

²⁵²Cf SF decay 2008Hw03,1974CIZX

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	30-Nov-2021

Parent: ²⁵²Cf: E=0; J^π=0⁺; T_{1/2}=2.645 y 8; %SF decay=0.0053 34

²⁵²Cf-T_{1/2}: from ²⁵²Cf Adopted Levels in the ENSDF database.

²⁵²Cf-%SF decay: %SF(²⁵²Cf)=3.092 8, yield/fission of ⁸⁹Kr=0.0017 11 (from ENDF database).

2008Hw03: Measured E_γ, I_γ, γγ-coin using Gammasphere array of 101 HPGe detectors with Compton-suppression. The γ rays from Kr isotopes were identified by gating on transitions in the fission partner Sm isotopes.

1974CIZX: isomeric levels of ²⁵²Cf fission fragments. Measured K x ray, γ.

All data are from 2008Hw03, unless otherwise stated.

⁸⁹Kr Levels

E(level) [†]	J ^π [‡]	T _{1/2}	Comments
0.0	3/2 ⁽⁺⁾		
28.59 [#] 3	(5/2 ⁺)	22.0 ns 13	T _{1/2} : from 1974CIZX (slow coincidence with fission fragments and time-to-amplitude converter).
982.5 [#] 3	(9/2 ⁺)		
1772.5 5	(11/2 ⁻)		
2278.5 [#] 5			
2648.2 6			
3215.0 [#] 6			
4375.3 [#] 6			

[†] From E_γ data, assuming uncertainty of 0.3 keV for each γ ray.

[‡] From the Adopted Levels, and as proposed by 2008Hw03 based on comparison with a similar γγ cascade in ⁹¹Sr and (790.0γ)(953.9γ)(θ).

[#] Seq.(A): γ cascade based on 5/2⁺. Possible configuration=ν2d_{5/2}⊗(⁹⁰Kr core states).

γ(⁸⁹Kr)

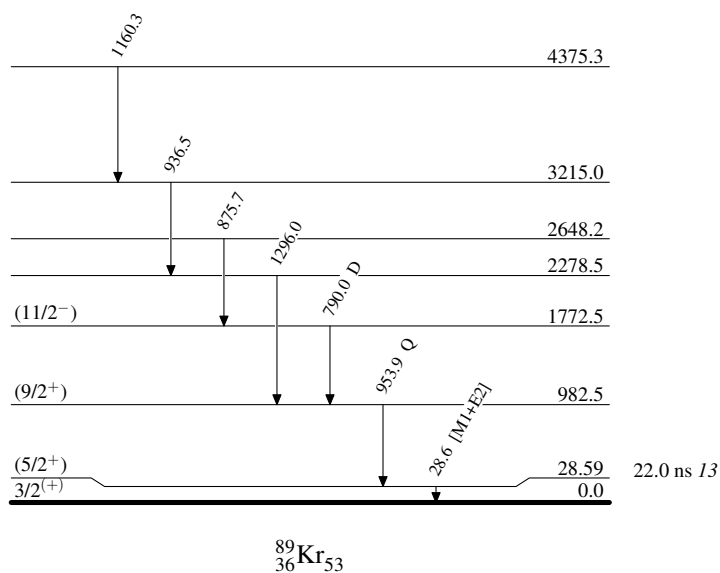
All γ rays from levels above 28.6 keV were observed in coin with fission partner Sm isotopes. The 11/2⁻ → 9/2⁺ → 5/2⁺ cascade in ⁸⁹Kr is similar to the one observed in ⁹¹Sr.

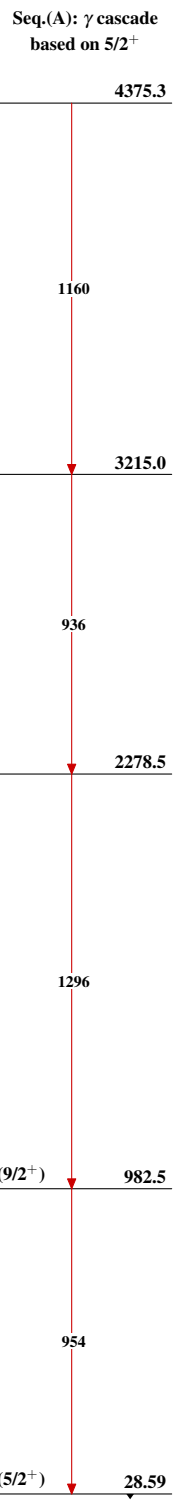
E _γ	E _i (level)	J _i ^π	E _f	J _f ^π	Mult.	δ	α [†]	Comments
28.6 1	28.59	(5/2 ⁺)	0.0	3/2 ⁽⁺⁾	[M1+E2]	<0.24	6.8 22	α(K)=5.4 13; α(L)=1.2 8; α(M)=0.20 12; α(N+...)=0.017 10; α(N)=0.017 10; I(γ+ce) per 100 fissions=21.0×10 ⁻⁵ 13 (1974CIZX). E _γ : from 1974CIZX. δ: from RUL(E2)=300.
790.0	1772.5	(11/2 ⁻)	982.5	(9/2 ⁺)	D			Mult.: from (790.0γ)(953.9γ)(θ): A ₂ =-0.09 5, A ₄ =-0.03 7 gives mult(790.0γ)=ΔJ=1, dipole and mult(953.9γ) of ΔJ=2, quadrupole.
875.7	2648.2		1772.5	(11/2 ⁻)				
936.5	3215.0		2278.5					
953.9	982.5	(9/2 ⁺)	28.59	(5/2 ⁺)	Q			Mult.: from (790.0γ)(953.9γ)(θ).
1160.3	4375.3		3215.0					
1296.0	2278.5		982.5	(9/2 ⁺)				

Continued on next page (footnotes at end of table)

^{252}Cf SF decay 2008Hw03,1974CIZX (continued) $\gamma(^{89}\text{Kr})$ (continued)

† Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

 ^{252}Cf SF decay 2008Hw03,1974CIZXLevel Scheme

^{252}Cf SF decay 2008Hw03,1974CIZX $^{89}_{36}\text{Kr}_{53}$