^{74}Ge(^{18}O,2npγ),^{76}Ge(^{18}O,4npγ) 1986Wa25

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 114, 1 (2013)	20-Oct-2012

1986Wa25: E=60 MeV. Enriched targets. Measured Eγ, Iγ, γγ, γ(θ), γ(lin pol), excitation functions (E(^{18}O)=40-80 MeV), $T_{1/2}$ by recoil-distance Doppler method.

γ-ray placements suggested by 1986Wa25 were based on (α,2nγ) results of 1978Da13. The level scheme given here is based on revised (1992Fu04) ordering of 935-343-95 cascade and revised (1992Fu04) placements of several other transitions.

^{89}Y Levels

E(level)	J^π‡	$T_{1/2}$†	Comments
0.0	1/2$^-$		
908.950 *24*	9/2$^+$	15.663 s *5*	$T_{1/2}$: from Adopted Levels.
2566.3 *2*	11/2$^+$		
2893.2 *2*	13/2$^+$		
3343.2 *2*	13/2$^-$		
4132.5 *2*	15/2$^-$		
4449.8 *2*	17/2$^-$	97 ps *42*	
4825.4 *2*	17/2$^+$		
4920.5 *2*	(19/2$^+$)	6.2 ps *21*	$T_{1/2}$: in (α,2nγ), 1992Fu04 report $T_{1/2}$=0.55 ns *28* from γ(t) (r.f. method).
5263.7 *2*	(21/2$^+$)	10 ps *3*	
6198.8 *2*	(23/2$^+$)	4.2 ps *21*	
7431.4 *3*	(25/2$^+$)		
7834.3 *4*	(27/2$^+$)		
8263.9 *4*	(29/2$^+$)		
8720.2 *5*	(31/2$^+$)		

† From recoil-distance Doppler (RDM) method. The lifetimes are uncorrected for feeding times, thus should be regarded as upper limits (1986Wa25).

‡ From Adopted Levels.

γ(^{89}Y)

E_γ	I_γ†	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	δ	α@	Comments
95.07 *3*	2.7 *5*	4920.5	(19/2$^+$)	4825.4	17/2$^+$	M1+E2	−0.05 *3*	0.212 *5*	α(K)=0.186 *5*; α(L)=0.0216 *7*; α(M)=0.00370 *12*; α(N+..)=0.000528 *16* α(N)=0.000495 *15*; α(O)=3.33×10^{-5} *7* δ: from Adopted Gammas. A_2=−0.31 *7*, A_4=0.
317.37 *9*	3.00 *20*	4449.8	17/2$^-$	4132.5	15/2$^-$	M1			A_2=−0.28 *6*, A_4=0, POL=−0.31 *8*.
343.24 *7*	5.5 *4*	5263.7	(21/2$^+$)	4920.5	(19/2$^+$)	M1			A_2=−0.46 *6*, A_4=0, POL=−0.21 *9*.
402.9# *2*		7834.3	(27/2$^+$)	7431.4	(25/2$^+$)				
429.63 *20*	2.5	8263.9	(29/2$^+$)	7834.3	(27/2$^+$)				I_γ: from γγ. Unresolved from an unknown contaminant.
456.29 *20*	2.60 *20*	8720.2	(31/2$^+$)	8263.9	(29/2$^+$)				
470.73 *5*	8.4 *4*	4920.5	(19/2$^+$)	4449.8	17/2$^-$	E1			A_2=−0.35 *6*, A_4=0, POL=+0.24 *9*.
692.82 *7*	<3.0	4825.4	17/2$^+$	4132.5	15/2$^-$				I_γ: unresolved from a ^{87}Zr line.
776.85 *6*	8.3 *6*	3343.2	13/2$^-$	2566.3	11/2$^+$				
908.945 *24*	68.5 *15*	908.950	9/2$^+$	0.0	1/2$^-$	M4+E5			I_γ: includes contributions from ^{89}Zr ε decay.

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^{74}Ge(^{18}O,2npγ),^{76}Ge(^{18}O,4npγ) 1986Wa25 (continued)

γ(^{89}Y) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
							Mult.: from Adopted Gammas. A_2=−0.01 *2*, A_4=0.00 *1*, POL=+0.02 *2*.
935.01 *5*	5.1 *3*	6198.8	(23/2$^+$)	5263.7	(21/2$^+$)	M1	A_2=−0.27 *7*, A_4=0, POL=−0.09 *27*.
1106.63 *8*	8.8 *9*	4449.8	17/2$^-$	3343.2	13/2$^-$	E2	A_2=+0.21 *5*, A_4=−0.08 *5*, POL=+0.40 *13*.
1232.6[#] *2*		7431.4	(25/2$^+$)	6198.8	(23/2$^+$)		
1239.32 *5*	6.1 *3*	4132.5	15/2$^-$	2893.2	13/2$^+$		A_2=−0.34 *6*, A_4=0.
1657.5 *2*	10.0 *6*	2566.3	11/2$^+$	908.950	9/2$^+$		E_γ: from Adopted Gammas. I_γ: unresolved from transitions in ^{90}Zr and ^{85}Sr.
1984.1[#] *2*		2893.2	13/2$^+$	908.950	9/2$^+$		

[†] From ^{76}Ge(^{18}O,4npγ) E=60 MeV.

[‡] From γ(θ) and γ(lin pol), unless otherwise stated.

[#] From (α,2nγ). γ not reported by 1986Wa25 but required by revised placements suggested by (α,2nγ) results (1992Fu04,1988Ba32).

[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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Level Scheme

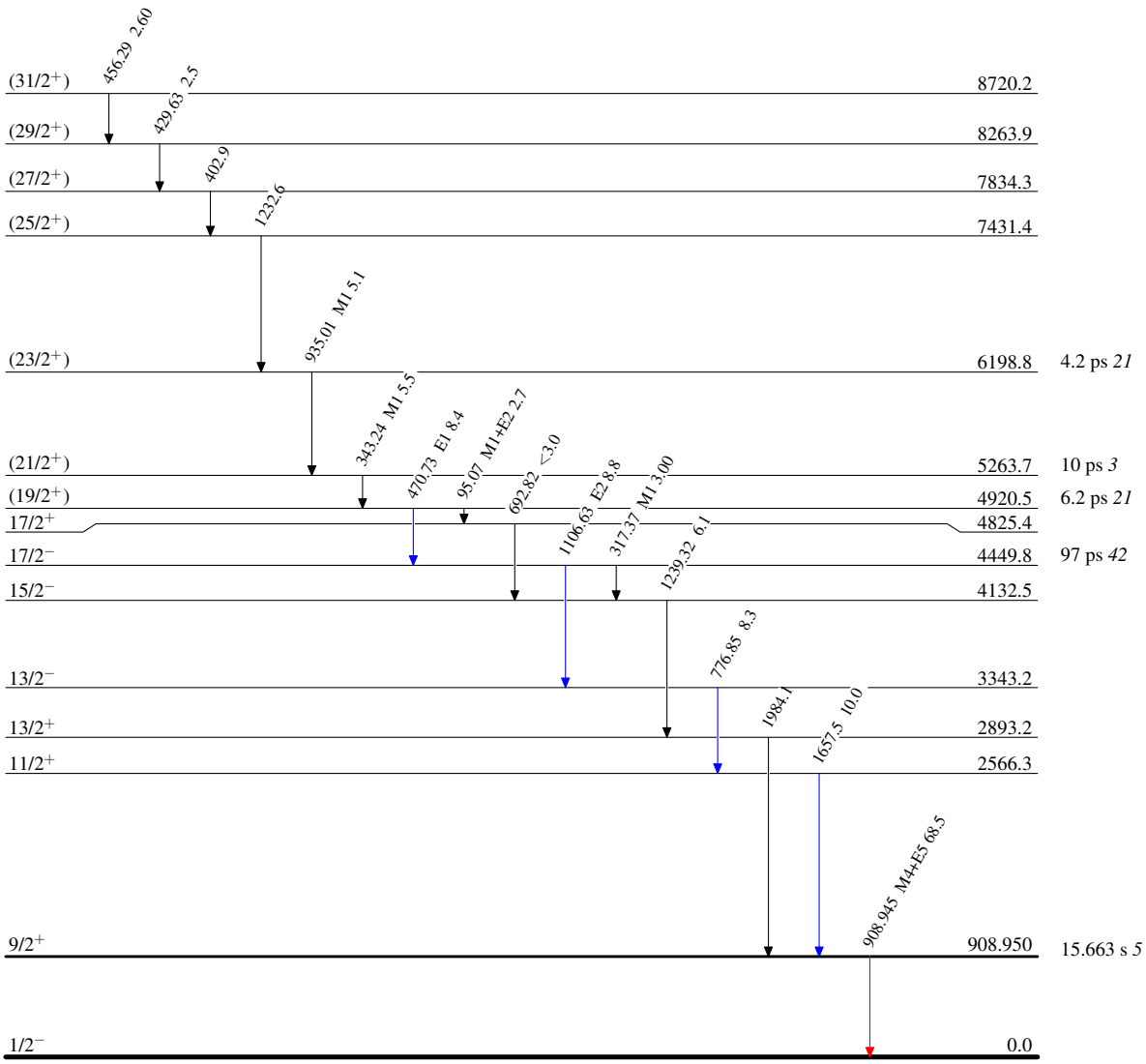
Intensities: Relative I_γ

Legend

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

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

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



$^{89}_{39}Y_{50}$