^{248}Cm SF decay 2002Ur04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	P. K. Joshi, B. Singh, S. Singh, A. K. Jain	NDS 138, 1 (2016)	15-Oct-2016

Parent: ^{248}Cm: E=0.0; J$^\pi$=0$^+$; $T_{1/2}$=3.48×10^5 y *4*; %SF decay=0.32 *10*

^{248}Cm-$T_{1/2}$: From ^{248}Cm Adopted Levels in the ENSDF database (Sept 2014 update).

^{248}Cm-%SF decay: From 3.8 *12* per 100 fissions (ENDF/B VII.1) and %SF=8.39 *16* (^{248}Cm Adopted Levels in the ENSDF database, Sept 2014 update).

^{248}Cm-%SF decay: %SF=8.39 *16* (^{248}Cm Adopted Levels in the ENSDF database, Sept 2014 update).

2002Ur04: measured Eγ, Iγ and γγ, γγ(θ), γγ(lin pol) using EUROGAM II array consisting of Compton-suppressed Ge detectors.

1994Be25 (several authors are the same as on 2002Ur04): measured Eγ, Iγ, γγ- and multi-fold-coin, coincidences with ^{109}Mo γ rays, γγ(θ); EUROGAM (45 Compton-suppressed large volume Ge and 5 LEP detectors). Identification based on observance of 512γ, and coincidences with 512γ ^{109}Mo γ rays. Three main γ cascades: 571-585-631-690-682; 491-582-763-664-648; and 502-560-637-581 were identified; and J^π assignments were made for seven levels starting from 7/2$^-$ to 23/2$^-$.

Additional information 1.

^{139}Xe Levels

E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡
0.0	3/2$^-$	1194.57[a] *17*	(13/2$^-$)	2192.99 *24*	(19/2$^-$)	3547.7 *3*	
22.71[#] *14*	7/2$^-$	1417.88 *17*	(11/2$^+$)	2499.96[#] *25*	23/2$^-$	3586.0[@] *4*	(29/2$^-$)
31.701[a] *20*	5/2$^-$	1512.12[&] *22*	13/2$^+$	2575.06[&] *23*	21/2$^+$	3792.9[&] *3*	(29/2$^+$)
559.32[a] *14*	9/2$^-$	1576.80[@] *21*	17/2$^-$	2921.7[@] *3*	(25/2$^-$)	4022.8[#] *4*	
593.93[#] *16*	11/2$^-$	1809.68[#] *22*	19/2$^-$	2925.5 *4*		4232.5[@] *4*	(33/2$^-$)
678.48[@] *14*	9/2$^-$	1861.86[a] *21*	(17/2$^-$)	2993.7 *3*		4299.0 *4*	
1085.93[@] *17*	13/2$^-$	2014.41[&] *21*	17/2$^+$	3161.4[#] *3*	27/2$^-$	5096.3[@] *5*	
1179.30[#] *20*	15/2$^-$	2158.70[@] *23*	21/2$^-$	3211.8[&] *3*	25/2$^+$		

† From least-squares ft to Eγ data, assuming Δ(Eγ)=0.2 keV for each γ ray.

‡ As proposed in 2002Ur04 based on multipolarities from γγ(θ) and γ(lin pol) data, and band structures. In Adopted Levels, parentheses are added to most assignments.

\# Band(A): Band based on 7/2$^-$.

@ Band(B): Band based on 9/2$^-$.

& Band(C): Band based on 13/2$^+$.

a Band(D): Band based on 5/2$^-$.

γ(^{139}Xe)

Eγ	Iγ	E_i(level)	J^π_i	E_f	J^π_f	Mult.†	α#	Comments
22.8‡ *2*		22.71	7/2$^-$	0.0	3/2$^-$			
31.70‡ *2*		31.701	5/2$^-$	0.0	3/2$^-$			
152.5	1.1 *3*	2014.41	17/2$^+$	1861.86	(17/2$^-$)			
232.8	5 *1*	1809.68	19/2$^-$	1576.80	17/2$^-$			
341.3	3 *1*	2499.96	23/2$^-$	2158.70	21/2$^-$	D		(341γ)(582γ)(θ): A_2=−0.12 *4*, A_4=−0.01 *4*.
349.0	14 *2*	2158.70	21/2$^-$	1809.68	19/2$^-$	D		(349γ)(571γ+585γ+630γ)(θ): A_2=−0.09 *2*, A_4=+0.02 *2*.
383.3	1.2 *4*	2192.99	(19/2$^-$)	1809.68	19/2$^-$			
397.5	24 *2*	1576.80	17/2$^-$	1179.30	15/2$^-$	M1+E2	0.0186 *12*	α(K)=0.0158 *13*; α(L)=0.00222 *6*; α(M)=0.000452 *14*; α(N)=9.29×10^{-5} *23*;

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^{248}Cm SF decay 2002Ur04 (continued)

γ(^{139}Xe) (continued)

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.†	Comments
							α(O)=1.129×10^{-5} *21* (397γ)(571γ)(θ): A_2=+0.08 *1*, A_4=0.00 *1*. Pol=−0.10 *6* (gated at 585γ and 581.9γ).
407.8	6 *1*	1085.93	13/2$^-$	678.48	9/2$^-$		
416.3	1.0 *5*	2575.06	21/2$^+$	2158.70	21/2$^-$		
490.8	13 *2*	1576.80	17/2$^-$	1085.93	13/2$^-$	(E2)	(491γ)(528γ)(θ): A_2=+0.08 *1*, A_4=−0.03 *5*.
491.8	25 *3*	1085.93	13/2$^-$	593.93	11/2$^-$	(M1+E2)	(492γ)(571γ)(θ): A_2=−0.03 *1*, A_4=+0.01 *1*. Pol=−0.22 *11* for 491 doublet (gated at 585γ).
502.3	1.2 *4*	2014.41	17/2$^+$	1512.12	13/2$^+$		
516.0	1.0 *5*	1194.57	(13/2$^-$)	678.48	9/2$^-$		
526.4	3 *1*	1085.93	13/2$^-$	559.32	9/2$^-$		
527.7	6 *1*	559.32	9/2$^-$	31.701	5/2$^-$	(E2)	Mult.: from (491γ)(528γ)(θ) consistent with mult=Q for both γ rays.
536.7	4 *1*	559.32	9/2$^-$	22.71	7/2$^-$		
554.0	1.2 *6*	3547.7		2993.7			E_γ: from e-mail reply of Oct. 11, 2002 from one of the authors (W. Urban). Eγ=667.0 in Table 1 and Figure 1 of 2000Ur04 is a misprint.
560.7	7 *1*	2575.06	21/2$^+$	2014.41	17/2$^+$	(Q)	(561γ)(835γ)(θ): A_2=−0.04 *2*, A_4=+0.02 *2*.
571.2	100 *5*	593.93	11/2$^-$	22.71	7/2$^-$	(E2)	Mult.: from (585γ)(571γ)(θ) consistent with mult=Q for both γ rays.
581.0	0.9 *5*	3792.9	(29/2$^+$)	3211.8	25/2$^+$		
581.9	30 *3*	2158.70	21/2$^-$	1576.80	17/2$^-$	(E2)	(582γ)(397γ)(θ): A_2=−0.10 *2*, A_4=−0.04 *4*.
585.4	75 *5*	1179.30	15/2$^-$	593.93	11/2$^-$	(E2)	(585γ)(571γ)(θ): A_2=+0.09 *1*, A_4=+0.02 *1*. Pol=+0.25 *6* (gated at 571γ).
600.5	6 *2*	1194.57	(13/2$^-$)	593.93	11/2$^-$		
626.0	2.5 *8*	3547.7		2921.7	(25/2$^-$)		
630.4	33 *3*	1809.68	19/2$^-$	1179.30	15/2$^-$	(E2)	(630γ)(571γ)(θ): A_2=+0.10 *1*, A_4=+0.01 *1*. Pol=+0.17 *8* (gated at 571γ).
631.5	1.0 *5*	3792.9	(29/2$^+$)	3161.4	27/2$^-$		
635.5	3 *1*	1194.57	(13/2$^-$)	559.32	9/2$^-$		
636.8	2.9 *7*	3211.8	25/2$^+$	2575.06	21/2$^+$		
646.5	2.0 *4*	4232.5	(33/2$^-$)	3586.0	(29/2$^-$)		
646.6	1.5 *5*	678.48	9/2$^-$	31.701	5/2$^-$		
655.8	4 *1*	678.48	9/2$^-$	22.71	7/2$^-$		
661.5	4 *1*	3161.4	27/2$^-$	2499.96	23/2$^-$		
664.3	5 *1*	3586.0	(29/2$^-$)	2921.7	(25/2$^-$)		
667.3	1.0 *5*	1861.86	(17/2$^-$)	1194.57	(13/2$^-$)		
682.5	4 *1*	1861.86	(17/2$^-$)	1179.30	15/2$^-$		
690.2	10 *1*	2499.96	23/2$^-$	1809.68	19/2$^-$	Q	(690γ)(571γ)(θ): A_2=+0.10 *1*, A_4=0.00 *3*.
711.8	3 *1*	3211.8	25/2$^+$	2499.96	23/2$^-$	D	(712γ)(571γ+585γ+630γ)(θ): A_2=−0.06 *3*, A_4=+0.02 *4*.
713.0	0.6 *3*	4299.0		3586.0	(29/2$^-$)		
732.5	0.8 *4*	2925.5		2192.99	(19/2$^-$)		
739.0	0.7 *3*	1417.88	(11/2$^+$)	678.48	9/2$^-$		
763.0	15 *3*	2921.7	(25/2$^-$)	2158.70	21/2$^-$		
765.4	6 *1*	2575.06	21/2$^+$	1809.68	19/2$^-$	D	(765γ)(571γ+585γ+630γ)(θ): A_2=−0.07 *2*, A_4=0.00 *2*.
824.2	1.2 *4*	1417.88	(11/2$^+$)	593.93	11/2$^-$		
835.0	5 *1*	2993.7		2158.70	21/2$^-$		
835.2	8 *1*	2014.41	17/2$^+$	1179.30	15/2$^-$	D	(835γ)(571γ+585γ)(θ): A_2=−0.04 *1*, A_4=+0.02 *1*. Pol=−0.2 *2* (gated at 585γ).
858.7	1.0 *5*	1417.88	(11/2$^+$)	559.32	9/2$^-$		
861.4	0.8 *4*	4022.8		3161.4	27/2$^-$		
863.8	0.8 *4*	5096.3		4232.5	(33/2$^-$)		
918.2	5 *1*	1512.12	13/2$^+$	593.93	11/2$^-$	D	(918γ)(571γ)(θ): A_2=−0.013 *3*, A_4=+0.01 *1*.
1013.7	2.8 *7*	2192.99	(19/2$^-$)	1179.30	15/2$^-$		

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^{248}Cm SF decay 2002Ur04 (continued)

$\gamma(^{139}Xe)$ (continued)

† From $\gamma\gamma(\theta)$ and γ(lin pol) data. Mult=Q is for $\Delta J=2$ transition and mult=D is for $\Delta J=1$ transition in $\gamma\gamma(\theta)$ data.
‡ From Adopted Gammas.
# 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.

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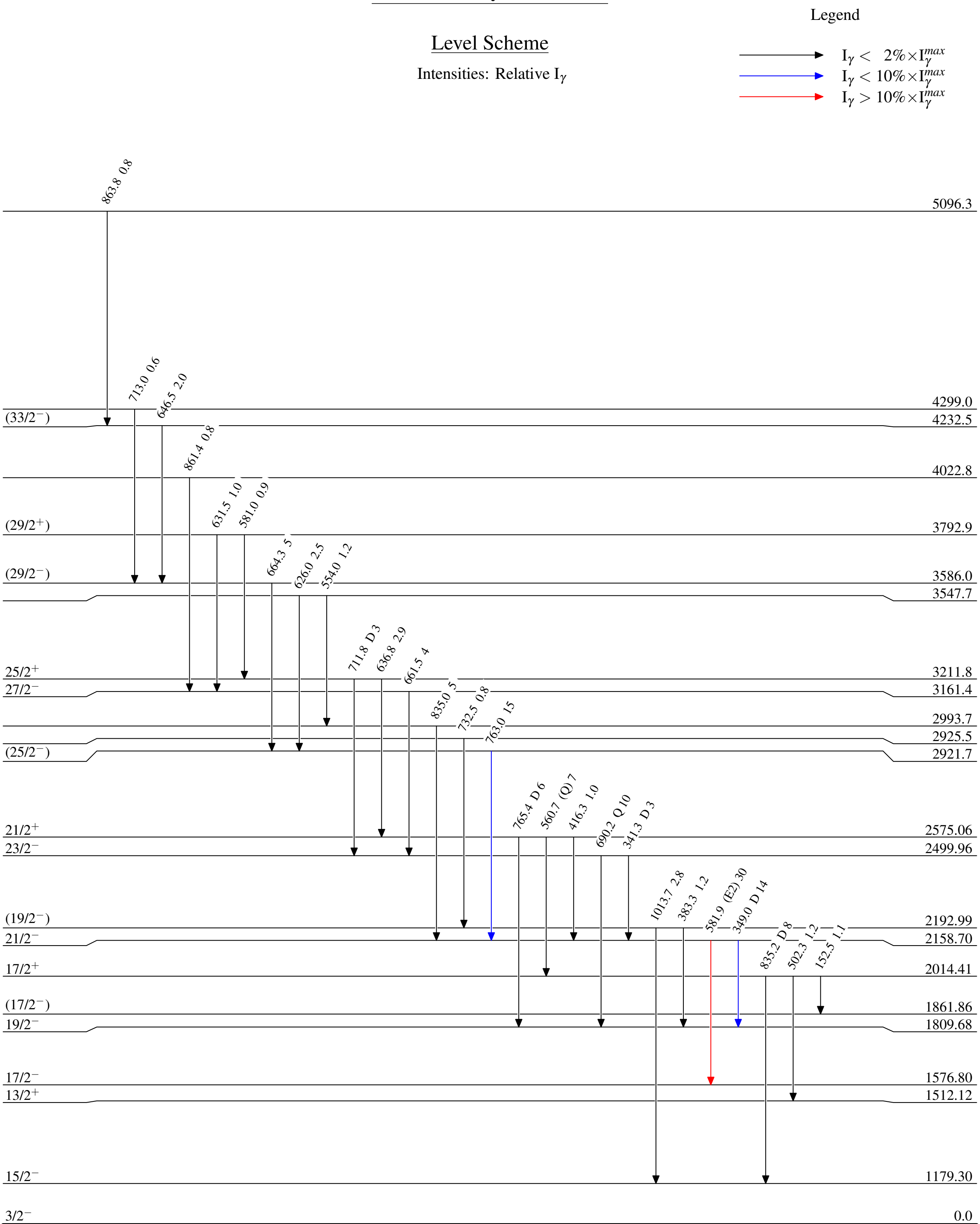
Level Scheme

Intensities: Relative I_γ



$^{139}_{54}Xe_{85}$

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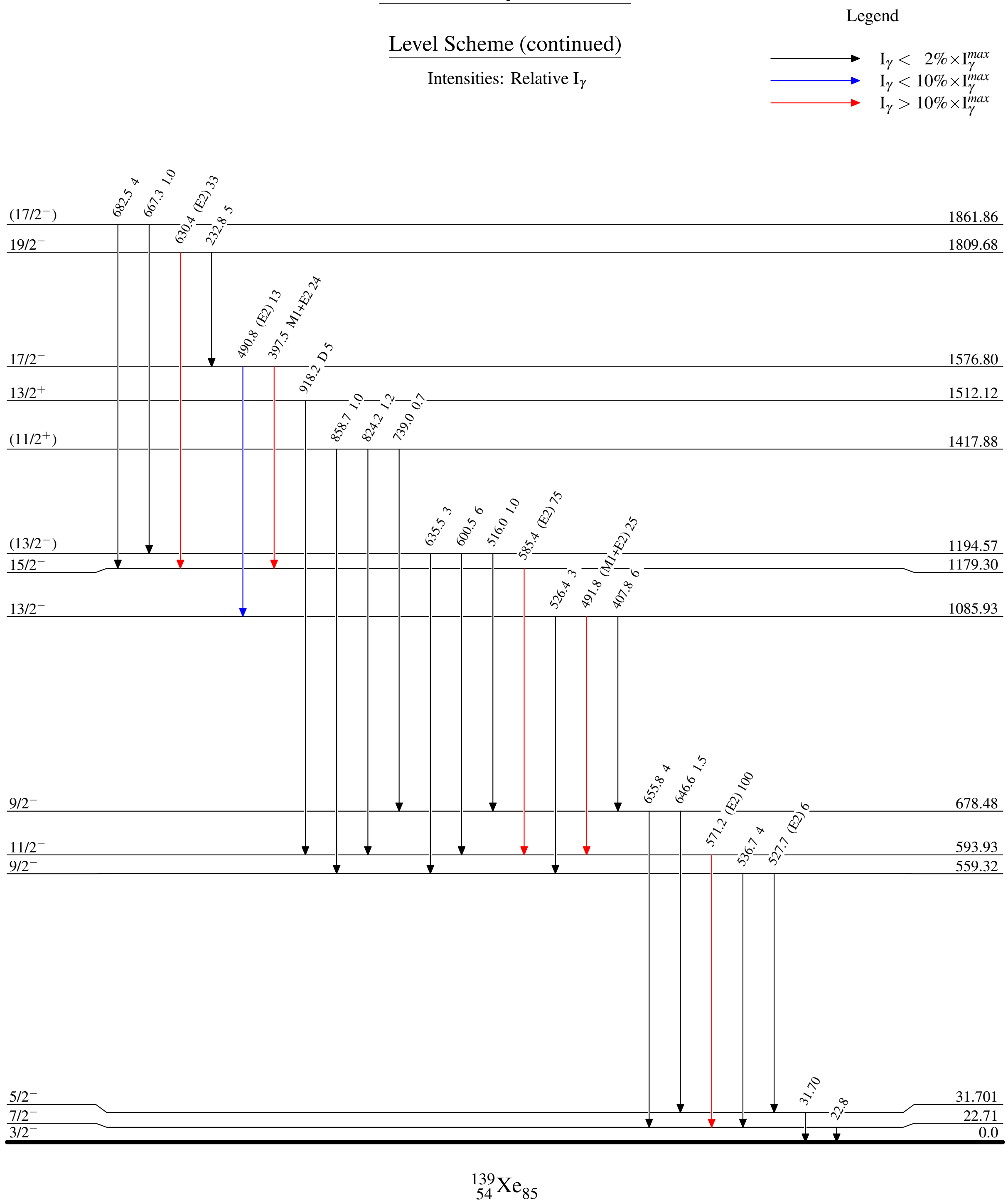
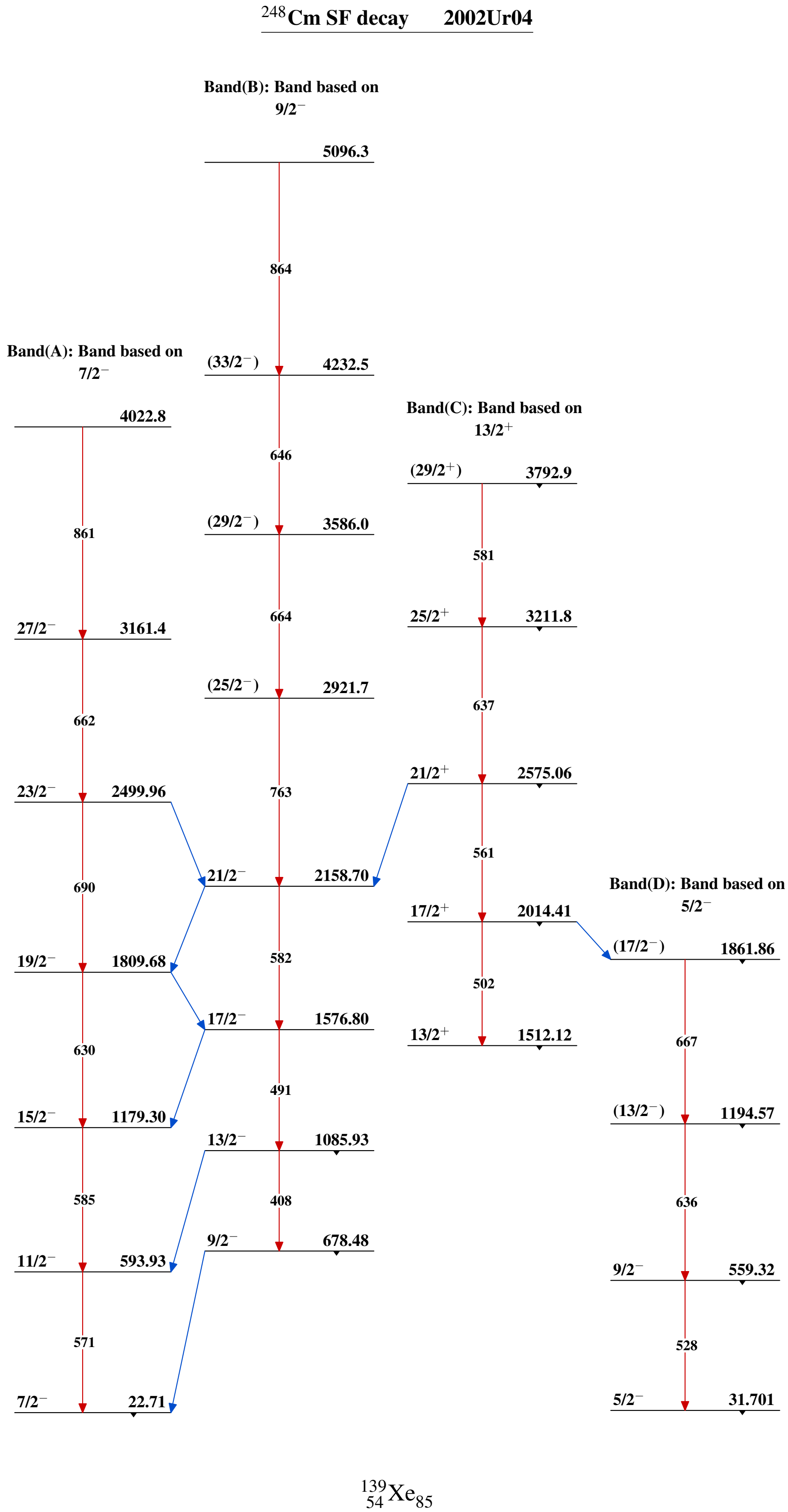
Level Scheme (continued)

Intensities: Relative I_γ




^{248}Cm SF decay 2002Ur04
Band(B): Band based on 9/2$^-$
5096.3
864
(33/2$^-$) 4232.5
646
(29/2$^-$) 3586.0
664
(25/2$^-$) 2921.7
763
21/2$^-$ 2158.70
582
17/2$^-$ 1576.80
491
13/2$^-$ 1085.93
408
9/2$^-$ 678.48
Band(A): Band based on 7/2$^-$
4022.8
861
27/2$^-$ 3161.4
662
23/2$^-$ 2499.96
690
19/2$^-$ 1809.68
630
15/2$^-$ 1179.30
585
11/2$^-$ 593.93
571
7/2$^-$ 22.71
Band(C): Band based on 13/2$^+$
(29/2$^+$) 3792.9
581
25/2$^+$ 3211.8
637
21/2$^+$ 2575.06
561
17/2$^+$ 2014.41
502
13/2$^+$ 1512.12
Band(D): Band based on 5/2$^-$
(17/2$^-$) 1861.86
667
(13/2$^-$) 1194.57
636
9/2$^-$ 559.32
528
5/2$^-$ 31.701
$^{139}_{54}Xe_{85}$