^{152}Sm(γ,γ') 1993Zi05,1965Me04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 114, 1497 (2013)	31-Aug-2013

1993Zi05 source=bremsstrahlung.
1965Me04 Eγ=963 from 13-y ^{152}Eu in high velocity centrifuge.

^{152}Sm Levels

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	S[@&]	Comments
0	0$^+$			
121.8	2$^+$			
963.4	1$^-$	28.2 fs *24*	7.3 *6*	T$_{1/2}$: From $\Gamma_{\gamma 0}$ and $\Gamma_{\gamma 0}/\Gamma$=0.451 *6*.
2510.6 *5*	1$^{(-)}$	0.0097 eV *25*	4.7 *13*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=1.06 *34*.
2541.6 *5*	1$^{(+)}$	0.0058 eV *20*	3.6 *14*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.62 *30*.
2643.4 *5*	1$^{(-)}$	0.047 eV *5*	18.9 *20*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=1.47 *16*.
2663.4 *5*	1$^{(+)}$	0.0088 eV *26*	6.7 *23*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.31 *13*.
2818.1 *5*	1$^{(+)}$	0.0141 eV *26*	8.7 *18*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.62 *16*.
2887.3 *5*	1$^{(+)}$	0.012 eV *3*	9.0 *27*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.35 *12*.
2891.7 *5*	1$^{(+)}$	0.028 eV *4*	20.8 *32*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.35 *6*. E(level): Seen in (e,e′).
2930.6 *5*	1$^{(+)}$	0.078 eV *5*	52.0 *35*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.50 *4*. E(level): Seen in (e,e′).
2939.3 *5*	1$^{(+)}$	0.0036 eV *25*	2.4 *22*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.48 *47*.
2946.8 *5*	1$^{(-)}$	0.013 eV *6*	4.6 *19*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=1.8 *9*.
2991.6 *5*	1$^{(+)}$	0.039 eV *5*	28.0 *36*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.41 *8*. E(level): Seen in (e,e′).
3012.6 *5*	1$^{(+)}$	0.015 eV *4*	10.5 *33*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.47 *20*.
3025.3 *5*	1$^{(+)}$	0.059 eV *4*	41.1 *33*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.43 *4*. E(level): Seen in (e,e′).
3090.2 *5*	1$^{(+)}$	0.078 eV *5*	46.9 *33*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.67 *6*. E(level): Seen in (e,e′).
3107.9 *5*	1$^{(-)}$	0.032 eV *7*	15.2 *28*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=1.09 *32*.
3122.6 *5*		0.0091 eV *11*	8.5 *9*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.00 *13*.
3281.7 *5*	1$^{(+)}$	0.022 eV *4*	14.7 *28*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.52 *12*.
3422.1 *5*	1$^{(-)}$	0.053 eV *17*	16 *4*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=2.3 *8*.
3708.8 *5*		0.0144 eV *25*	13.2 *20*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.00 *18*.
3794.0 *5*		0.0123 eV *26*	11.0 *20*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.00 *25*.
3882.6 *5*		0.018 eV *3*	16.2 *23*	$\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.00 *20*.

[†] From 1993Zi05, except for the 122 and 963 levels which are rounded-off values from Adopted Levels.
[‡] From 1993Zi05, except for the 963 level which is from ADOPTED levels. J=1 is determined from the ratio of intensities at 127 ° and 90°. From Iγ(g.s.)/Iγ(122 level) the authors invoke the Alaga branching rules to distinguish J$^{\pi}$=1$^+$ from 1$^-$. Several of the levels are excited in unpublished (e,e′) work quoted by the authors confirming M1 excitation. These cases are noted. the B(M1) values from (e,e′), although determined with less precision, agree well with values from (γ,γ').
[#] From $\Gamma_{\gamma 0}$ and $\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$ of 1993Zi05, except for the 963 level as noted. Transitions to only the g.s. and 2$^+$ level were observed. Any additional branching would make the deduced half-life an upper limit. The branchings are given in comments.
[@] Label=$\Gamma_{\gamma 0}$ (meV).
[&] From 1993Zi05, except for the 963 level where the value is from 1965Me04.