

$^{96}\text{Zr}(\text{p},\text{p}'\gamma)$ 1989Mo15

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni		NDS 109, 2501 (2008)	1-Apr-2008

1989Mo15,1988MoZS: E=9.5 MeV; measured $E\gamma$, $I\gamma$, $p\gamma$ coincidences.

1972Bu18: E=8.16 MeV; measured $T_{1/2}$ by pulsed-beam delayed coincidence technique.

1972AnZZ,1971AnZF: E=8.1 MeV; measured $T_{1/2}$ by delayed coincidences between inelastically scattered p and E0 K-conversion electrons.

Others: 1989JuZZ, 1970Co01.

All data are from 1989Mo15, unless indicated otherwise.

 ^{96}Zr Levels

E(level) [†]	$J^{\pi\ddagger}$	$T_{1/2}$	Comments
0	0 ⁺		
1581.36 24	0 ⁺	38.0 ns 7	$T_{1/2}$: weighted average of 38.0 ns 15 (1972Bu18), 37.8 ns 12 (1972AnZZ), and 38.2 ns 12 (1971AnZF). 1971AnZF list their data as mean life; by comparing this group's later measurement in 1972AnZZ, the evaluator has assumed that this was a misprint and their result is $T_{1/2}$.
1750.31 13	2 ⁺		
1896.99 13	3 ⁻		
2225.77 13	2 ⁺		
2438.55 18	3 ⁺		
2668.75 19	(2 ⁺)		
2695.27 24	0 ⁺	≤69 ps	$T_{1/2}$: from delayed coincidence measurements (1989JuZZ).
2857.24 19	4 ⁺		
2925.39 19	0 ⁺		
3082.31 16	4 ⁺		
3119.70 24	5 ⁻		
3150.22 20	3 ⁻		
3176.06 19	4 ⁺		
3211.70 24	2 ⁺		
3308.9 3	(4 ⁺ ,5 ⁺ ,6 ⁺)		
3363.5 3			
3483.2 4	6 ⁺		
3509.10 17	2 ⁺		
3575.6 3			
4013.9 4	5 ⁻		

[†] From a least-squares fit to the $E\gamma$ data.

[‡] From Adopted Levels.

 $\gamma(^{96}\text{Zr})$

E_{γ}	I_{γ}	$E_i(\text{level})$	J_i^{π}	E_f	J_f^{π}	Comments
146.6 2	990 60	1896.99	3 ⁻	1750.31	2 ⁺	I_{γ} : estimated using branching ratio from (n,n' γ) data.
226.6 2	2.3 2	3308.9	(4 ⁺ ,5 ⁺ ,6 ⁺)	3082.31	4 ⁺	
328.6 2	3.8 3	2225.77	2 ⁺	1896.99	3 ⁻	
363.5 2	6.2 3	3483.2	6 ⁺	3119.70	5 ⁻	
469.5 2	17.1 7	2695.27	0 ⁺	2225.77	2 ⁺	
475.4 2	22.2 6	2225.77	2 ⁺	1750.31	2 ⁺	
631.4 2	3.1 6	2857.24	4 ⁺	2225.77	2 ⁺	
643.9 2	5.6 6	3082.31	4 ⁺	2438.55	3 ⁺	
644.4 2	11.4 4	2225.77	2 ⁺	1581.36	0 ⁺	

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$^{96}\text{Zr}(\text{p},\text{p}'\gamma)$ 1989Mo15 (continued) $\gamma(^{96}\text{Zr})$ (continued)

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	Comments
688.3 2	93 1	2438.55	3 ⁺	1750.31	2 ⁺		
699.7 2	3.6 3	2925.39	0 ⁺	2225.77	2 ⁺		
711.6 2	13.6 6	3150.22	3 ⁻	2438.55	3 ⁺		
771.6 2	8.5 6	2668.75	(2 ⁺)	1896.99	3 ⁻		
856.6 2	5 1	3082.31	4 ⁺	2225.77	2 ⁺		
894.2 2	4.7 6	4013.9	5 ⁻	3119.70	5 ⁻		
918.6 2	37 1	2668.75	(2 ⁺)	1750.31	2 ⁺		
924.9 2	4.7 5	3363.5		2438.55	3 ⁺		
1107.0 2	27 1	2857.24	4 ⁺	1750.31	2 ⁺		
1137.0 2	9 1	3575.6		2438.55	3 ⁺		
1175.0 2	8.7 7	2925.39	0 ⁺	1750.31	2 ⁺		
1185.3 2	79 1	3082.31	4 ⁺	1896.99	3 ⁻		
1222.7 2	38 1	3119.70	5 ⁻	1896.99	3 ⁻		
1253.3 2	9 1	3150.22	3 ⁻	1896.99	3 ⁻		
1279.2 2	107 2	3176.06	4 ⁺	1896.99	3 ⁻		
1283.1 2	10 1	3509.10	2 ⁺	2225.77	2 ⁺		
1314.7 2	17 1	3211.70	2 ⁺	1896.99	3 ⁻		
1331.8 2	8 1	3082.31	4 ⁺	1750.31	2 ⁺		
1425.6 2	5 1	3176.06	4 ⁺	1750.31	2 ⁺		
1581.36		1581.36	0 ⁺	0	0 ⁺	E0	E_γ : from level energy; 1588 from the ce(K) at 1570 keV (1972Bu18). Mult.: internal conversion electrons observed without a γ (1972Bu18).
1612.1 2	30 1	3509.10	2 ⁺	1896.99	3 ⁻		
1750.3 2	1000 11	1750.31	2 ⁺	0	0 ⁺		
1759.0 2	5 1	3509.10	2 ⁺	1750.31	2 ⁺		
1896.9 2	188 4	1896.99	3 ⁻	0	0 ⁺		
2225.8 2	50 2	2225.77	2 ⁺	0	0 ⁺		

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Level Scheme

Intensities: Relative I_γ

Legend

- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$

