

<sup>143</sup>Eu ε decay 1974Ke07

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli		NDS 113, 715 (2012)	31-May-2011

Parent: <sup>143</sup>Eu: E=0.0; J<sup>π</sup>=5/2<sup>+</sup>; T<sub>1/2</sub>=2.59 min 2; Q(ε)=5275 11; %ε+%β<sup>+</sup> decay=100.0

Additional information 1.

Measured: γ (1974Ke07,1974Ch21,1974FiZF), γγ (1974Ke07,1974FiZF), β<sup>+</sup> (1974Ch21), ce, ce(t) (1980Ab10).

<sup>143</sup>Sm Levels

E(level)	J <sup>π</sup> †	T <sub>1/2</sub>	Comments
0.0	3/2 <sup>+</sup>		
107.69 1	1/2 <sup>+</sup>	800 ps 50	T <sub>1/2</sub> : from 1980Ab10.
754.0 2	11/2 <sup>-</sup>	66 s 2	
1107.3 2	5/2 <sup>+</sup>		
1310.4 4	7/2 <sup>-</sup>		
1369.1 2	7/2 <sup>+</sup>		
1536.9 2	(5/2) <sup>+</sup>		
1566.1 2	(3/2) <sup>+</sup>		
1658.7 5			
1715.0 2	(3/2) <sup>+</sup>		
1912.7 2	(3/2) <sup>+</sup>		
2070.3 2	5/2 <sup>+</sup> ,3/2 <sup>+</sup>		
2102.5 2	(7/2 <sup>+</sup> )		
2167.3 3	7/2 <sup>+</sup>		
2228.0 3	(5/2) <sup>+</sup>		
2270.7? 3	7/2 <sup>+</sup>		
2410.7? 4	(3/2 <sup>+</sup> ,5/2 <sup>+</sup> )		
2558.1? 3			
2587.5 3	5/2 <sup>+</sup> ,3/2		
2685.8 3	(5/2) <sup>+</sup>		
2842.1 6			
2885.9?	(7/2 <sup>-</sup> ,9/2 <sup>+</sup> )		
3031.2 6	7/2 <sup>+</sup>		
3154.0 6	5/2 <sup>+</sup> ,3/2 <sup>+</sup>		
3324.7?	(7/2 <sup>-</sup> )		

† Adopted values.

ε,β<sup>+</sup> radiations

E(β<sup>+</sup>)=4080 50 (1974Ch21). Other: 4220 70 (1983Al06).

E(decay)	E(level)	Iβ <sup>+</sup> †	Iε †	Log ft	I(ε+β <sup>+</sup> ) †	Comments
(1950 11)	3324.7?	0.002 1	0.07 2	6.8	0.07 2	av Eβ=425 5; εK=0.8125 12; εL=0.11908 20; εM+=0.03436 6
(2121 11)	3154.0	0.00060 18	0.009 3	7.7	0.010 3	av Eβ=500 5; εK=0.7914 16; εL=0.1156 3; εM+=0.03334 8
(2244 11)	3031.2	0.0011 3	0.012 3	7.7	0.013 3	av Eβ=554 5; εK=0.7717 20; εL=0.1125 3; εM+=0.03243 9
(2389 11)	2885.9?	0.007 1	0.05 1	7.1	0.06 1	av Eβ=618 5; εK=0.7439 23; εL=0.1082 4; εM+=0.03119 11
(2433 11)	2842.1	0.0013 4	0.009 3	7.9	0.010 3	av Eβ=638 5; εK=0.7346 24; εL=0.1068 4; εM+=0.03078 11
(2589 11)	2685.8	0.01	0.07 1	7.1	0.08 1	av Eβ=708 5; εK=0.698 3; εL=0.1013 4; εM+=0.02919 12

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<sup>143</sup>Eu ε decay **1974Kc07** (continued)

ε,β<sup>+</sup> radiations (continued)

E(decay)	E(level)	Iβ <sup>+</sup> †	Iε †	Log ft	I(ε+β <sup>+</sup> ) †	Comments
(2688 11)	2587.5	0.024 4	0.096 16	6.9	0.12 2	av Eβ=752 5; εK=0.674 3; εL=0.0976 5; εM+=0.02812 13
(2717 11)	2558.1?	0.013 2	0.050 6	7.2	0.063 8	av Eβ=765 5; εK=0.666 3; εL=0.0965 5; εM+=0.02779 13
(2864 11)	2410.7?	0.012 2	0.035 5	7.4	0.047 7	av Eβ=831 5; εK=0.626 3; εL=0.0906 5; εM+=0.02609 13
(3004 11)	2270.7?	0.042 6	0.098 14	7.0	0.14 2	av Eβ=894 5; εK=0.587 3; εL=0.0849 5; εM+=0.02443 13
(3047 11)	2228.0	0.14 2	0.29 4	6.6	0.43 6	av Eβ=913 5; εK=0.575 3; εL=0.0831 5; εM+=0.02393 13
(3108 11)	2167.3	0.041 10	0.079 20	7.2	0.12 3	av Eβ=941 5; εK=0.558 3; εL=0.0806 5; εM+=0.02320 13
(3173 11)	2102.5	0.33 4	0.60 6	6.3	0.93 10	av Eβ=970 5; εK=0.540 3; εL=0.0780 5; εM+=0.02244 13
(3205 11)	2070.3	0.25 3	0.43 4	6.4	0.68 7	av Eβ=985 5; εK=0.531 3; εL=0.0766 5; εM+=0.02206 13
(3362 11)	1912.7	1.9 2	2.5 2	5.7	4.4 4	av Eβ=1056 5; εK=0.488 3; εL=0.0703 5; εM+=0.02024 13
(3560 11)	1715.0	0.64 6	0.69 7	6.3	1.33 13	av Eβ=1146 5; εK=0.437 3; εL=0.0628 4; εM+=0.01808 12
(3616 11)	1658.7	0.03 1	0.03 1	7.7	0.06 2	av Eβ=1172 5; εK=0.423 3; εL=0.0608 4; εM+=0.01749 12
(3709 11)	1566.1	0.89 11	0.81 10	6.3	1.7 2	av Eβ=1215 5; εK=0.400 3; εL=0.0575 4; εM+=0.01655 11
(3738 11)	1536.9	1.8 2	1.6 1	6.0	3.4 3	av Eβ=1228 5; εK=0.393 3; εL=0.0565 4; εM+=0.01627 11
(3906 11)	1369.1	0.38 4	0.27 3	6.8	0.65 7	av Eβ=1305 5; εK=0.3559 24; εL=0.0511 4; εM+=0.01470 10
(3965 11)	1310.4	0.11 2	0.077 12	7.4	0.19 3	av Eβ=1332 5; εK=0.3436 23; εL=0.0493 4; εM+=0.01419 10
(4168 11)	1107.3	3.7 4	2.1 2	6.0	5.8 6	av Eβ=1426 5; εK=0.3038 21; εL=0.0436 3; εM+=0.01253 9
(5275 11)	0.0	65 2	15	5.3	80 2	av Eβ=1943 6; εK=0.1585 10; εL=0.02264 14; εM+=0.00651 4

† Absolute intensity per 100 decays.

γ(<sup>143</sup>Sm)

I<sub>γ</sub> normalization: Deduced by evaluators from decay scheme as follows: 1) I<sub>γ</sub> normalization=0.060 20, using ΣI(γ+ce) to (g.s.+107+754 levels)=22% 8 (**1974Kc07**), and 2) I<sub>γ</sub> normalization=0.0695 60, using ΣI(β<sup>+</sup>)/I(1107γ)=9.6 10 from I(γ<sup>±</sup>) (**1974Kc07**). The weighted average of these values is I<sub>γ</sub> normalization=0.069 5, used in this evaluation.

E <sub>γ</sub>	I <sub>γ</sub> †	E <sub>i</sub> (level)	J <sub>i</sub> <sup>π</sup>	E <sub>f</sub>	J <sub>f</sub> <sup>π</sup>	Mult.	δ	α †	Comments
107.69 1	27.9 30	107.69	1/2 <sup>+</sup>	0.0	3/2 <sup>+</sup>	M1+(E2)	≤0.14	1.371	B(M1)(W.u.)>0.0084; B(E2)(W.u.)<9.4 α(K)=1.157 17; α(L)=0.169 6; α(M)=0.0364 12; α(N+..)=0.0095 3 α(N)=0.0082 3; α(O)=0.00123 4; α(P)=7.36×10 <sup>-5</sup> 11 Mult.: K/L+M+=5.7 3 ( <b>1980Ab10</b> ).
203.1 2	1.9 3	1310.4	7/2 <sup>-</sup>	1107.3	5/2 <sup>+</sup>				
429.6 2	1.52 20	1536.9	(5/2) <sup>+</sup>	1107.3	5/2 <sup>+</sup>				
458.4 3	0.57 20	1566.1	(3/2) <sup>+</sup>	1107.3	5/2 <sup>+</sup>				
551.4 3	0.80 20	1658.7		1107.3	5/2 <sup>+</sup>				
556.6 3	0.9 2	1310.4	7/2 <sup>-</sup>	754.0	11/2 <sup>-</sup>				
607.6 2	3.5 2	1715.0	(3/2) <sup>+</sup>	1107.3	5/2 <sup>+</sup>				
691.2 3	0.77 20	2228.0	(5/2) <sup>+</sup>	1536.9	(5/2) <sup>+</sup>				
733.1 3	0.84 20	2102.5	(7/2 <sup>+</sup> )	1369.1	7/2 <sup>+</sup>				
754.0 2	2.9 5	754.0	11/2 <sup>-</sup>	0.0	3/2 <sup>+</sup>				

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$^{143}\text{Eu}$   $\varepsilon$  decay **1974Ke07** (continued) $\gamma(^{143}\text{Sm})$  (continued)

$E_\gamma$	$I_\gamma^\ddagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Comments
798.1 4	1.0 3	2167.3	7/2 <sup>+</sup>	1369.1	7/2 <sup>+</sup>	
805.3 2	13.4 6	1912.7	(3/2) <sup>+</sup>	1107.3	5/2 <sup>+</sup>	
999.6 2	7.3 3	1107.3	5/2 <sup>+</sup>	107.69	1/2 <sup>+</sup>	
1107.3 2	100	1107.3	5/2 <sup>+</sup>	0.0	3/2 <sup>+</sup>	
1163.3 3	0.37 10	2270.7?	7/2 <sup>+</sup>	1107.3	5/2 <sup>+</sup>	
<sup>x</sup> 1272.2 3	0.80 15					$E_\gamma$ : 1268.4 in 1974Ch21.
1369.1 2	12.0 4	1369.1	7/2 <sup>+</sup>	0.0	3/2 <sup>+</sup>	
1429.3 2	4.7 3	1536.9	(5/2) <sup>+</sup>	107.69	1/2 <sup>+</sup>	
1458.4 2	15.5 6	1566.1	(3/2) <sup>+</sup>	107.69	1/2 <sup>+</sup>	
1536.8 2	43.9 12	1536.9	(5/2) <sup>+</sup>	0.0	3/2 <sup>+</sup>	
1566.1 2	8.0 3	1566.1	(3/2) <sup>+</sup>	0.0	3/2 <sup>+</sup>	
1578.5 3	0.46 10	2685.8	(5/2) <sup>+</sup>	1107.3	5/2 <sup>+</sup>	
1607.3 2	13.5 6	1715.0	(3/2) <sup>+</sup>	107.69	1/2 <sup>+</sup>	
<sup>x</sup> 1668.8 2	1.3 2					
<sup>x</sup> 1680.9 3	0.32 8					
1715.2 2	2.3 3	1715.0	(3/2) <sup>+</sup>	0.0	3/2 <sup>+</sup>	
1779.1 4	0.35 15	2885.9?	(7/2 <sup>-</sup> ,9/2 <sup>+</sup> )	1107.3	5/2 <sup>+</sup>	
1804.9 2	22.2 12	1912.7	(3/2) <sup>+</sup>	107.69	1/2 <sup>+</sup>	
1912.7 2	28.4 14	1912.7	(3/2) <sup>+</sup>	0.0	3/2 <sup>+</sup>	
1955.3 3	0.80 25	3324.7?	(7/2 <sup>-</sup> )	1369.1	7/2 <sup>+</sup>	
1962.6 2	3.1 2	2070.3	5/2 <sup>+</sup> ,3/2 <sup>+</sup>	107.69	1/2 <sup>+</sup>	
<sup>x</sup> 2001.6 5	0.38 15					
2070.3 2	6.8 4	2070.3	5/2 <sup>+</sup> ,3/2 <sup>+</sup>	0.0	3/2 <sup>+</sup>	
2102.5 2	12.6 6	2102.5	(7/2 <sup>+</sup> )	0.0	3/2 <sup>+</sup>	
2131.5 3	0.48 6	2885.9?	(7/2 <sup>-</sup> ,9/2 <sup>+</sup> )	754.0	11/2 <sup>-</sup>	
2167.3 3	0.70 7	2167.3	7/2 <sup>+</sup>	0.0	3/2 <sup>+</sup>	
2228.0 3	5.4 6	2228.0	(5/2) <sup>+</sup>	0.0	3/2 <sup>+</sup>	
2270.8 3	1.6 2	2270.7?	7/2 <sup>+</sup>	0.0	3/2 <sup>+</sup>	
<sup>x</sup> 2280.0 3	0.34 6					
2303.0 3	0.45 6	2410.7?	(3/2 <sup>+</sup> ,5/2 <sup>+</sup> )	107.69	1/2 <sup>+</sup>	
<sup>x</sup> 2312.4 3	0.29 4					
<sup>x</sup> 2323.6 3	0.46 6					
2410.7 4	0.23 4	2410.7?	(3/2 <sup>+</sup> ,5/2 <sup>+</sup> )	0.0	3/2 <sup>+</sup>	
2450.6 3	0.46 6	2558.1?		107.69	1/2 <sup>+</sup>	
2479.9 3	1.13 10	2587.5	5/2 <sup>+</sup> ,3/2	107.69	1/2 <sup>+</sup>	
2557.9 3	0.45 6	2558.1?		0.0	3/2 <sup>+</sup>	
2571.1 4	0.22 5	3324.7?	(7/2 <sup>-</sup> )	754.0	11/2 <sup>-</sup>	
2578.2 4	0.15 6	2685.8	(5/2) <sup>+</sup>	107.69	1/2 <sup>+</sup>	
2587.4 3	0.64 6	2587.5	5/2 <sup>+</sup> ,3/2	0.0	3/2 <sup>+</sup>	
<sup>x</sup> 2646.8 3	0.30 5					
2685.8 3	0.54 7	2685.8	(5/2) <sup>+</sup>	0.0	3/2 <sup>+</sup>	
<sup>x</sup> 2708.9 4	0.22 4					
2842.1 6	0.14 4	2842.1		0.0	3/2 <sup>+</sup>	
3031.2 6	0.19 4	3031.2	7/2 <sup>+</sup>	0.0	3/2 <sup>+</sup>	
3154.0 6	0.15 4	3154.0	5/2 <sup>+</sup> ,3/2 <sup>+</sup>	0.0	3/2 <sup>+</sup>	
<sup>x</sup> 3342.9 7	0.13 3					
<sup>x</sup> 4093.0 30	0.07 2					

† Additional information 2.

‡ For absolute intensity per 100 decays, multiply by 0.069 5.

<sup>x</sup>  $\gamma$  ray not placed in level scheme.

<sup>143</sup>Eu ε decay **1974Ke07**

Decay Scheme

Intensities: I<sub>γ</sub> per 100 parent decays

Legend

- I<sub>γ</sub> < 2% × I<sub>γ</sub><sup>max</sup>
- I<sub>γ</sub> < 10% × I<sub>γ</sub><sup>max</sup>
- I<sub>γ</sub> > 10% × I<sub>γ</sub><sup>max</sup>

5/2<sup>+</sup> 0.0 2.59 min 2  
 Q<sub>ε</sub>=5275.11  
<sup>143</sup>Eu<sub>80</sub>

