

⁹²Zr(¹⁶O,p2n γ) 1979Po13

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. Lalkovski, J. Timar and Z. Elekes		NDS 161, 1 (2019)	1-Apr-2019

Facility: Purdue University Tandem Van de Graaff accelerator; Beam: E(¹⁶O)=60 MeV; Target: rolled 2 mg/cm² thick enriched in ⁹²Zr to \approx 100%, and backed with 25 μ m Ag; Detectors: three Ge(Li); measured: γ - γ coinc., E γ , I γ , γ - γ (θ), excitation function;

¹⁰⁵Ag Levels

E(level) [†]	J π	E(level) [†]	J π	E(level) [†]	J π	E(level) [†]	J π
0	1/2 ⁻	1166.27 22	7/2 ⁻ , 9/2 ⁻	2313.18 14	(19/2) ⁺	3125.15 17	21/2 ⁺
25.480 20	7/2 ⁺	1294.6 5	(7/2 ⁻)	2469.70 13	15/2 ⁻	3176.00 15	23/2 ⁻
53.150 23	9/2 ⁺	1681.02 10	15/2 ⁺	2496.83 12	15/2 ⁻	3510.51 17	25/2 ⁻
346.8 4	3/2 ⁻	1734.05 13	15/2 ⁺	2595.75 11	17/2 ⁻	3927.78 18	27/2 ⁻
433.26 20	5/2 ⁻	1978.05 12	17/2 ⁺	2751.17 13	19/2 ⁻	4361.70 24	29/2 ⁻
668.66 7	11/2 ⁺	2022.60 11	(17/2) ⁺	2761.73 18	21/2 ⁺	4931.7 3	31/2 ⁻
917.30 8	13/2 ⁺	2298.97 14	17/2 ⁻	2935.71 13	(21/2) ⁻		

[†] From a least-squares fit to E γ .

γ (¹⁰⁵Ag)

E γ [†]	I γ [†]	E _i (level)	J π _i	E _f	J π _f	Mult. [‡]	δ [‡]	Comments
25.48 [#] 2		25.480	7/2 ⁺	0	1/2 ⁻			
27.67 [#] 1		53.150	9/2 ⁺	25.480	7/2 ⁺			
98.91 11	11 2	2595.75	17/2 ⁻	2496.83	15/2 ⁻	E2+M1	-0.12 5	Mult.: R _{DCO} =3.6 5 in 1979Po13.
126.05 15	8 1	2595.75	17/2 ⁻	2469.70	15/2 ⁻	E2+M1	-0.12 5	Mult.: R _{DCO} =3.5 5 in 1979Po13.
155.42 6	47.1 5	2751.17	19/2 ⁻	2595.75	17/2 ⁻	E2+M1	+0.04 1	Mult.: A ₂₂ =-0.184 10; A ₄₄ =0.017 13 in 1979Po13.
184.54 7	45.3 6	2935.71	(21/2) ⁻	2751.17	19/2 ⁻	E2+M1	+0.06 1	Mult.: A ₂₂ =-0.146 11; A ₄₄ =0.012 15 in 1979Po13.
240.29 8	37.1 6	3176.00	23/2 ⁻	2935.71	(21/2) ⁻	E2+M1	+0.05 1	Mult.: A ₂₂ =-0.175 15; A ₄₄ =0.018 19 in 1979Po13.
248.65 7	30 1	917.30	13/2 ⁺	668.66	11/2 ⁺	E2+M1	0.00 4	Mult.: A ₂₂ =-0.165 14; A ₄₄ =0.009 18 in 1979Po13; Mult.: R _{DCO} =1.84 34 in 1979Po13.
290.40 15	5 1	2313.18	(19/2) ⁺	2022.60	(17/2) ⁺			
296.50 15	5 1	2595.75	17/2 ⁻	2298.97	17/2 ⁻	E2+M1	+0.22 38	Mult.: R _{DCO} =0.92 16 in 1979Po13.
297.04 30	4 1	1978.05	17/2 ⁺	1681.02	15/2 ⁺	E2+M1	+0.09 4	Mult.: A ₂₂ =-0.094 53; A ₄₄ =0.017 70 in 1979Po13.
334.51 10	34.5 6	3510.51	25/2 ⁻	3176.00	23/2 ⁻	E2+M1	+0.085 10	Mult.: A ₂₂ =-0.105 14; A ₄₄ =-0.009 19 in 1979Po13.
339.96 13	2.0 7	2935.71	(21/2) ⁻	2595.75	17/2 ⁻			
341.5 3	4.9 10	2022.60	(17/2) ⁺	1681.02	15/2 ⁺	E2+M1	+0.09 5	Mult.: A ₂₂ =-0.074 65; A ₄₄ =0.029 27 in 1979Po13.
346.8 4	8 2	346.8	3/2 ⁻	0	1/2 ⁻			
417.27 8	24 1	3927.78	27/2 ⁻	3510.51	25/2 ⁻	E2+M1	+0.06 2	Mult.: A ₂₂ =-0.157 35; A ₄₄ =0.068 54 in 1979Po13.
424.83 15	3.4 8	3176.00	23/2 ⁻	2751.17	19/2 ⁻			
433.26 20	8 2	433.26	5/2 ⁻	0	1/2 ⁻	(E2)		Mult.: R _{DCO} =1.77 60 in 1979Po13.
433.91 18	15 2	4361.70	29/2 ⁻	3927.78	27/2 ⁻	E2+M1	+0.08 4	Mult.: R _{DCO} =1.99 23 in 1979Po13.
448.55 12	8.5 8	2761.73	21/2 ⁺	2313.18	(19/2) ⁺	E2+M1	+0.26 4	Mult.: A ₂₂ =0.171 46; A ₄₄ =-0.005 68 in 1979Po13.

Continued on next page (footnotes at end of table)

$^{92}\text{Zr}(^{16}\text{O},\text{p}2\text{n}\gamma)$ **1979Po13** (continued) $\gamma(^{105}\text{Ag})$ (continued)

E_γ^\dagger	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡	δ^\ddagger	Comments
564.79 10	17 1	2298.97	17/2 ⁻	1734.05	15/2 ⁺	D+Q	-0.07 5	Mult.: $A_{22}=-0.338$ 51; $A_{44}=0.048$ 74 in 1979Po13.
570.00 10	11 1	4931.7	31/2 ⁻	4361.70	29/2 ⁻			
574.80 18	3 1	3510.51	25/2 ⁻	2935.71	(21/2) ⁻			
579.19 9	12.4 9	2313.18	(19/2) ⁺	1734.05	15/2 ⁺	E2		Mult.: $A_{22}=0.371$ 64; $A_{44}=-0.031$ 93 in 1979Po13.
615.52 8	78 1	668.66	11/2 ⁺	53.150	9/2 ⁺	E2+M1	+0.35 4	Mult.: $A_{22}=0.241$ 25; $A_{44}=0.041$ 31 in 1979Po13.
733.01 8	5.7 9	1166.27	7/2 ⁻ , 9/2 ⁻	433.26	5/2 ⁻	E2		Mult.: $A_{22}=0.30$ 13; $A_{44}=0.00$ 20 in 1979Po13.
751@ 1	3.4 8	3927.78	27/2 ⁻	3176.00	23/2 ⁻			
763.78 8	23 1	1681.02	15/2 ⁺	917.30	13/2 ⁺	E2+M1	+0.25 4	Mult.: $A_{22}=0.149$ 37; $A_{44}=0.090$ 58 in 1979Po13.
816.63 25	12 3	1734.05	15/2 ⁺	917.30	13/2 ⁺	E2+M1	-1.0 2	Mult.: $A_{22}=-1.112$ 93; $A_{44}=0.26$ 14 in 1979Po13.
851.2 3	3 1	4361.70	29/2 ⁻	3510.51	25/2 ⁻			
864.14 9	100	917.30	13/2 ⁺	53.150	9/2 ⁺	E2		Mult.: $A_{22}=0.325$ 12; $A_{44}=-0.097$ 17 in 1979Po13.
914.88 11	6 1	2595.75	17/2 ⁻	1681.02	15/2 ⁺			
947.83 20	6 1	1294.6	(7/2) ⁻	346.8	3/2 ⁻			
1012.43 25	9.8 8	1681.02	15/2 ⁺	668.66	11/2 ⁺	E2		Mult.: $A_{22}=0.423$ 67; $A_{44}=-0.02$ 10 in 1979Po13.
1060.74 9	31 1	1978.05	17/2 ⁺	917.30	13/2 ⁺	E2		Mult.: $A_{22}=0.322$ 32; $A_{44}=-0.15$ 5 in 1979Po13.
1065.28 20	27 2	1734.05	15/2 ⁺	668.66	11/2 ⁺	E2		Mult.: $A_{22}=0.299$ 23; $A_{44}=-0.037$ 22 in 1979Po13.
1105.25 8	15.3 9	2022.60	(17/2) ⁺	917.30	13/2 ⁺	E2		Mult.: $A_{22}=0.306$ 45; $A_{44}=-0.066$ 66 in 1979Po13.
1147.09 12	8 1	3125.15	21/2 ⁺	1978.05	17/2 ⁺	E2		Mult.: $A_{22}=0.42$ 17; $A_{44}=-0.30$ 24 in 1979Po13.
1552.39 12	12 3	2469.70	15/2 ⁻	917.30	13/2 ⁺	D(+Q)	+0.07 7	Mult.: $R_{\text{DCO}}=1.84$ 34 in 1979Po13.
1579.50 12	21 3	2496.83	15/2 ⁻	917.30	13/2 ⁺	D(+Q)	+0.05 5	Mult.: $R_{\text{DCO}}=1.99$ 20 in 1979Po13.

† From 1979Po13.

‡ From γ - $\gamma(\theta)$ in 1979Po13.

From the adopted gammas. Not reported in 1979Po13.





@ Placement of transition in the level scheme is uncertain.

$^{92}\text{Zr}(^{16}\text{O,p}2\text{n}\gamma)$ 1979Po13

Legend

Level Scheme

Intensities: Type not specified

-  $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
-  $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
-  $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
-  γ Decay (Uncertain)

