Coulomb excitation 1980Pa21

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	N. Nica and B. Singh	NDS 181, 1 (2022)	9-Mar-2022

1980Pa21: (α,α') E=8, 10, 13 MeV mag spect.
1976Ga10: (^{16}O,^{16}O′) E=44−MeV γ-detection (α,α') E=11−MeV particle detection (716 level only).
1975ScYZ: (α,α') E=13.5−MeV (^{16}O,^{16}O′) E=50-60−MeV γ detection.
1977ScYK: (α,$\alpha'\gamma$), (^{16}O,^{16}O′γ) exp similar to 1975ScYZ.
1977ScYL: (α,α') E=10,12,14,16 MeV mag spect.
Others: 1960Na13, 1963Al14, 1963Al30, 1964Al28.

^{147}Sm Levels

E(level)†	J$^\pi$†	$T_{1/2}$‡	Comments
0.0	$7/2^-$	1.073×10^{11} y *10*	$T_{1/2}$: from Adopted Levels.
121.212 *5*	$5/2^-$	0.79 ns *14*	B(E2)↑=0.093 *8* B(E2)↑: weighted av. (ext. unc.) of 0.093 *11* (1980Pa21), 0.079 *22* (1976Ga10), 0.101 *16* (1977ScYK), 0.092 *18* (1975ScYZ). Others: 1963Al14, 1964Al28. $T_{1/2}$: using $\delta(121\gamma)=-0.33$ *3*, this $T_{1/2}$ is in agreement with the adopted $T_{1/2}$=0.798 ns *17*, while using $\delta=-0.278$ *20* results in discrepant $T_{1/2}$ (both δ′s from ^{147}Eu ε). From this reason $\delta=-0.33$ *3* was adopted.
197.284 *5*	$3/2^-$	1.25 ns *5*	B(E2)↑=0.0537 *17* B(E2)↑: weighted av. of 0.051 *4* (1980Pa21), 0.050 *8* (1977ScYK), 0.055 *2* (1976Ga10), 0.045 *10* (1975ScYZ).
716.62 *4*	$11/2^-$	2.35 ps *5*	B(E2)↑=0.191 *4* B(E2)↑: weighted av. of 0.191 *7* (1980Pa21), 0.191 *6* (1977GaZB), 0.188 *10* (1977ScYL). Other: 0.226 *13* (1976Ga10).
798.731 *4*	$3/2^-$	1.00 ps *21*	B(E2)↑=0.020 *4* B(E2)↑: weighted av. of 0.019 *5* (1980Pa21) and 0.024 *8* (1976Ga10), which results in $T_{1/2}$=1.00 ps *21* in agreement with ^{147}Eu ε value $T_{1/2}$=1.07 ps *21* (while discrepant if the B(E2)↑′s that follow are included). Others: 0.013 *4* (1977ScYK), 0.012 *3* (1975ScYZ); see also 1963Al30.
809.358 *13*	$9/2^-$	3.1 ps *5*	B(E2)↑=0.0092 *13* B(E2)↑: weighted av. of 0.008 *2* (1980Pa21), 0.011 *4* (1976Ga10) 0.010 *2* (1975ScYZ).
932.0 *5*	$11/2^+$		B(E3)↑=0.021 (1977ScYK)
1030.70 *14*	$13/2^+$		B(E3)↑=0.066 *11* (1977ScYK)
1106.861 *17*	($3/2^-$ to $9/2^-$)		B(E2)↑=0.087 *9* B(E2)↑: weighted av. of 0.105 *12* (1980Pa21), 0.068 *10* (1977ScYK), 0.088 *8* (1977ScYL), 0.120 *25* (1976Ga10). Other: 0.019 *4* (1975ScYZ). $T_{1/2}$: (partial) $T_{1/2}$=0.43 ps *5* from B(E2)↑ (to be corrected for M1 mixing, unless 1107γ is pure E2).
1317.677 *10*	$1/2^-$,$3/2^-$,$5/2^-$		B(E3)↑=0.053 (1977ScYK)

† From Adopted Levels.
‡ From B(E2)↑ calculated in this dataset using the Adopted gamma branching, except where noted.

Coulomb excitation 1980Pa21 (continued)

γ(^{147}Sm)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[†]	δ[†]	α[†]	Comments
121.212	5/2⁻	121.220 *17*	100	0.0	7/2⁻	M1+E2	−0.33 *3*	0.996 *15*	α: α(E2)=1.174.
197.284	3/2⁻	76.073 *10*	3.44 *11*	121.212	5/2⁻	M1+E2	+0.655 *34*	4.53 *9*	
		197.299 *12*	100 *3*	0.0	7/2⁻	E2		0.218	
716.62	11/2⁻	716.45 *5*	100	0.0	7/2⁻	E2		0.00522	
798.731	3/2⁻	601.450 *4*	60.2 *19*	197.284	3/2⁻	M1(+E2)	0.005 *8*	0.01354	
		677.516 *7*	100 *3*	121.212	5/2⁻	M1+E2	−0.48 *2*	0.00931 *14*	
		798.729 *5*	49.6 *16*	0.0	7/2⁻	E2		0.00406	
809.358	9/2⁻	688.15 *4*	25.0 *19*	121.212	5/2⁻	E2		0.00574	
		809.380 *16*	100 *4*	0.0	7/2⁻	M1+E2	0.46	0.00608	α: α(E2)=0.003941.
932.0	11/2⁺	122.8	30 *6*	809.358	9/2⁻	D			
		215.3	100.0 *20*	716.62	11/2⁻	E1		0.0347	
		931.6	2.0 *8*	0.0	7/2⁻	[M2+E3]		0.01186	Mult.: E3 component suggested in B(E3)↑ measurement.
1030.70	13/2⁺	98.9	6.0 *10*	932.0	11/2⁺	D			
		314.10 *15*	100 *3*	716.62	11/2⁻	E1		0.01311	
1106.861	(3/2⁻ to 9/2⁻)	985.34 *12*	12.5 *11*	121.212	5/2⁻				
		1106.863 *17*	100 *3*	0.0	7/2⁻	(E2(+M1))		0.0026 *6*	Mult.: compatible with B(E2)↑ (from 7/2⁻).
1317.677	1/2⁻,3/2⁻,5/2⁻	518.96 *3*	9.9 *6*	798.731	3/2⁻	M1		0.0196	
		1120.387 *9*	100 *3*	197.284	3/2⁻	M1(+E2)	−0.018 *17*	0.00301	

[†] From Adopted Gammas.
[‡] Relative photon branching from each level (from Adopted Gammas).

$^{147}_{62}Sm_{85}$-2

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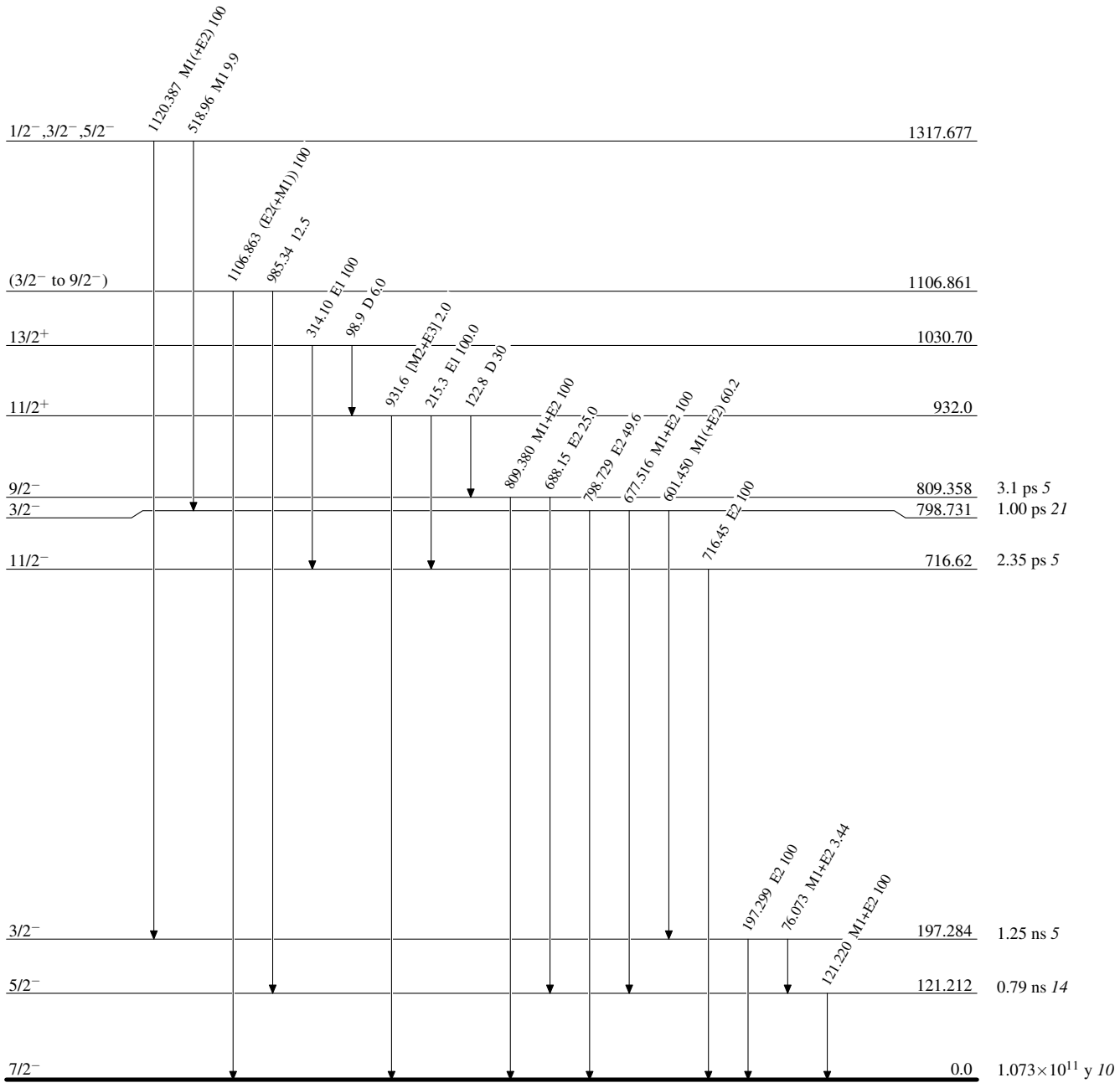
Level Scheme

Intensities: Relative photon branching from each level



$^{147}_{62}Sm_{85}$