

^{252}Cf SF decay **2001Lu16,2003Ha49**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Alexander A. Rodionov And Yuri L. Khazov		NDS 109, 517 (2008)	22-Jan-2008

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

2001Lu16, 2003Ha49 (also **2002Ha46**): Measured E_γ and $\gamma\gamma$ using GAMMASPHERE array comprised of 100 escape-suppressed large volume Ge detectors. **2003Ha49**, **2002Ha46** and **2001Lu16** are the results of the same experiment.

1999Fo10: Measured E_γ , I_γ , $\gamma\gamma$ using GASP array of 40 Compton-suppressed Ge detectors and inner ball of 80 BGO detectors. Only seven γ rays are reported between seven excited states.

 ^{135}Te Levels

$E(\text{level})^\dagger$	$J^\pi^\ddagger$	$T_{1/2}$	$E(\text{level})^\dagger$	$J^\pi^\ddagger$
0.0	(7/2 ⁻)		4342.47 ¹⁹	
1180.29 ¹⁰	(11/2 ⁻)		4393.55 & ¹⁷	(21/2 ⁻)
1505.25 ¹⁵	(15/2 ⁻)		4591.09 ¹⁹	(27/2 ⁺)
1555.25 ¹⁶	(19/2 ⁻)	0.511 ^a μs ²⁰	4798.99 & ¹⁷	(23/2 ⁻)
2016.49 ¹⁸	(17/2 ⁻)		5170.69 & ¹⁸	(25/2 ⁻)
2208.53 ¹⁸	(19/2 ⁻)		5525.30 & ¹⁸	(27/2 ⁻)
2640.25 ¹⁸	(21/2 ⁻)		5641.70 ¹⁹	(31/2 ⁻)
3150.39 @ ¹⁹			5790.51 & ¹⁹	(29/2 ⁻)
3164.60 @ ¹⁹			6109.76 & ¹⁹	(31/2 ⁻)
3233.67 ¹⁸	(25/2 ⁺)		6151.90 ²¹	(31/2 ⁻) [#]
3312.96 @ ¹⁹			6383.01 ²¹	(33/2 ⁻) [#]
3470.96 ¹⁷	(21/2 ⁺)		6455.11 & ²²	(33/2 ⁻)
3775.11 @ ¹⁹			6669.56 & ²²	(35/2 ⁻)
4023.37 & ¹⁶	(19/2 ⁻)			

[†] From least-squares fit to E_γ 's, assuming $\Delta(E_\gamma)=0.1$ keV systematic error for each γ ray, as proposed by **2001Lu16** for ^{139}Ba data.

[‡] As proposed by **2003Ha49**, **2001Lu16** and **1999Fo10** based on expected shell-model predictions. The assignments are the same in 'Adopted Levels', unless otherwise stated.

[#] No assignment given in 'Adopted Levels'.

@ Level from **2003Ha49** only.

& Band(A): possible magnetic-rotational band based on (19/2⁻). Band assignment suggested by **2001Lu16** with possible configuration= $\pi g_{7/2}^2 \otimes \nu(f_{7/2}^{-1} h_{11/2}^{-1})$.

^a From 'Adopted Levels'.

 $\gamma(^{135}\text{Te})$

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
(50.0 &)		1555.25	(19/2 ⁻)	1505.25	(15/2 ⁻)	461.24	0.50	2016.49	(17/2 ⁻)	1555.25	(19/2 ⁻)
248.61	0.07	4591.09	(27/2 ⁺)	4342.47		468.06	0.14	6109.76	(31/2 ⁻)	5641.70	(31/2 ⁻)
265.21	1.07	5790.51	(29/2 ⁻)	5525.30	(27/2 ⁻)	559.8		6669.56	(35/2 ⁻)	6109.76	(31/2 ⁻)
319.25	0.66	6109.76	(31/2 ⁻)	5790.51	(29/2 ⁻)	584.46 ^a		6109.76	(31/2 ⁻)	5525.30	(27/2 ⁻)
324.96	65 [‡]	1505.25	(15/2 ⁻)	1180.29	(11/2 ⁻)	593.42	0.82	3233.67	(25/2 ⁺)	2640.25	(21/2 ⁻)
345.35		6455.11	(33/2 ⁻)	6109.76	(31/2 ⁻)	619.81	0.09	5790.51	(29/2 ⁻)	5170.69	(25/2 ⁻)
354.60	0.67	5525.30	(27/2 ⁻)	5170.69	(25/2 ⁻)	653.28	1.11	2208.53	(19/2 ⁻)	1555.25	(19/2 ⁻)
370.18	0.93	4393.55	(21/2 ⁻)	4023.37	(19/2 ⁻)	664.6 ^a		6455.11	(33/2 ⁻)	5790.51	(29/2 ⁻)
371.70	0.77	5170.69	(25/2 ⁻)	4798.99	(23/2 ⁻)	710.4 ^a		4023.37	(19/2 ⁻)	3312.96	
405.44	1.05	4798.99	(23/2 ⁻)	4393.55	(21/2 ⁻)	726.30	0.21	5525.30	(27/2 ⁻)	4798.99	(23/2 ⁻)

Continued on next page (footnotes at end of table)

^{252}Cf SF decay 2001Lu16,2003Ha49 (continued) $\gamma(^{135}\text{Te})$ (continued)

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
741.31	0.27	6383.01	(33/2 ⁻)	5641.70	(31/2 ⁻)
775.62	0.11	4798.99	(23/2 ⁻)	4023.37	(19/2 ⁻)
777.14	0.36	5170.69	(25/2 ⁻)	4393.55	(21/2 ⁻)
830.71	0.43	3470.96	(21/2 ⁺)	2640.25	(21/2 ⁻)
922.58	0.23	4393.55	(21/2 ⁻)	3470.96	(21/2 ⁺)
1050.6	0.11	5641.70	(31/2 ⁻)	4591.09	(27/2 ⁺)
1084.99	4.75	2640.25	(21/2 ⁻)	1555.25	(19/2 ⁻)
1108.80	0.14	4342.47		3233.67	(25/2 ⁺)
1180.28	100 [‡]	1180.29	(11/2 ⁻)	0.0	(7/2 ⁻)
1262.42	0.56	3470.96	(21/2 ⁺)	2208.53	(19/2 ⁻)
1328.02	0.38	4798.99	(23/2 ⁻)	3470.96	(21/2 ⁺)
1357.41	1.40 [#]	4591.09	(27/2 ⁺)	3233.67	(25/2 ⁺)
1560.8	0.05	6151.90	(31/2 ⁻)	4591.09	(27/2 ⁺)
1595.13 [@]	0.43	3150.39		1555.25	(19/2 ⁻)
1609.34 [@]	0.64	3164.60		1555.25	(19/2 ⁻)
1678.41	13	3233.67	(25/2 ⁺)	1555.25	(19/2 ⁻)
1757.7 [@]	0.16	3312.96		1555.25	(19/2 ⁻)
1915.7	1.05	3470.96	(21/2 ⁺)	1555.25	(19/2 ⁻)
1937.01	0.12	5170.69	(25/2 ⁻)	3233.67	(25/2 ⁺)
2006.86	0.38	4023.37	(19/2 ⁻)	2016.49	(17/2 ⁻)
2185.0	0.45	4393.55	(21/2 ⁻)	2208.53	(19/2 ⁻)
2219.84 [@]	0.82	3775.11		1555.25	(19/2 ⁻)
2291.61	0.67	5525.30	(27/2 ⁻)	3233.67	(25/2 ⁺)
2408.01	1.16	5641.70	(31/2 ⁻)	3233.67	(25/2 ⁺)
2468.1 [#]	1.22 [#]	4023.37	(19/2 ⁻)	1555.25	(19/2 ⁻)
2518.1	0.19	4023.37	(19/2 ⁻)	1505.25	(15/2 ⁻)
2838.28	0.56	4393.55	(21/2 ⁻)	1555.25	(19/2 ⁻)

[†] From 2003Ha49, unless otherwise stated. Values In 2001Lu16 are nearly the same.

[‡] Due to long lifetime of 1555 level, the intensity needs to be corrected by a factor of ≈ 0.75 .

[#] From 2001Lu16 only.

[@] γ from 2003Ha49 only.

[&] From level-energy difference.

^a Placement of transition in the level scheme is uncertain.

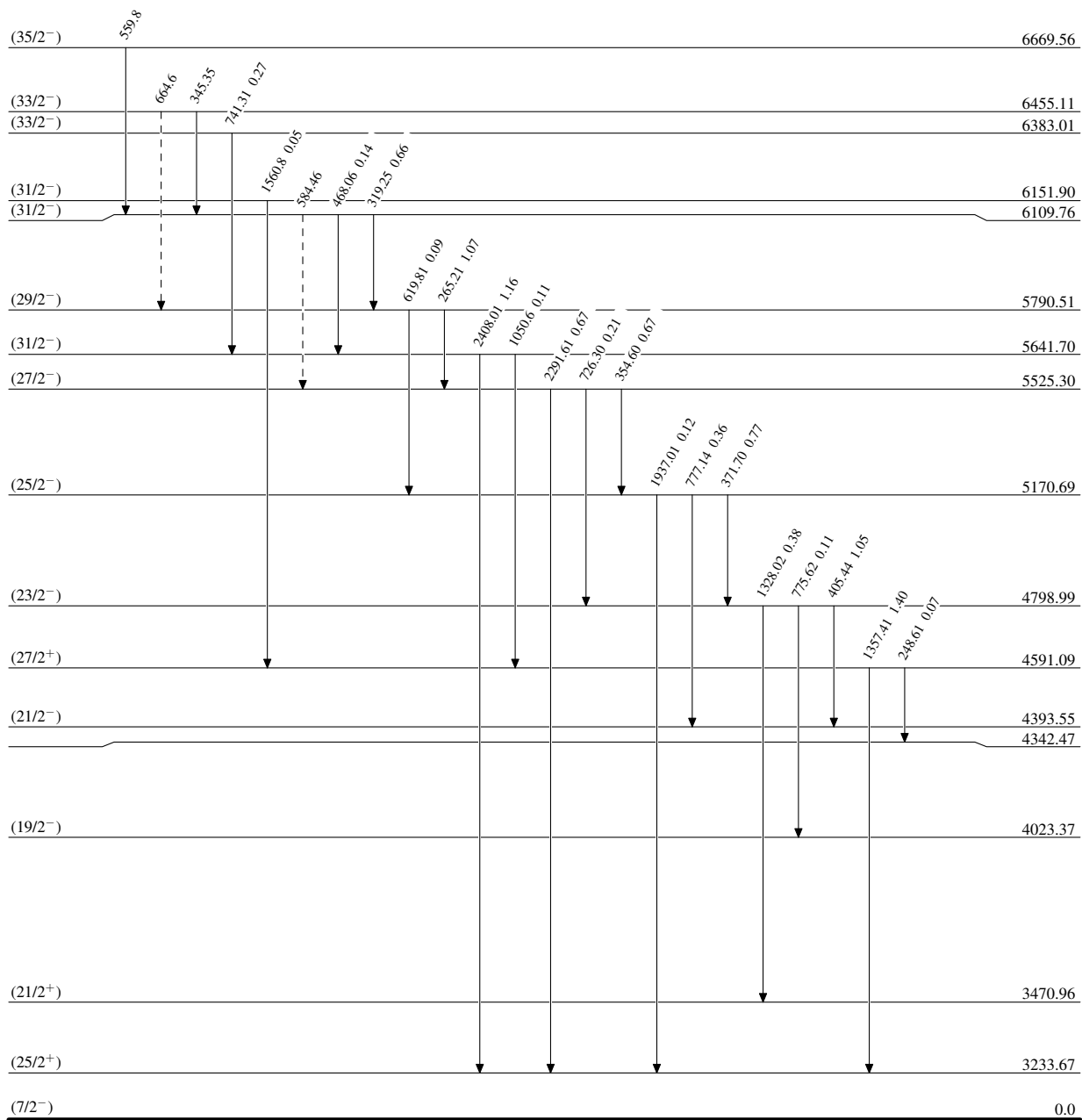
^{252}Cf SF decay 2001Lu16,2003Ha49

Level Scheme

Intensities: Relative I_γ

Legend

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

 $^{135}_{52}\text{Te}_{83}$

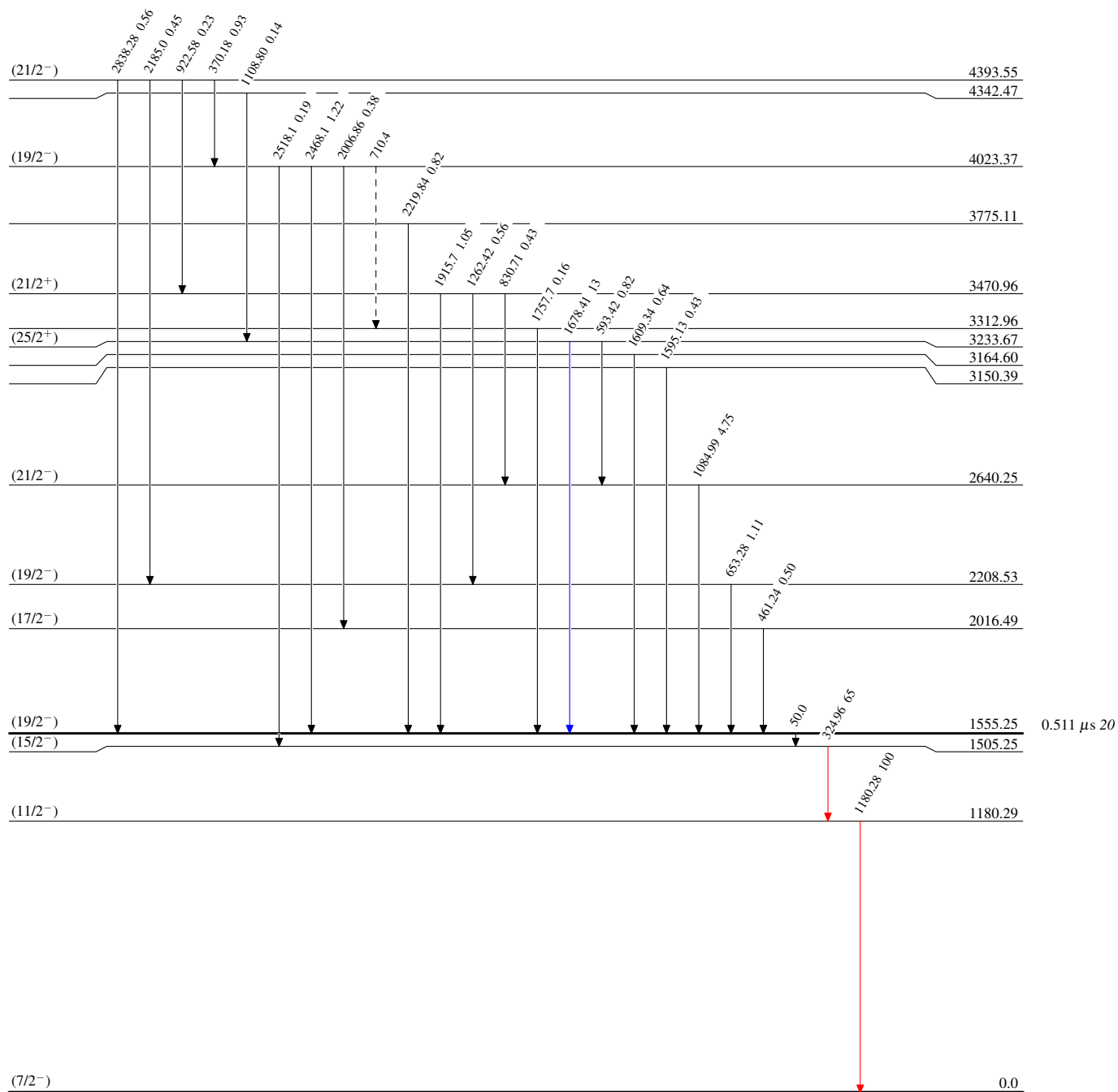
^{252}Cf SF decay 2001Lu16,2003Ha49

Legend

Level Scheme (continued)

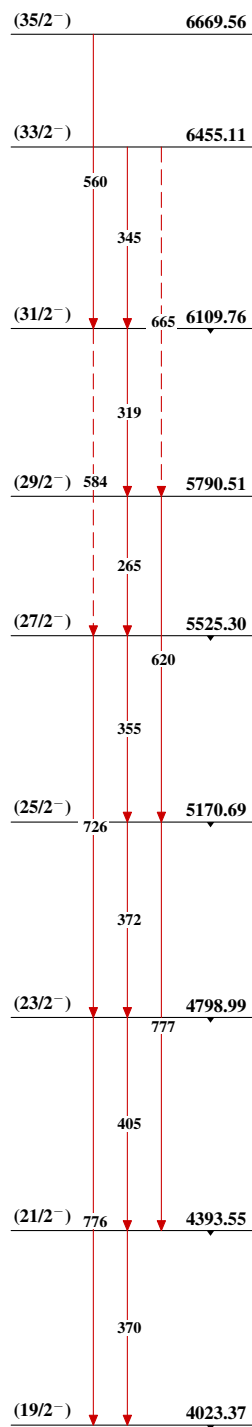
Intensities: Relative I_γ

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

 $^{135}_{52}\text{Te}_{83}$

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Band(A): Possible
magnetic-rotational band based on
(19/2⁻)

 $^{135}_{52}\text{Te}_{83}$