Coulomb excitation 1974Ba80,1977Le11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. K. Tuli, E. Browne	NDS 157, 260 (2019)	1-Mar-2019

1974Ba80: (^{16}O,^{16}Oγ), E=39.2 MeV. (α,$\alpha'\gamma$), E=6.6 MeV and 7.3 MeV. Enriched targets. Deduced B(E2) values from γ yield of (^{16}O,^{16}Oγ). Yields are related by (α,$\alpha'\gamma$) on natural Se target to a ^{80}Se(α,$\alpha'\gamma$) measurement, where B(E2) values are extracted by means of first- and second-order perturbation theories of Alder.

1977Le11: (^{16}O,^{16}Oγ), E=30 MeV to 40 MeV. (α,$\alpha'\gamma$), E=7.3 MeV enriched targets. Deduced B(E2) and Q of 655 level from σ(inelastic)/σ(elastic) using the matrix elements of 1974Ba80 to account for the interference of higher excited states.

2018Li20:Multistep Coulomb excitation in ^{82}Se with 577 MeV beam on ^{238}U target. Measured level $T_{1/2}$ using recoil-distance Doppler shift technique.

1969He11: (^{16}O,^{16}Oγ), E=33 MeV to 38 MeV. Enriched target. NaI(Tl). Measured $\gamma(\theta$,H). Deduced g-factor.

1995Ka29: ^{82}Se(^{16}O,^{16}Oγ), E=34 MeV; ^{48}Ti(^{82}Se,^{82}Se$'$), E=195 MeV; ^{208}Pb(^{82}Se,^{82}Se$'$), E=316 MeV. Measured γ, $\gamma(\theta)$, Ge(Li). See paper for deduced E2 and M1 matrix elements.

1998Sp03: 230 MeV ^{82}Se on composite target consisting of natural Si, Gd, Ta, Al, and Cu. Measured $\gamma(\theta$,H). Deduced g-factors.

^{82}Se Levels

E(level)	J^π‡	$T_{1/2}$†	Comments
0	0^+		
654.82 *15*	2^+	12.8 ps *7*	B(E2)↑=0.183 *10*; g=+0.497 *29*; Q=−0.22 *7* B(E2) from 2016Pr01,Q from 1977Le11. Constructive interference of the second excited state has been assumed (Q=−0.11 *7* for destructive interference). B(E2)=0.180 *3* (1977Le11),0.175 *9* (1974Ba80), 0.17 *3* (2005Iw03), 0.179 *19* (1995Ka29); others: 1970AgZV, 1962Ga13, 1962St02, 1960An07,1956Te26. g: from 1998Sp03, based on 1978Br38. Other: +0.43 *12* from $\gamma(\theta$,H) (1969He11). $T_{1/2}$: From 2016Pr01, deduced from B(E2).
1409.6 *11*	0^+	30 ps	B(E2)(2^+ to 0^+)=0.0015. B(E2)(↓)(1409 level)/B(E2)(↓)(655 level)=0.22 from reinspection of the 1974Ba80 γ spectrum (see 1977Le11).
1731.1 *3*	2^+	0.94 ps *11*	B(E2)(2^+ to $2+'$)=0.0106 *15*; B(E2)(0^+ to $2+'$)=0.0145 *15* (1974Ba80). Pure E2 was assumed for B(E2)(2^+ to $2+'$).
1735.3 *5*	4^+	0.96 ps *15*	g=0.57 *38* (1998Sp03) B(E2)(2^+ to 4^+)=0.072 *11* (1974Ba80).
2550	$(3,4^+)$		J^π: J^π adopted as $(3,4^+)$. Level feeding in (n,n$'\gamma$) supports J=3. 1995Ka29 assumed it to be 4^+ for their calculations.

† From B(E2).
‡ From Adopted Levels.

γ(^{82}Se)

E_i(level)	J^π_i	E_γ†	I_γ‡	E_f	J^π_f
654.82	2^+	654.82 *15*	100	0	0^+
1409.6	0^+	754.8#		654.82	2^+
1731.1	2^+	1076.3 *3*	26@ *5*	654.82	2^+
		1731.0 *5*	100	0	0^+
1735.3	4^+	1080.5 *4*	100	654.82	2^+
2550	$(3,4^+)$	815&		1735.3	4^+
		819&		1731.1	2^+
		1895&		654.82	2^+

† From 1974Ba80.

Continued on next page (footnotes at end of table)

Coulomb excitation 1974Ba80,1977Le11 (continued)

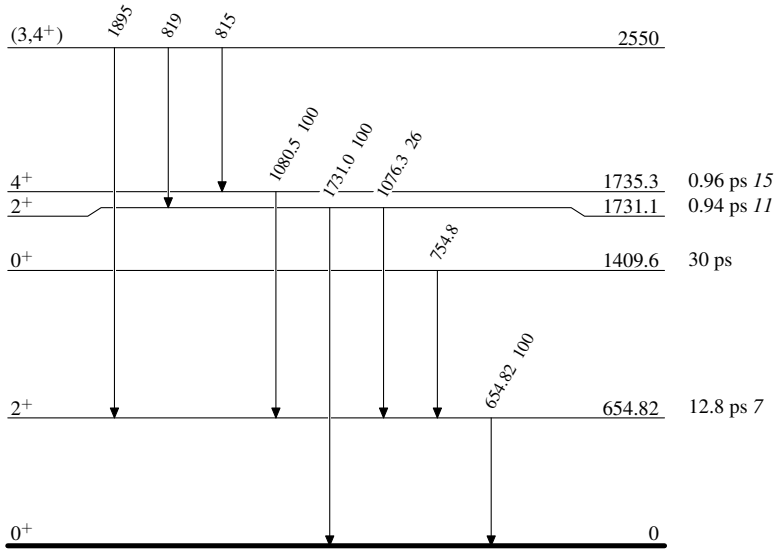
$\gamma(^{82}Se)$ (continued)

‡ γ branching ratios (1974Ba80).
# From reinspection of γ spectrum of 1974Ba80 (see 1977Le11).
@ From Adopted Levels, Gammas.
& Eγ from level energy difference, presumably observed by 1995Ka29.

Coulomb excitation 1974Ba80,1977Le11

Level Scheme

Intensities: Relative photon branching from each level



$^{82}_{34}Se_{48}$