^{158}Sm β^- decay 1980Ba51,1997Gr09

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 141, 1 (2017)	1-Feb-2017

Parent: ^{158}Sm: E=0; $J^\pi=0^+$; $T_{1/2}$=5.30 min *3*; Q(β^-)=2005 *10*; %β^- decay=100.0

Source produced by ^{252}Cf SF followed by chemical separation with measurement of total absorption γ spectrum (1996Gr20,1997Gr09) and γ spectra (1980Ba51 and unpublished study).

^{158}Eu Levels

E(level)†	E(level)†	E(level)†	E(level)†
0.0	324.7	551.3	1110
38.9	338.8	632.8	1209.6
97.7	363.6	660	1342.9
189.5	373.4	741.1	1395.3
224.2	467.8	791.5	1421.0
229.9	470	921.3	1448.0
295.8	507.3	1010	1550

† The level energies quoted to 0.1 keV are from an unpublished study of the γ rays from this decay and are given in 1997Gr09. The level energies given with no decimal point are from the analysis of the total absorption γ spectrum.

β^- radiations

E(decay)	E(level)	Iβ^-†‡	Comments
(455 *10*)	1550	0.66	
(557 *10*)	1448.0	2.5	
(584 *10*)	1421.0	0.57	
(610 *10*)	1395.3	0.81	
(662 *10*)	1342.9	2.6	
(795 *10*)	1209.6	3.9	
(895 *10*)	1110	0.90	
(995 *10*)	1010	0.80	
(1084 *10*)	921.3	2.4	
(1214 *10*)	791.5	5.0	
(1264 *10*)	741.1	0.93	
(1345 *10*)	660	1.2	
(1372 *10*)	632.8	0.75	
(1454 *10*)	551.3	35.	
(1498 *10*)	507.3	1.5	
(1535 *10*)	470	3.3	
(1537 *10*)	467.8	0.7	
(1632 *10*)	373.4	1.4	
(1641 *10*)	363.6	17.	
(1666 *10*)	338.8	12.	
(1680 *10*)	324.7	6.3	
(1907 *10*)	97.7	<2.6	Additional information 1. Iβ^-: The value is the total for levels at 0, 39, and 97 keV (1996Gr20), which is 0.6 *20*, is adopted here as limit.

† From total absorption γ spectrometry (1997Gr09).

‡ Absolute intensity per 100 decays.

^{158}Sm β^- decay 1980Ba51,1997Gr09 (continued)

$\gamma(^{158}Eu)$

Iγ normalization: 0.106 *12* determined by 1980Ba51 from %I$_\gamma$(944) = 25 *2* (1974KL11, 1975BL03) and I$_\gamma$(324)/I$_\gamma$(944) ratio measured by them at five different moments of the parent − daughter decay (944γ is from ^{158}Eu β- decay to ^{158}Gd and 324γ from this decay). With the updated value %I$_\gamma$(944) = 30 *4* (see ^{158}Eu β- decay dataset in this evaluation), one can reestimate the normalization constant N=0.127 *20* adopted here. Uncertainty does not include contribution from change in T$_{1/2}$ from 5.51 min *9* used by 1980Ba51 to the actual value, 5.30 min *3*; also since the decay scheme is unknown, no correction for coincidence summing in the 324−γ ray was made. If included the uncertainty would increase.

E$_\gamma$[†]	I$_\gamma$[†‡]	E$_i$(level)	E$_\gamma$[†]	I$_\gamma$[†‡]	E$_i$(level)	E$_\gamma$[†]	I$_\gamma$[†‡]	E$_i$(level)
[x]100.2 *3*	43.8 *25*		[x]229.7 *3*	63 *4*		[x]363.6 *3*	117 *7*	
[x]108.7 *3*	11.0 *13*		[x]283.0 *3*	6.6 *6*		[x]376.5 *3*	5.0 *4*	
[x]132.3 *3*	6.9 *10*		[x]285.4 *3*	15.9 *19*		[x]551.2 *3*	28.5 *19*	
[x]149.0 *3*	46. *3*		[x]299.7 *3*	19.8 *21*		[x]791.4 *3*	15.5 *11*	
[x]177.7 *3*	37.4 *20*		[x]321.3 *3*	78 *4*		[x]988 *1*		
[x]189.4 *3*	143 *9*		[x]324.5 *3*	100 *5*		[x]1162.9 *3*	11.4 *6*	
[x]190.7 *3*	39 *4*		[x]326.8 *3*	19.4 *13*		[x]1209.9 *3*	8.3 *12*	
[x]224.1 *3*	80 *4*		[x]338.6 *3*	35 *3*		[x]1343.3 *3*	7.8 *6*	
[x]226.6 *3*	49 *4*		[x]361.7 *3*	62 *4*		[x]1448.5 *3*	3.4 *3*	

[†] From 1980Ba51. The uncertainties in the energies are from a general comment. The intensities are not corrected for coincidence summing and this correction may be large.
[‡] For absolute intensity per 100 decays, multiply by 0.127 *20*.
[x] γ ray not placed in level scheme.