other measurements: 1970Jo20, 1970Wa05, 1971Ho29, 1972ClZN, 1972Ho08, 1973Ho22, 1974ClZX, 1974JaYY, 1977YoZM.

¹⁴⁴Ba Levels

E(level) [‡]	J ^π [†]	T _{1/2}	Comments
0.0 [#]	0 ⁺		
199.0 [#]	2 ⁺	0.67 ns //	T _{1/2} : from recoil distance (1983MaYT).
529.8 [#]	4 ⁺		
759.0 [@]	1 ⁻		
838.4 [@]	3 ⁻		
961.2 [#]	6 ⁺		
1038.5 [@]	5 ⁻		
1354.8 [@]	7 ⁻		
1470.5 [#]	8 ⁺		
1772.4 [@]	9 ⁻		
1991.4 ^{&}			
2043.8 [#]	10 ⁺		
2158.9 ^{<i>a</i>}			
2278.3 [@]	11 ⁻		
2362.4 ^{&}			
2664.0 ^{<i>a</i>}			
2666.9 [#]	12 ⁺		
2862.9 [@]	13 ⁻		
3320.7 [#]	14 ⁺		
3518.5 [@]	15 ⁻		
3991.7 [#]	16 ⁺		
4241.9 [@]	17 ⁻		
5027.4 [@]	19 ⁻		

[†] As given by 1999Ha10, based on γγ(θ) and γ multiplicities.

[‡] From 1999Ha10.

Band(A): g.s. band.

@ Band(B): octupole band.

& Band(C): rotational band 1.

^a Band(D): rotational band 2.

²⁵²Cf SF decay **1999Ha10** (continued)

								$\gamma(^{144}\text{Ba})$		
E_γ #	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. †	α @	Comments		
115.8	3.4	1470.5	8 ⁺	1354.8	7 ⁻	E1		I _γ : 2.3 6 (1986Ph02). Mult.: from α(K)exp calculated from I(K x ray) (1986Ph02).		
167.6		2158.9		1991.4						
195.9	1.5	2862.9	13 ⁻	2666.9	12 ⁺	E1		Mult.: from 1995Zh34, from γγ(θ).		
198.0		3518.5	15 ⁻	3320.7	14 ⁺					
199.0		199.0	2 ⁺	0.0	0 ⁺	E2	0.175	α(K)= 0.1357; α(L)= 0.0311; α(M)=0.00659; α(N+..)=0.00172 Mult.: K/L=3.7 (1973Kh05) in ²³⁵ U(n,F), γ(θ).		
199.1		1038.5	5 ⁻	838.4	3 ⁻					
234.3	6.9	2278.3	11 ⁻	2043.8	10 ⁺	E1		Mult.: from 1995Zh34, from γγ(θ). I _γ : 4.7 11 (1986Ph02).		
271.5	3.4	2043.8	10 ⁺	1772.4	9 ⁻	E1		I _γ : 3.8 9 (1986Ph02).		
301.6		2664.0		2362.4						
301.8	20	1772.4	9 ⁻	1470.5	8 ⁺	E1		I _γ : 18.0 15 (1986Ph02).		
316.1	4.7	1354.8	7 ⁻	1038.5	5 ⁻	E2		I _γ : 4.3 9 (1986Ph02).		
330.8	100	529.8	4 ⁺	199.0	2 ⁺	E2				
371.5		2362.4		1991.4						
388.5	1.5	2666.9	12 ⁺	2278.3	11 ⁻	E1		Mult.: from 1995Zh34, from γγ(θ).		
393.8	19	1354.8	7 ⁻	961.2	6 ⁺	E1		I _γ : 16.5 15 (1986Ph02).		
417.6	15.0	1772.4	9 ⁻	1354.8	7 ⁻	E2		I _γ : 15.1 14 (1986Ph02).		
431.4	71.4	961.2	6 ⁺	529.8	4 ⁺	E2		I _γ : 73 4 (1986Ph02).		
457.6	0.7	3320.7	14 ⁺	2862.9	13 ⁻					
473.1		3991.7	16 ⁺	3518.5	15 ⁻					
504.9		2664.0		2158.9						
506.0	15.6	2278.3	11 ⁻	1772.4	9 ⁻	E2		I _γ : 13.7 22 (1986Ph02).		
508.8	6.4	1038.5	5 ⁻	529.8	4 ⁺					
509.3	41.6	1470.5	8 ⁺	961.2	6 ⁺	E2		I _γ : 37 3 (1986Ph02).		
573.3	8.7	2043.8	10 ⁺	1470.5	8 ⁺	E2		I _γ : 7.2 11 (1986Ph02).		
584.7	6.7	2862.9	13 ⁻	2278.3	11 ⁻	E2		Mult.: from 1995Zh34, from γγ(θ).		
623.1	2.3	2666.9	12 ⁺	2043.8	10 ⁺	E2		Mult.: from 1995Zh34, from γγ(θ).		
639.4 &		838.4	3 ⁻	199.0	2 ⁺					
654.0	1.6	3320.7	14 ⁺	2666.9	12 ⁺					
655.5	2.3	3518.5	15 ⁻	2862.9	13 ⁻					
671.0		3991.7	16 ⁺	3320.7	14 ⁺					
723.4	0.7	4241.9	17 ⁻	3518.5	15 ⁻					
785.5	0.2	5027.4	19 ⁻	4241.9	17 ⁻					
892.0		2362.4		1470.5	8 ⁺					
953.0		1991.4		1038.5	5 ⁻					
1007.6		2362.4		1354.8	7 ⁻					
1030.2		1991.4		961.2	6 ⁺					
1197.7		2158.9		961.2	6 ⁺					

† From 1986Ph02, unless stated otherwise; these are inferred from: 1. γγ(θ) for the intraband transitions are consistent with stretched Q – Q, while the γγ(θ) for J+1 to J to J-2 transitions are consistent with stretched D – Q. 2. The estimated reduced transition probabilities indicate that D are more likely to be E1 than M1 transitions.

‡ From 1999Ha10, unless stated otherwise; relative intensities of in coincidence with the 199.0γ from the first excited 2⁺ level to g.s..

From 1999Ha10.

@ 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.

& Placement of transition in the level scheme is uncertain.

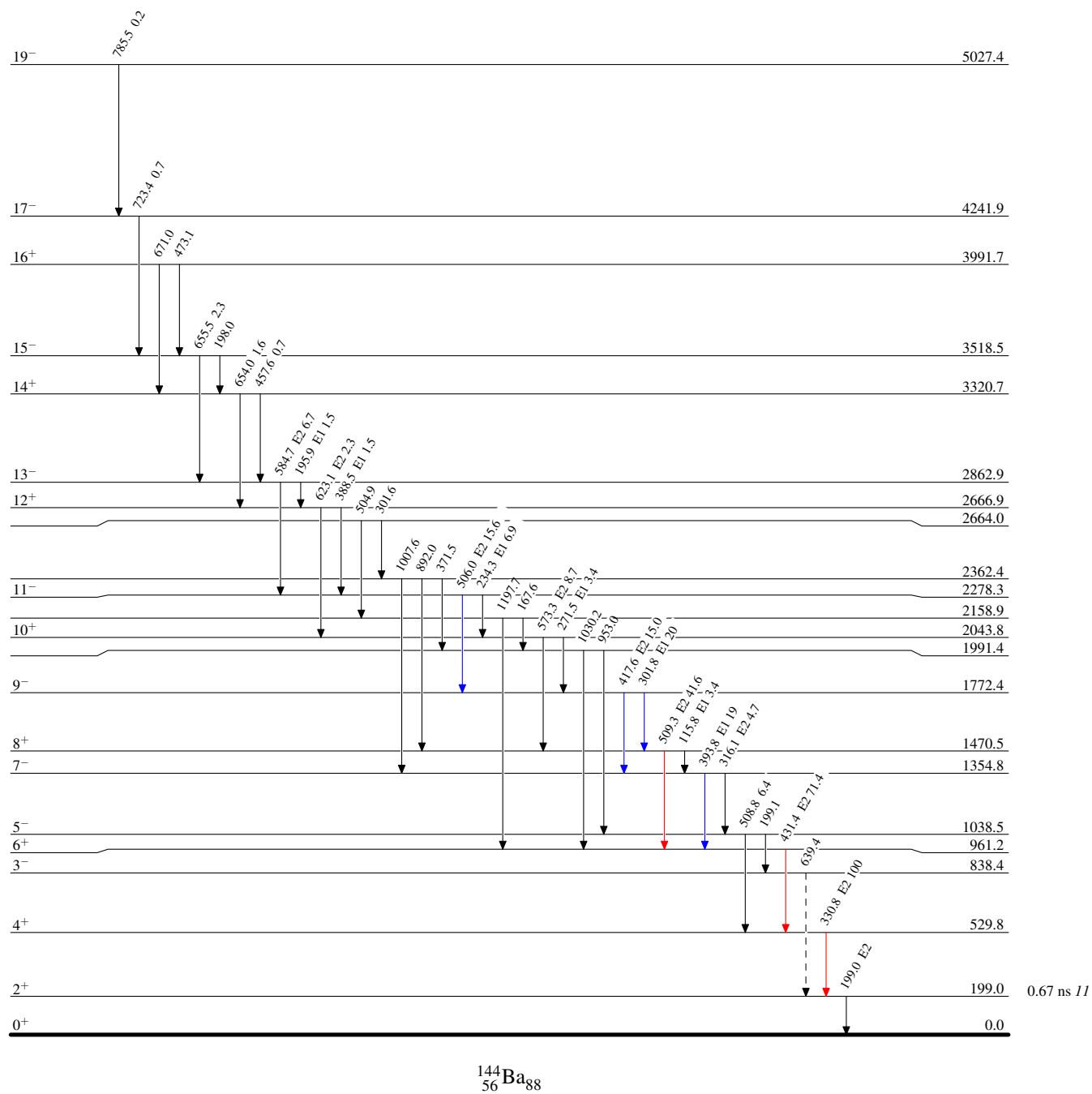
^{252}Cf SF decay 1999Ha10

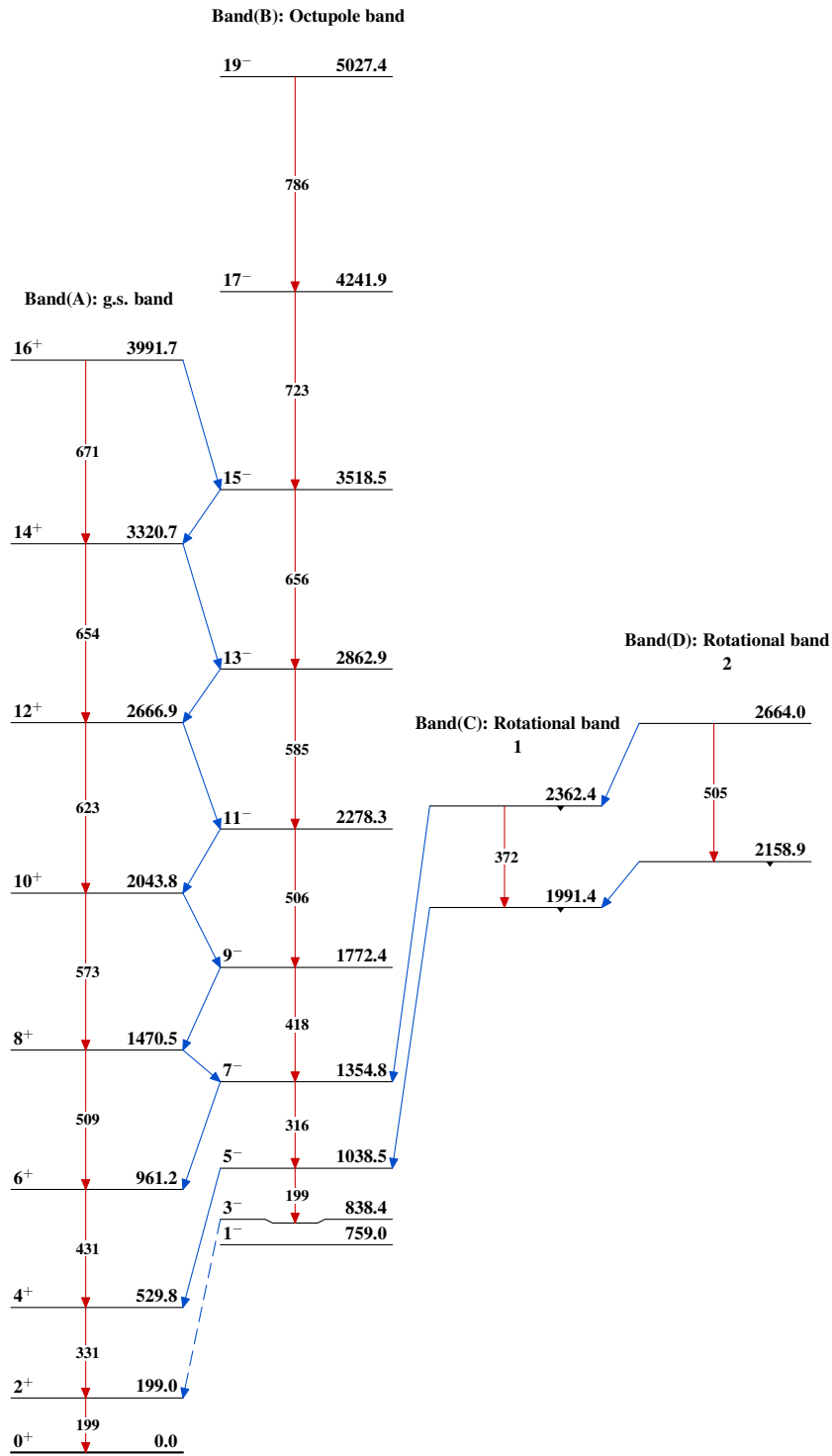
Legend

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)



^{252}Cf SF decay 1999Ha10 $^{144}_{56}\text{Ba}_{88}$