^{89}Y(p,2nγ) 1978Ki06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan and A. A. Sonzogni	NDS 115, 135 (2014)	1-Nov-2013

2009Br05: Ep=17 MeV. Measured Eγ, $\gamma\gamma(\theta)$ using one Euroball Cluster detector and nine HPGe detectors (six with Compton-suppression shields). See also 2009BrZV.

1981Ju03: Ep=17.2 MeV. Measured Eγ, Iγ, E(ce), Ice using a magnetic lens plus Si(Li) electron spectrometer and a Ge(Li) detector.

1978Ki06: Ep=22.7 MeV. Measured Eγ, Iγ, and γ(H,θ,t) using a Ge(Li) detector.

1973BeYD: Ep=15.2 MeV. Measured $T_{1/2}$ using Doppler-shift attenuation method (DSAM).

1971Is04: Ep=51 MeV. Measured Eγ, γ(t) using a Ge(Li) detector; deduced $T_{1/2}$ of 77γ.

^{88}Zr Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	Comments
0	0^+		
1056.98 *16*	2^+	0.83 ps *+4−2*	$T_{1/2}$: from DSAM (1973BeYD).
1521.3	0^+		
1817.84 *16*	2^+[@]	0.21 ps *9*	$T_{1/2}$: from DSAM (1973BeYD).
2139.68 *23*	4^+		
2231.0[#] *5*	0^+		
2456.03 *20*	3^-		
2539.14 *25*	5^-		
2568.3 *3*	2^+[@]		
2801.4 *4*	5^-		
2810.9 *3*	6^+		
2887.6 *4*	8^+	1.28 μs *10*	g=−0.20 *2* $T_{1/2}$: from γ(H,θ,t) (1978Ki06); value includes the lattice relaxation time. Other: 1.75 μs *20* from γ(t) in 1971Is04. g: from γ(H,θ,t) (1978Ki06).
2989.64 *25*	5^-		
3074.9[#] *3*	(4^+)		
3093.6[#] *2*	5^-		
3390.4 *4*	8^+		
4613.2 *5*	(9^+)		

[†] From a least-squares fit to Eγ by evaluators, except where noted.
[‡] From the Adopted Levels, except where noted.
[#] From 2009Br05. Authors quote precise level energies but do not provide the γ ray energies of the depopulating transitions.
[@] From $\gamma\gamma(\theta)$ in 2009Br05. Assignment is consistent with Adopted Levels.

γ(^{88}Zr)

E$_\gamma$[†]	I$_\gamma$[‡]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
77.0		2887.6	8^+	2810.9	6^+	E$_\gamma$: from the Adopted Levels. γ reported only by 1971Is04.
262.3 *2*	6.5	2801.4	5^-	2539.14	5^-	
272.0 *2*	6	2810.9	6^+	2539.14	5^-	
399.4 *2*	31	2539.14	5^-	2139.68	4^+	
450.2 *2*	3.5	2989.64	5^-	2539.14	5^-	
464.5[@]		1521.3	0^+	1056.98	2^+	
502.8 *2*	5	3390.4	8^+	2887.6	8^+	
533.9 *2*	2.5	2989.64	5^-	2456.03	3^-	

Continued on next page (footnotes at end of table)

^{89}Y(p,2nγ) 1978Ki06 (continued)

γ(^{88}Zr) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	Comments
637.9 *2*	8.5	2456.03	3^-	1817.84	2^+			
671.0 *2*	14	2810.9	6^+	2139.68	4^+			
760.6 *2*	9	1817.84	2^+	1056.98	2^+	M1+E2	+0.26 *4*	
1057.0 *2*	100	1056.98	2^+	0	0^+			
1082.4 *2*	61	2139.68	4^+	1056.98	2^+			
1222.8 *2*	2	4613.2	(9^+)	3390.4	8^+			
1399.6 *2*	1	2456.03	3^-	1056.98	2^+			
1511.3 *3*		2568.3	2^+	1056.98	2^+	M1+E2	−0.54 *22*	E_γ: from 2009Br05.
1521.2[@]		1521.3	0^+	0	0^+	(E0)		I_γ: I(γ+ce)(1521)/I(γ+ce)(464)=0.0005 *1* deduced from Ice(K)(1521)/Ice(K)(464)=0.09 *2* (1981Ju03) if ce(K)/(γ+ce)(1521)=0.82 α(K)(464)=0.0046.
1817.8 *2*	6.5	1817.84	2^+	0	0^+			

[†] From 1978Ki06, except where noted.
[‡] From 1978Ki06, normalized to Iγ(1057γ)=100.
[#] From γγ(θ) in 2009Br05 and Δπ of Adopted Levels.
[@] From Eγ and E(ce) measurement of 1981Ju03.

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Level Scheme

Intensities: Type not specified