^{80}Se(γ,γ') 1973Sz04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 105, 223 (2005)	22-Jun-2005

1973Sz04 (also 1970Sc27) E=8.995 MeV (γ rays from neutron capture in nickel). Measured γ, $\gamma\gamma(\theta)$ (90°,135°).
Others: 1976KaYY (E=666 keV from ^{80}Br decay), 1963Ar12, 1979Mo19.

^{80}Se Levels

E(level)‡	J$^\pi$†	$T_{1/2}$	Comments
0.0	0^+		
666.43 *24*	2^+	8.3 ps *8*	No primary transition to this level. $T_{1/2}$: from (γ,γ') (1976KaYY).
1449.3 *3*	2^+		
1479.24 *24*	0^+		
1873.5 *6*	0^+,2^+		J$^\pi$: $(0)^+$ in 'Adopted Levels'.
1960.3 *3*	2^+		
2310.3 *5*	$(1,2^+)$		J$^\pi$: (2^+) in 'Adopted Levels'.
2514.5 *3*	$(1^-,2^+)$		J$^\pi$: (2^+) in 'Adopted Levels'.
2627.1# *5*	(0,1,2)		J$^\pi$: (0^+) in 'Adopted Levels'.
2814.0 *4*	(2^+)		J$^\pi$: $(2^+,1^+)$ in 'Adopted Levels'.
2827.3 *3*	(2^+)		
3126.3 *3*	(2^+)		
3199.6# *4*	(2)		
3248.6# *6*	(2^+)		
3316.7# *11*	(0)		
3350.7 *3*	(1^+)		
3391.0 *4*	(2^+)		
3441.6 *4*	(0^+)		
3606.8# *5*	(2)		
3619.9 *5*	$(0^+,2^+)$		
3655.8# *11*	(0,1,2)		
3870.4 *5*	(1^-)		
3952.2 *4*	(2^+)		
4062.4 *4*	(0^+)		
7818.87 *22*	$1^{(-)}$		

† 1973Sz04 assigned J^π on the basis of $\gamma\gamma(\theta)$ data. J^π of resonant state at 7819 was taken as (1^-) and the primary transitions were assumed to be of pure dipole (M1 or E1) character. Since small quadrupole admixtures cannot be discounted, these assignments should not be treated as firmly established. See 'Adopted Levels' for further discussion on J^π's.
‡ From least-squares fit to Eγ's.
# No deexciting transitions reported. Level defined by primary transition only.

$\gamma(^{80}Se)$

1973Sz04 deduced A_2 values from data at 90° and 135° and compared these with theoretical values: 0.500, −0.250, 0.050 for 0-1-0, 0-1-1, 0-1-2 spin sequences, respectively. Pure dipole transitions were assumed.

Continued on next page (footnotes at end of table)

^{80}Se(γ,γ′) 1973Sz04 (continued)

γ(^{80}Se) (continued)

E_γ [#]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [†]	Comments
665.9 *4*	139	666.43	2^+	0.0	0^+		
782.9 *4*	16	1449.3	2^+	666.43	2^+		
813.0 *4*	24	1479.24	0^+	666.43	2^+		
1035.7 *4*	4	2514.5	$(1^-,2^+)$	1479.24	0^+		
1206.7 *7*	4	1873.5	$0^+,2^+$	666.43	2^+		
1294.2 *7*	12	1960.3	2^+	666.43	2^+		I_γ: not given by 1973Sz04, deduced from 'adopted gammas'.
1449.3 *7*	24.9	1449.3	2^+	0.0	0^+		
1643.2 *5*	11.8	2310.3	$(1,2^+)$	666.43	2^+		
1848.2 *5*	10.1	2514.5	$(1^-,2^+)$	666.43	2^+		
1909.9 *5*	0.8	3391.0	(2^+)	1479.24	0^+		
1941.9 *5*	0.8	3391.0	(2^+)	1449.3	2^+		
1960.1 *5*	7.2	1960.3	2^+	0.0	0^+		
2160.5 *5*	10.8	2827.3	(2^+)	666.43	2^+		
2391.9 *5*	0.7	3870.4	(1^-)	1479.24	0^+		
2459.7 *5*	12.6	3126.3	(2^+)	666.43	2^+		
2612.7 *5*	2.9	4062.4	(0^+)	1449.3	2^+		
2774.5 *4*	3.6	3441.6	(0^+)	666.43	2^+		
2813.4 *6*	6.3	2814.0	(2^+)	0.0	0^+		
2827.7 *8*	1.2	2827.3	(2^+)	0.0	0^+		
2953.7 *5*	0.6	3619.9	$(0^+,2^+)$	666.43	2^+		
3286.1 *5*	2.6	3952.2	(2^+)	666.43	2^+		
3351.3 *5*	7.2	3350.7	(1^+)	0.0	0^+		
3756.1 *4*	4.3 *4*	7818.87	$1^{(-)}$	4062.4	(0^+)	(E1)	A_2=+0.39 *24*.
3866.9 *4*	3.0 *5*	7818.87	$1^{(-)}$	3952.2	(2^+)		A_2=−0.30 *38*.
3949.1 *5*	3.0 *4*	7818.87	$1^{(-)}$	3870.4	(1^-)		A_2=−0.25 *30*.
4163 *1*	1.3 *3*	7818.87	$1^{(-)}$	3655.8	(0,1,2)		
4199.1 *5*	2.8 *3*	7818.87	$1^{(-)}$	3619.9	$(0^+,2^+)$		A_2=+0.46 *28*.
4212.0 *4*	3.7 *3*	7818.87	$1^{(-)}$	3606.8	(2)		A_2=+0.19 *19*.
4376.8 *3*	5.2 *4*	7818.87	$1^{(-)}$	3441.6	(0^+)		A_2=+0.40 *18*.
4427.1 *3*	8.5 *3*	7818.87	$1^{(-)}$	3391.0	(2^+)	(E1)	A_2=+0.11 *7*.
4468.2 *2*	9.2 *4*	7818.87	$1^{(-)}$	3350.7	(1^+)	(E1)	A_2=−0.25 *8*.
4502 *1*	2.2 *4*	7818.87	$1^{(-)}$	3316.7	(0)		A_2=+1.2 *7*.
4570.1 *5*	7.3 *3*	7818.87	$1^{(-)}$	3248.6	(2^+)	(E1)	A_2=+0.01 *9*.
4619.1 *3*	5.5 *3*	7818.87	$1^{(-)}$	3199.6	(2)		A_2=+0.21 *10*.
4692.4 *2*	12.5 *3*	7818.87	$1^{(-)}$	3126.3	(2^+)	(E1)	A_2=+0.14 *8*.
4991.4 *2*	12.4 *4*	7818.87	$1^{(-)}$	2827.3	(2^+)	(E1)	A_2=+0.13 *7*.
5004.3 *5*	3.5 *3*	7818.87	$1^{(-)}$	2814.0	(2^+)		A_2=+0.37 *37*.
5191.6 *4*	1.0 *3*	7818.87	$1^{(-)}$	2627.1	(0,1,2)		
5304.4 *3*	6.4 *3*	7818.87	$1^{(-)}$	2514.5	$(1^-,2^+)$		A_2=+0.17 *9*.
5507.2 *7*	4.2 *5*	7818.87	$1^{(-)}$	2310.3	$(1,2^+)$		A_2=−0.03 *17*.
5858.4 *2*	27.8 *3*	7818.87	$1^{(-)}$	1960.3	2^+	(E1)	A_2=+0.06 *3*.
5944.7 *8*	1.1 *2*	7818.87	$1^{(-)}$	1873.5	$0^+,2^+$		A_2=+0.62 *58*.
6339.4 *1*	9.4 *2*	7818.87	$1^{(-)}$	1479.24	0^+		A_2=+0.58 *6*.
6369.4 *3*	8.4 *2*	7818.87	$1^{(-)}$	1449.3	2^+		A_2=+0.15 *13*.
7818.9 *5*	100.0 *5*	7818.87	$1^{(-)}$	0.0	0^+	(E1)	A_2=+0.50.

[†] Estimated from reduced transition strengths for E1 and M1 multipolarities. See 1973Sz04 for definition of these reduced transition strengths. Based on systematics, 1973Sz04 assigned E1 multipolarity to transitions which give M1-reduced strength ≥0.05 eV MeVE4-4. 1973Sz04 assumed that all the primary transitions are of dipole nature.

[‡] Uncertainties for secondary transitions not given by 1973Sz04. These are probably 10% as for the primary transitions.

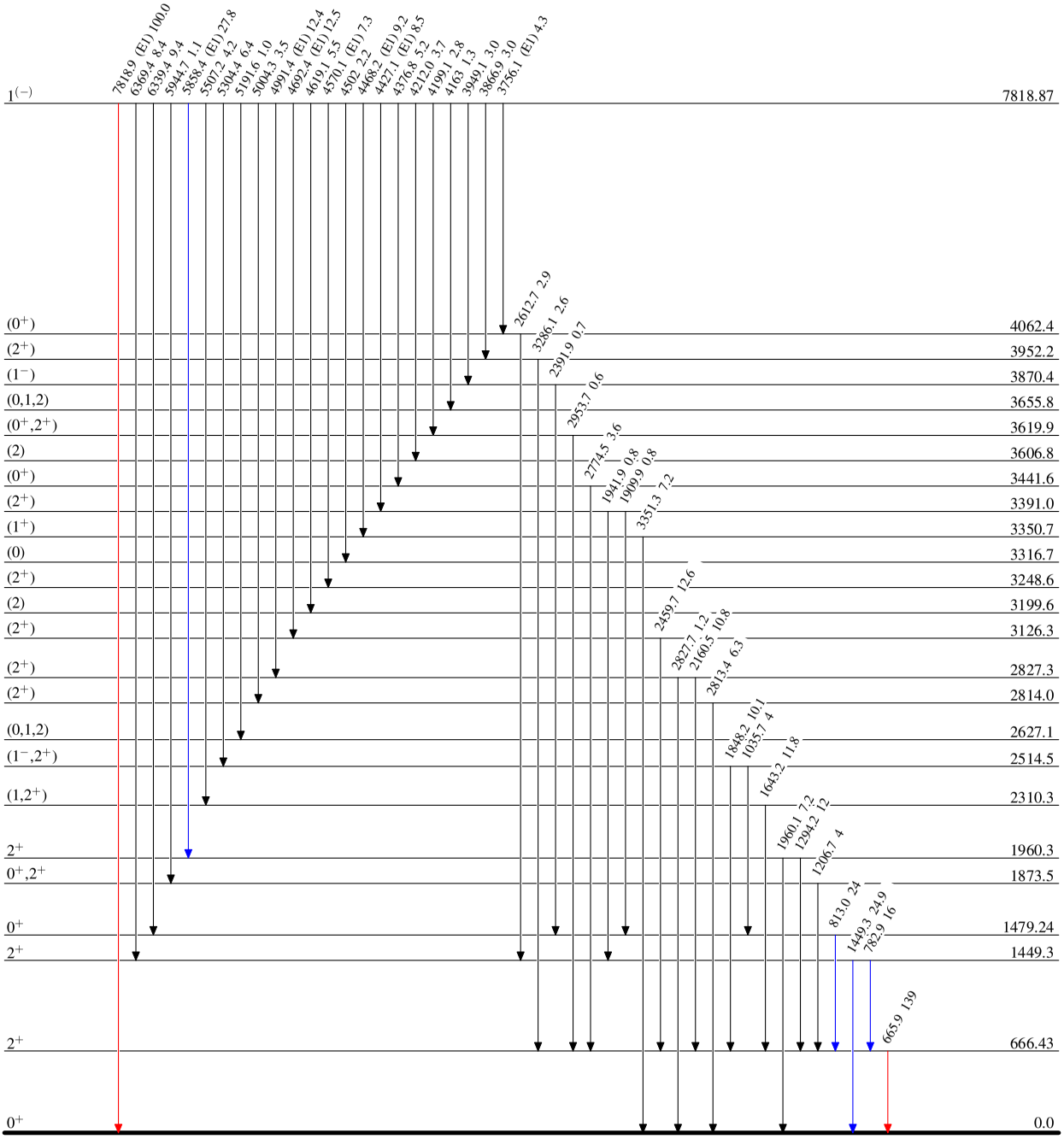
[#] Uncertainties on primary γ rays are taken from uncertainties on energies of final levels given by 1973Sz04.

^{80}Se(γ,γ′) 1973Sz04

Level Scheme

Intensities: Relative I_γ

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



$^{80}_{34}Se_{46}$