$^{18}O(^{48}Ca,p2n\gamma)$ 1996Re18

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 196,17 (2024)	30-Sep-2023

1996Re18: E=110 MeV ^{48}Ca beam was produced from the University of Pennsylvania tandem Van de Graaff accelerator. Targets were 1 mg/cm^2 gold-backed $W^{18}O_3$. γ-rays were detected with an array of six germanium detectors operated in coincidence with 4π segmented detector array. Measured Eγ,Iγ, pγ-coin, pnγ-coin, p$\gamma\gamma$-coin, $\gamma(\theta)$, Doppler-shift attenuation. Deduced levels, J, π, band structures, life-times, γ-ray multipolarties, transition strengths. Comparisons with shell-model calculations. See also 1992ReZR.

^{63}Co Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	Comments
0.0[@]	7/2$^-$		
995.0 *5*	(3/2$^-$)		
1382.7[@] *7*	9/2$^-$		
1673.1[&] *7*	11/2$^-$		
2538.8[@] *9*	(11/2$^-$)		
3006.7[&] *9*	(13/2$^-$)		
3033.8[@] *10*	(13/2$^-$)		
3203.5[&] *9*	(15/2$^-$)		
3225.1[@] *10*	(15/2$^-$)		
3580.8[@] *10*	(17/2$^-$)	1.2 ps *+6−4*	T$_{1/2}$: from τ=1.7 ps *+8−5* in 1996Re18.
3610.5[&] *10*	(17/2$^-$)	0.69 ps *+21−14*	T$_{1/2}$: from τ=1.0 ps *+3−2* in 1996Re18.
4166.5[@] *11*	(19/2$^-$)	0.21 ps *7*	T$_{1/2}$: from τ=0.3 ps *1* using 555.9γ in 1996Re18. Other: τ=0.3 ps *20* using 585.8γ (1996Re18).

[†] From a least-squares fit to γ-ray energies.
[‡] Proposed in 1996Re18 based on measured $\sigma(\theta)$, band assignment and known assignment of g.s.
[#] From DSAM in 1996Re18.
[@] Band(A): K=7/2$^-$ g.s. band.
[&] Seq.(B): Sequence based on 11/2$^-$, 1673 level.

$\gamma(^{63}Co)$

For A_2 values under comments, a negative value is expected for a J to J-1 dipole transition and a positive value is for a J to J-2 or J to J transition (1996Re18).

E$_\gamma$[†]	I$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[†]	Comments
191.3 *4*	45 *5*	3225.1	(15/2$^-$)	3033.8	(13/2$^-$)	(D)	A_2=−0.05 *11*.
196.8 *4*	15 *5*	3203.5	(15/2$^-$)	3006.7	(13/2$^-$)	(D)	A_2=−0.16 *29*.
[x]239.1 *4*	6 *3*						
290.3 *4*	10 *4*	1673.1	11/2$^-$	1382.7	9/2$^-$	(D)	A_2=−0.18 *39*.
355.7 *4*	44 *7*	3580.8	(17/2$^-$)	3225.1	(15/2$^-$)	D	A_2=−0.22 *15*.
407.0 *5*	47 *8*	3610.5	(17/2$^-$)	3203.5	(15/2$^-$)	(D)	A_2=−0.16 *16*.
495.0 *5*	58 *6*	3033.8	(13/2$^-$)	2538.8	(11/2$^-$)	D	A_2=−0.13 *10*.
555.9 *8*	22 *7*	4166.5	(19/2$^-$)	3610.5	(17/2$^-$)	(D)	A_2=−0.16 *26*.
585.8 *10*	30 *4*	4166.5	(19/2$^-$)	3580.8	(17/2$^-$)		E$_\gamma$,I$_\gamma$: Contaminant from ^{62}Co (1996Re18).
995.0 *5*	6 *1*	995.0	(3/2$^-$)	0.0	7/2$^-$		E$_\gamma$,I$_\gamma$: Contaminant from ^{62}Co (1996Re18).
1156.1 *7*	56 *5*	2538.8	(11/2$^-$)	1382.7	9/2$^-$	D	A_2=−0.16 *11*.

Continued on next page (footnotes at end of table)

^{18}O(^{48}Ca,p2nγ) 1996Re18 (continued)

$\gamma(^{63}Co)$ (continued)

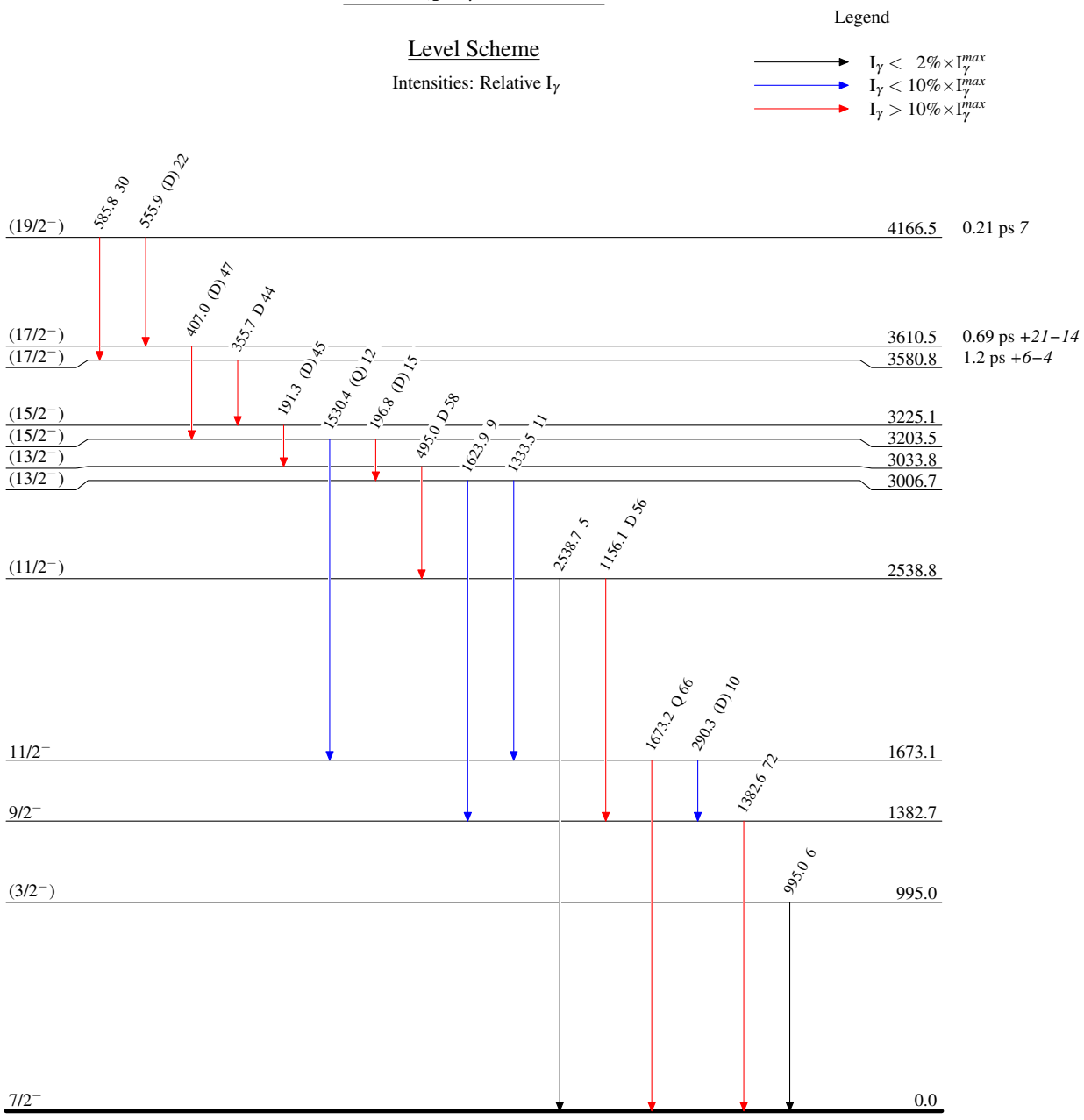
E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	Comments
x1247.6 *7*	32 *8*					Q	A_2=+0.38 *20*.
1333.5 *10*	11 *4*	3006.7	(13/2$^-$)	1673.1	11/2$^-$		A_2=+0.16 *40*.
1382.6 *10*	72 *6*	1382.7	9/2$^-$	0.0	7/2$^-$		A_2=−0.01 *8*.
1530.4 *10*	12 *4*	3203.5	(15/2$^-$)	1673.1	11/2$^-$	(Q)	A_2=+0.18 *45*.
1623.9 *10*	9 *4*	3006.7	(13/2$^-$)	1382.7	9/2$^-$		
1673.2 *10*	66 *8*	1673.1	11/2$^-$	0.0	7/2$^-$	Q	A_2=+0.28 *13*.
x1698.4 *15*	10 *4*						
2538.7 *15*	5 *2*	2538.8	(11/2$^-$)	0.0	7/2$^-$		

† From 1996Re18, with multipolarity deduced based on measured $\gamma(\theta)$.
x γ ray not placed in level scheme.

$^{18}O(^{48}Ca,p2n\gamma)$ 1996Re18

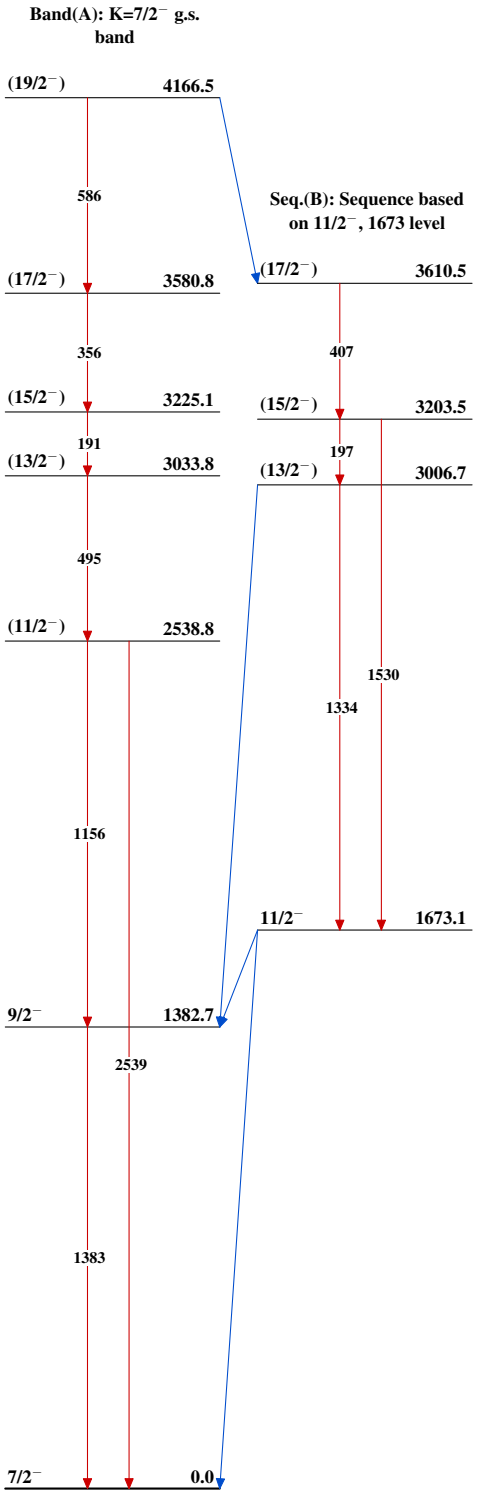
Level Scheme

Intensities: Relative I_γ



$^{63}_{27}Co_{36}$

$^{18}O(^{48}Ca,p2n\gamma)$ 1996Re18



$^{63}_{27}Co_{36}$