^{139}La(γ,γ'):E=5.4-11.5 MeV 2010Ma40

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

2010Ma40: E(end-point)=11.5 MeV. Bremsstrahlung beam using superconducting electron accelerator ELBE at Rossendorf (FZD). Measured Eγ, Iγ using four Compton-suppressed HPGe detectors, two at 90°, and the other two at 127° relative to the beam direction.

^{139}La Levels

E(level)	J^π	$g\Gamma_0^2/\Gamma$ (eV)[‡]	I_s (eVb)[†]	E(level)	$g\Gamma_0^2/\Gamma$ (eV)[‡]	I_s (eVb)[†]
0.0	$7/2^+$			6501.4 *6*	0.54 eV *20*	49 *18*
5380.6 *6*		0.15 eV *5*	20 *6*	6526.7 *6*	0.37 eV *6*	33 *5*
5389.8 *12*		0.10 eV *6*	13 *8*	6539.6 *5*	0.54 eV *7*	49 *7*
5406.8 *13*		0.12 eV *9*	16 *11*	6549.6 *8*	0.32 eV *6*	28 *5*
5423.1 *7*		0.19 eV *6*	25 *8*	6619.4 *6*	0.13 eV *5*	12 *4*
5545.4 *7*		0.055 eV *25*	7 *3*	6651.3 *7*	0.59 eV *14*	52 *12*
5552.7 *9*		0.04 eV *3*	5 *3*	6674.8 *8*	0.30 eV *11*	26 *9*
5572.0 *11*		0.15 eV *8*	19 *10*	6713.0 *6*	0.52 eV *9*	44 *8*
5582.1 *10*		0.14 eV *6*	17 *8*	6723.8 *15*	0.18 eV *6*	15 *5*
5594.8 *7*		0.21 eV *6*	25 *7*	6755.8 *7*	0.77 eV *17*	65 *15*
5620.4 *8*		0.11 eV *4*	13 *5*	6767.6 *18*	0.33 eV *10*	28 *8*
5658.8 *7*		0.16 eV *4*	19 *5*	6875.4 *8*	0.7 eV *3*	59 *23*
5688.1 *5*		0.09 eV *3*	10 *4*	6889.9 *8*	0.73 eV *21*	59 *17*
5708.6 *7*		0.21 eV *9*	24 *11*	6901.1 *10*	0.56 eV *16*	45 *13*
5716.5 *6*		0.30 eV *13*	35 *15*	6926.3 *8*	0.9 eV *5*	72 *40*
5723.0 *3*		0.41 eV *21*	48 *24*	6969.0 *6*	0.36 eV *10*	28 *7*
5811.3 *8*		0.13 eV *9*	15 *10*	6983.4 *7*	0.29 eV *7*	23 *6*
5830.9 *9*		0.09 eV *4*	10 *5*	7019.7 *10*	0.19 eV *6*	15 *4*
5848.9 *6*		0.13 eV *4*	15 *5*	7036.1 *9*	0.22 eV *6*	17 *4*
5940.2 *8*		0.26 eV *8*	29 *9*	7052.4 *7*	0.27 eV *6*	21 *5*
5984.1 *20*		0.06 eV *4*	7 *4*	7154.0 *11*	0.14 eV *4*	10 *3*
6015.5 *8*		0.18 eV *5*	19 *5*	7158 *3*	0.10 eV *4*	8 *3*
6047.1 *14*		0.10 eV *4*	11 *4*	7272.8 *15*	0.12 eV *9*	8 *7*
6077.9 *11*		0.31 eV *9*	33 *9*	7320.0 *8*	0.19 eV *7*	14 *5*
6097.8 *12*		0.33 eV *8*	34 *8*	7327.2 *8*	0.19 eV *6*	14 *4*
6112.0 *15*		0.26 eV *7*	26 *7*	7370.0 *8*	0.25 eV *6*	18 *4*
6131.1 *9*		0.36 eV *8*	37 *8*	7400.0 *7*	0.32 eV *6*	22 *4*
6150.8 *10*		0.33 eV *8*	34 *8*	7414.0 *7*	0.34 eV *7*	24 *5*
6178 *3*		0.13 eV *5*	13 *5*	7444.9 *12*	0.27 eV *9*	18 *6*
6194.1 *9*		0.46 eV *8*	46 *8*	7451.1 *9*	0.36 eV *10*	25 *7*
6214.2 *5*		0.83 eV *11*	82 *10*	7462.8 *7*	0.34 eV *9*	23 *6*
6233.3 *8*		0.49 eV *8*	48 *8*	7472.0 *9*	0.29 eV *10*	20 *7*
6249.2 *20*		0.23 eV *7*	23 *7*	7506.7 *7*	0.44 eV *9*	30 *6*
6260.2 *20*		0.27 eV *8*	27 *8*	7552.7 *8*	0.24 eV *9*	16 *6*
6269.5 *12*		0.60 eV *11*	58 *11*	7562.1 *4*	0.22 eV *8*	15 *5*
6301.1 *6*		0.42 eV *7*	41 *6*	7570.2 *11*	0.17 eV *6*	12 *4*
6326.1 *6*		0.50 eV *7*	47 *7*	7579.8 *6*	0.31 eV *7*	21 *5*
6354.8 *5*		0.80 eV *10*	76 *10*	7591.6 *11*	0.18 eV *5*	12 *4*
6366.5 *10*		0.37 eV *7*	35 *7*	7599.1 *7*	0.26 eV *6*	18 *4*
6383.5 *5*		0.57 eV *14*	54 *14*	7636.2 *5*	0.13 eV *4*	9 *3*
6402.6 *9*		0.9 eV *3*	81 *33*	7661.3 *18*	0.13 eV *8*	8 *5*
6435.2 *20*		0.20 eV *8*	19 *8*	7667 *3*	0.38 eV *8*	25 *5*
6441.9 *11*		0.57 eV *12*	53 *11*	7678.6 *16*	0.24 eV *4*	16 *2*
6450.9 *4*		0.96 eV *13*	89 *12*	7684.7 *9*	0.42 eV *5*	27 *3*
6465.3 *7*		0.35 eV *8*	33 *7*	7692.4 *12*	0.33 eV *4*	21 *2*
6483.8 *16*		0.38 eV *21*	35 *20*	7699 *3*	0.13 eV *3*	9 *2*
6491.3 *8*		0.57 eV *25*	52 *22*	7765.1 *13*	0.10 eV *7*	6 *5*

Continued on next page (footnotes at end of table)

^{139}La(γ,γ'):E=5.4-11.5 MeV 2010Ma40 (continued)

^{139}La Levels (continued)

E(level)	$g\Gamma_0^2/\Gamma$ (eV)‡	I_s (eVb)†	E(level)	$g\Gamma_0^2/\Gamma$ (eV)‡	I_s (eVb)†
7789.4 *13*	0.10 eV *6*	6 *4*	7961 *3*	0.08 eV *5*	5 *3*
7905.2 *6*	0.37 eV *9*	23 *6*	7972.3 *7*	0.35 eV *8*	21 *5*
7912.5 *7*	0.37 eV *4*	23 *3*	8551.5 *6*	0.13 eV *5*	7 *3*
7922.2 *9*	0.28 eV *9*	17 *5*	8595.7 *5*	0.19 eV *5*	10 *2*

† Energy-integrated cross section deduced from intensities at 127°.
‡ Partial width of g.s. transition, g=(2J+1)/(2J(target)+1), where J(target)=7/2.

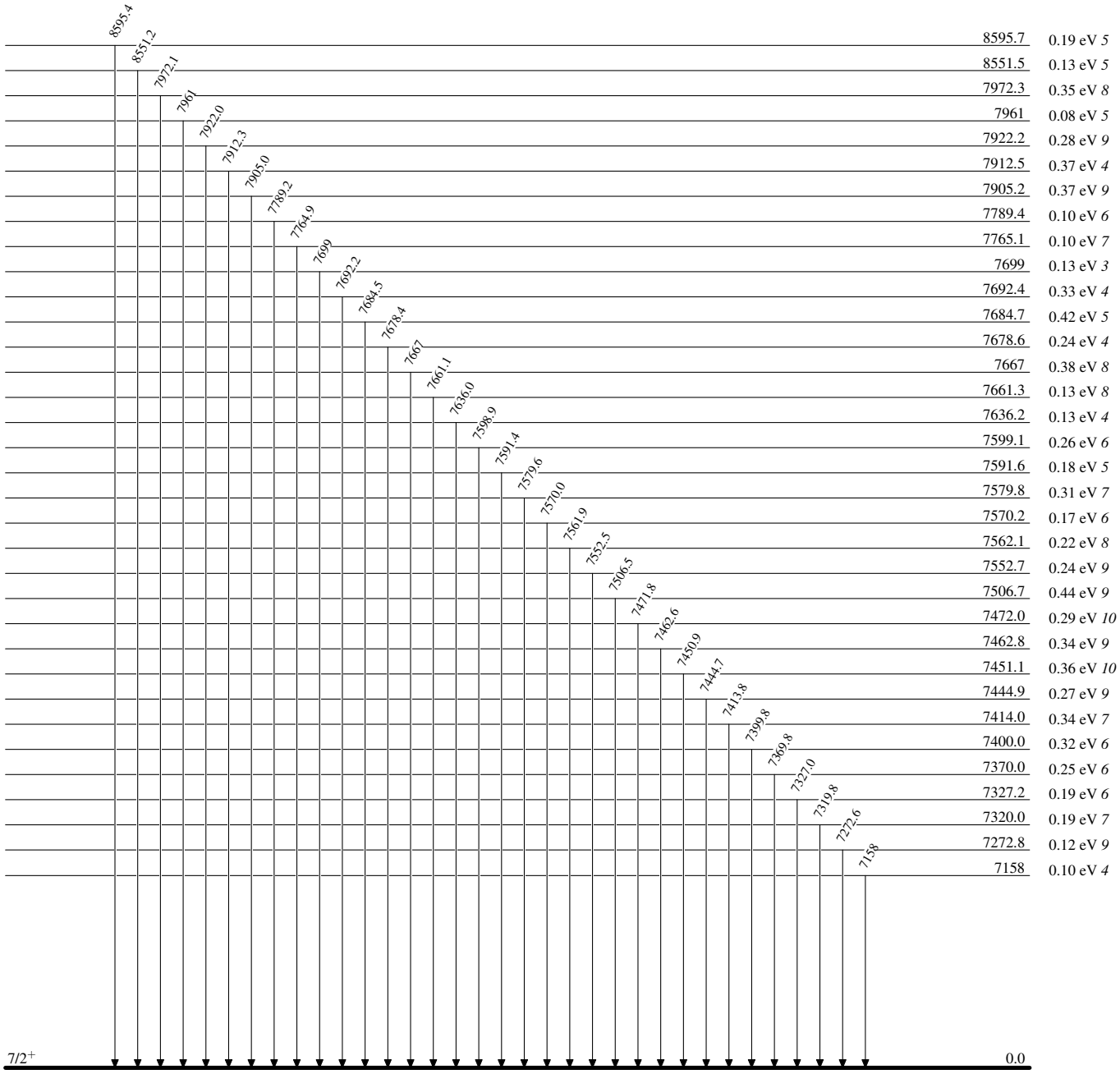
γ(^{139}La)

E_γ†	E_i(level)	E_f	J_f^π	E_γ†	E_i(level)	E_f	J_f^π	E_γ†	E_i(level)	E_f	J_f^π
5380.5 *6*	5380.6	0.0	7/2+	6300.9 *6*	6301.1	0.0	7/2+	7272.6 *15*	7272.8	0.0	7/2+
5389.7 *12*	5389.8	0.0	7/2+	6325.9 *6*	6326.1	0.0	7/2+	7319.8 *8*	7320.0	0.0	7/2+
5406.7 *13*	5406.8	0.0	7/2+	6354.6 *5*	6354.8	0.0	7/2+	7327.0 *8*	7327.2	0.0	7/2+
5423.0 *7*	5423.1	0.0	7/2+	6366.3 *10*	6366.5	0.0	7/2+	7369.8 *8*	7370.0	0.0	7/2+
5545.3 *7*	5545.4	0.0	7/2+	6383.3 *5*	6383.5	0.0	7/2+	7399.8 *7*	7400.0	0.0	7/2+
5552.6 *9*	5552.7	0.0	7/2+	6402.4 *9*	6402.6	0.0	7/2+	7413.8 *7*	7414.0	0.0	7/2+
5571.9 *11*	5572.0	0.0	7/2+	6435 *2*	6435.2	0.0	7/2+	7444.7 *12*	7444.9	0.0	7/2+
5582.0 *10*	5582.1	0.0	7/2+	6441.7 *11*	6441.9	0.0	7/2+	7450.9 *9*	7451.1	0.0	7/2+
5594.7 *7*	5594.8	0.0	7/2+	6450.7 *4*	6450.9	0.0	7/2+	7462.6 *7*	7462.8	0.0	7/2+
5620.3 *8*	5620.4	0.0	7/2+	6465.1 *7*	6465.3	0.0	7/2+	7471.8 *9*	7472.0	0.0	7/2+
5658.7 *7*	5658.8	0.0	7/2+	6483.6 *16*	6483.8	0.0	7/2+	7506.5 *7*	7506.7	0.0	7/2+
5688.0 *5*	5688.1	0.0	7/2+	6491.1 *8*	6491.3	0.0	7/2+	7552.5 *8*	7552.7	0.0	7/2+
5708.5 *7*	5708.6	0.0	7/2+	6501.2 *6*	6501.4	0.0	7/2+	7561.9 *4*	7562.1	0.0	7/2+
5716.4 *6*	5716.5	0.0	7/2+	6526.5 *6*	6526.7	0.0	7/2+	7570.0 *11*	7570.2	0.0	7/2+
5722.9 *3*	5723.0	0.0	7/2+	6539.4 *5*	6539.6	0.0	7/2+	7579.6 *6*	7579.8	0.0	7/2+
5811.2 *8*	5811.3	0.0	7/2+	6549.4 *8*	6549.6	0.0	7/2+	7591.4 *11*	7591.6	0.0	7/2+
5830.8 *9*	5830.9	0.0	7/2+	6619.2 *6*	6619.4	0.0	7/2+	7598.9 *7*	7599.1	0.0	7/2+
5848.8 *6*	5848.9	0.0	7/2+	6651.1 *7*	6651.3	0.0	7/2+	7636.0 *5*	7636.2	0.0	7/2+
5940.1 *8*	5940.2	0.0	7/2+	6674.6 *8*	6674.8	0.0	7/2+	7661.1 *18*	7661.3	0.0	7/2+
5984 *2*	5984.1	0.0	7/2+	6712.8 *6*	6713.0	0.0	7/2+	7667 *3*	7667	0.0	7/2+
6015.4 *8*	6015.5	0.0	7/2+	6723.6 *15*	6723.8	0.0	7/2+	7678.4 *16*	7678.6	0.0	7/2+
6047.0 *14*	6047.1	0.0	7/2+	6755.6 *7*	6755.8	0.0	7/2+	7684.5 *9*	7684.7	0.0	7/2+
6077.8 *11*	6077.9	0.0	7/2+	6767.4 *18*	6767.6	0.0	7/2+	7692.2 *12*	7692.4	0.0	7/2+
6097.7 *12*	6097.8	0.0	7/2+	6875.2 *8*	6875.4	0.0	7/2+	7699 *3*	7699	0.0	7/2+
6111.9 *15*	6112.0	0.0	7/2+	6889.7 *8*	6889.9	0.0	7/2+	7764.9 *13*	7765.1	0.0	7/2+
6131.0 *9*	6131.1	0.0	7/2+	6900.9 *10*	6901.1	0.0	7/2+	7789.2 *13*	7789.4	0.0	7/2+
6150.7 *10*	6150.8	0.0	7/2+	6926.1 *8*	6926.3	0.0	7/2+	7905.0 *6*	7905.2	0.0	7/2+
6178 *3*	6178	0.0	7/2+	6968.8 *6*	6969.0	0.0	7/2+	7912.3 *7*	7912.5	0.0	7/2+
6194.0 *9*	6194.1	0.0	7/2+	6983.2 *7*	6983.4	0.0	7/2+	7922.0 *9*	7922.2	0.0	7/2+
6214.1 *5*	6214.2	0.0	7/2+	7019.5 *10*	7019.7	0.0	7/2+	7961 *3*	7961	0.0	7/2+
6233.1 *8*	6233.3	0.0	7/2+	7035.9 *9*	7036.1	0.0	7/2+	7972.1 *7*	7972.3	0.0	7/2+
6249 *2*	6249.2	0.0	7/2+	7052.2 *7*	7052.4	0.0	7/2+	8551.2 *6*	8551.5	0.0	7/2+
6260 *2*	6260.2	0.0	7/2+	7153.8 *11*	7154.0	0.0	7/2+	8595.4 *5*	8595.7	0.0	7/2+
6269.3 *12*	6269.5	0.0	7/2+	7158 *3*	7158	0.0	7/2+				

† Deduced by evaluators from level energies with recoil correction removed.

^{139}La(γ,γ′):E=5.4-11.5 MeV 2010Ma40

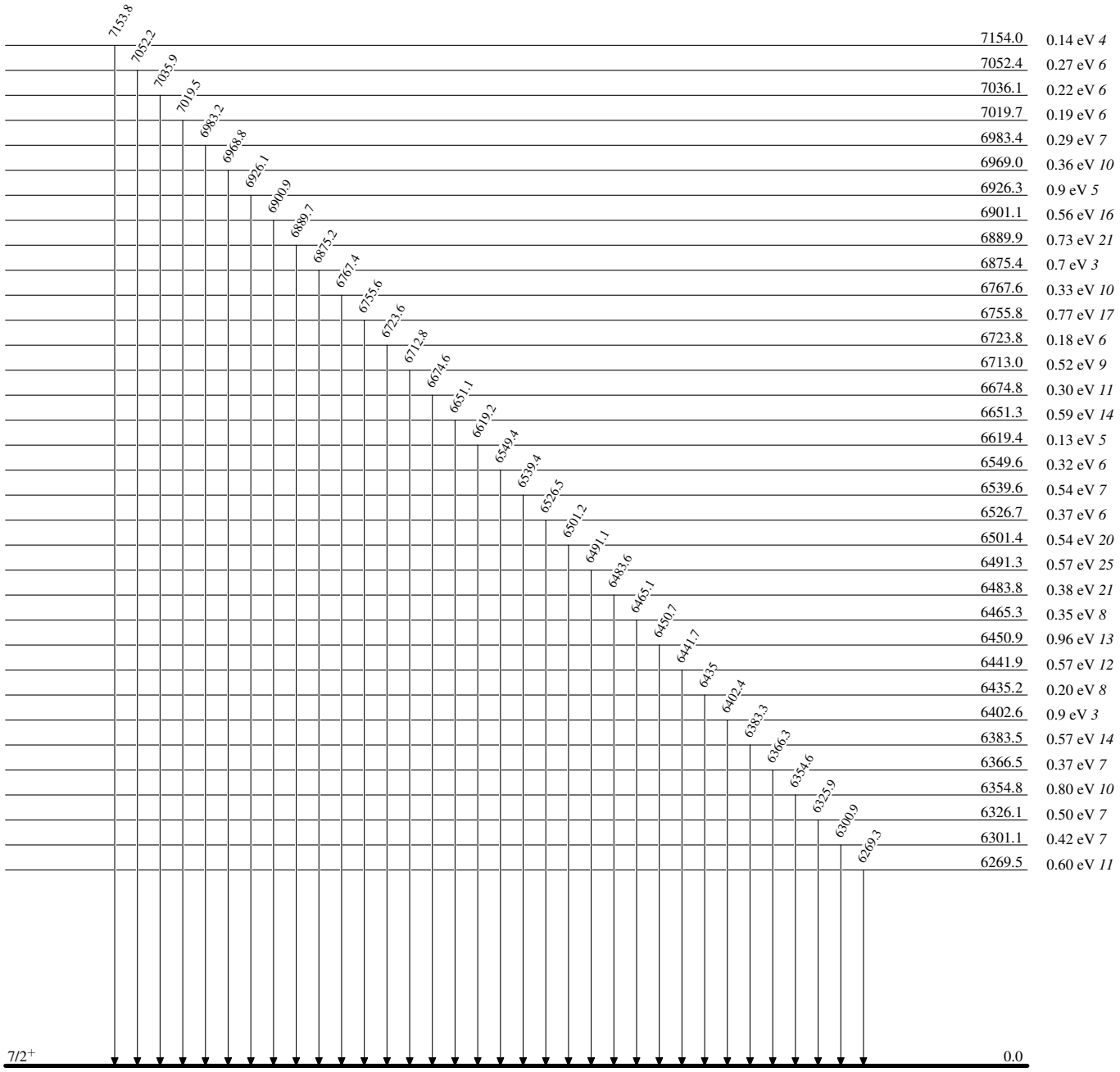
Level Scheme



$^{139}_{57}La_{82}$

^{139}La(γ,γ′):E=5.4-11.5 MeV 2010Ma40

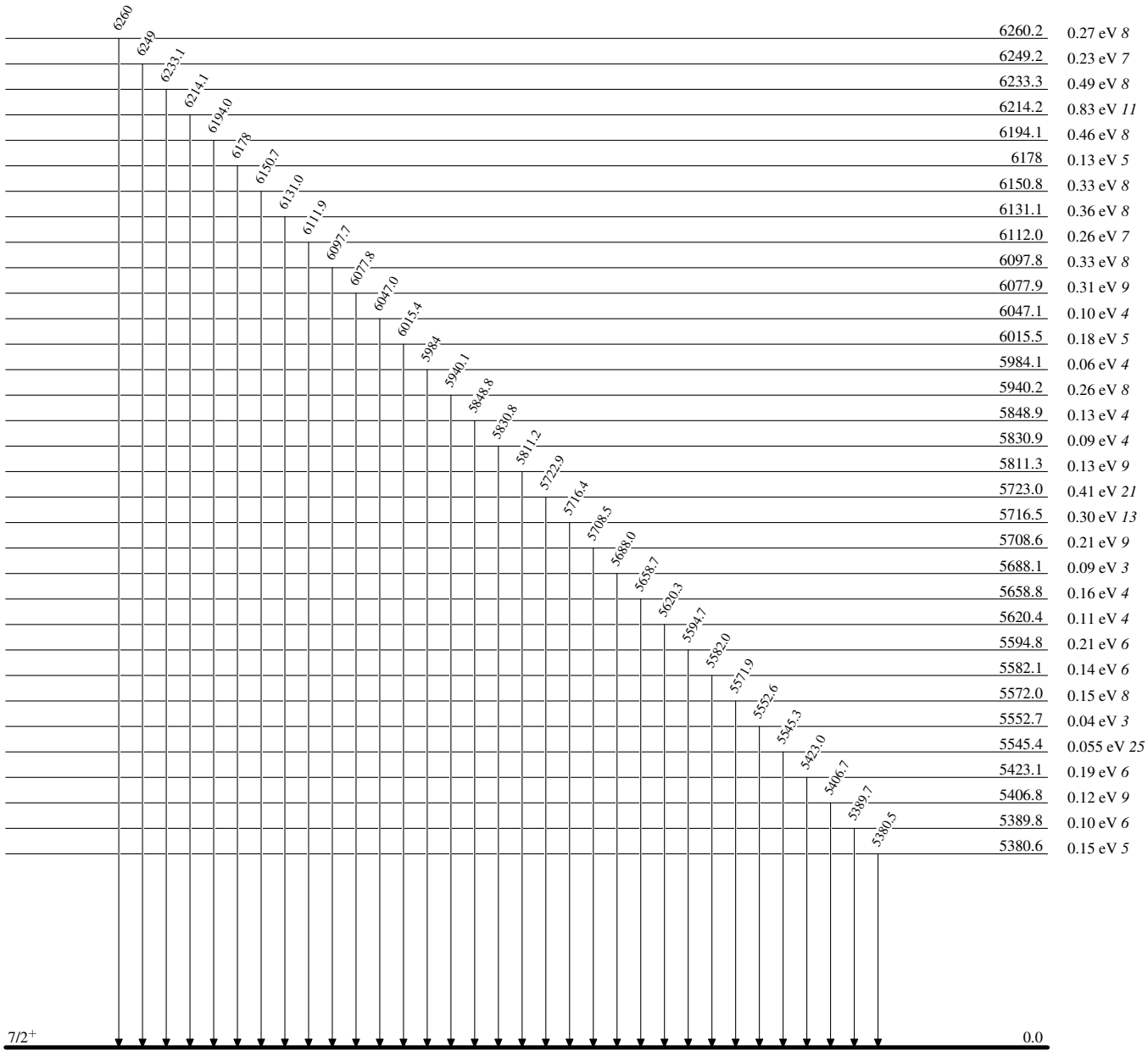
Level Scheme (continued)



$^{139}_{57}La_{82}$

^{139}La(γ,γ′):E=5.4-11.5 MeV 2010Ma40

Level Scheme (continued)



$^{139}_{57}La_{82}$