^{104}Ru(α,3nγ) 1977Gr22,1969Iv02

History

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

1977Gr22: Facility: Stockholm cyclotron; Beam: E(α)=32 MeV; Target: enriched to ^{104}Ru; Detectors: two Ge(Li); Measured: γ, γ-γ coinc., $\gamma(\theta)$, Eγ, Iγ, excitation function; Deduced: ^{105}Ru level scheme, J^{π}; Also, from the same collaboration: 1972Gr33, 1971GrZV.

1969Iv02: Facility: Institute-of-Physics′ (Bucharest) 120-cm cyclotron; Beam: E(α)=24 MeV; Target: natural Ru; Detectors: one NaI(Tl); Measured: γ, Eγ, γ(t); Deduced: $T_{1/2}$.

Others: 1973Ri10, 1973RiZZ.

^{105}Pd Levels

E(level)[†]	J^{π}[‡]	$T_{1/2}$	Comments
0.0	$5/2^+$		configuration: $\nu(2d_{5/2})^{+1}$.
280.50[&] *24*	$3/2^+$		
306.03[@] *23*	$7/2^+$		configuration: $\nu(1g_{7/2})^{+1}$.
442.39[&] *19*	$(7/2)^+$		
488.8[#] *3*	$11/2^-$	36 μs *7*	$T_{1/2}$: from 182.7γ(t) and 306.2γ(t) in 1969Iv02. configuration: $\nu(1h_{11/2})^{+1}$.
560.50 *24*	$5/2^+$		
696.60 *19*	$(7/2^+)$		
781.99[&] *20*	$9/2^+$		
969.8[#] *4*	$(15/2)^-$		
1010.93[@] *23*	$(11/2)^+$		
1271.18 *23*	$(11/2)^+$		
1323.7 *3*	$(11/2^+)$		
1410.63 *25*	$(13/2^+)$		
1741.2[#] *5*	$(19/2)^-$		
1853.7 *3*	$(13/2^+)$		
1873.5 *3*	$(15/2^+)$		
1900.8[@] *4*	$(15/2)^+$		
2698.9[#] *6*	$(23/2)^-$		
2754.5[@] *5*	$(19/2)^+$		
3153.4[#] *7*	$(27/2)^-$		
3293.3[@] *6*	$(23/2)^+$		
3797.7[#] *7*	$(27/2^-)$		
3871.3[@] *12*	$(27/2)^+$		

[†] From a least-squares fit to Eγ.
[‡] From 1977Gr22.
[#] Member of the ΔJ=2 negative-parity band; configuration=$\nu(1h_{11/2})^{+1}$.
[@] Member of a ΔJ=2 positive-parity band; configuration=$\nu(1g_{7/2})^{+1}$.
[&] Member of the $2^+\otimes\nu(2d_{5/2})^{+1}$ multiplet.

^{104}Ru(α,3nγ) 1977Gr22,1969Iv02 (continued)

$\gamma(^{105}Pd)$

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.†
x95.2 3	1.0 3					
x105.2 3	2.1 6					
x110.7 3	5.5 6					
x121.9 3	0.4 1					
135.8 3	0.8 2	696.60	(7/2$^+$)	560.50	5/2$^+$	
140.0 3	0.8 2	1410.63	(13/2$^+$)	1271.18	(11/2)$^+$	
x178.9 3	0.7 2					
182.7 3	51 5	488.8	11/2$^-$	306.03	7/2$^+$	
x210.7 3	2.3 7					
228.7 3	0.3 1	1010.93	(11/2)$^+$	781.99	9/2$^+$	
254.3 3	3.4 10	696.60	(7/2$^+$)	442.39	(7/2)$^+$	
260.0 3	1.2 4	1271.18	(11/2)$^+$	1010.93	(11/2)$^+$	
280.2 3	2.4 7	280.50	3/2$^+$	0.0	5/2$^+$	
x284.6 3	0.4 1					
306.2 3	100	306.03	7/2$^+$	0.0	5/2$^+$	
312.6 3	2.3 7	1323.7	(11/2$^+$)	1010.93	(11/2)$^+$	
x319.3 3	5.4 5					
x333.2 3	0.6 2					
339.4 3	5.0 5	781.99	9/2$^+$	442.39	(7/2)$^+$	
x344.6 3	0.6 2					
x349.3 3	1.6 5					
399.9 3	2.0 6	1410.63	(13/2$^+$)	1010.93	(11/2)$^+$	
415.8 3	1.4 4	696.60	(7/2$^+$)	280.50	3/2$^+$	(E2)
442 3		1853.7	(13/2$^+$)	1410.63	(13/2$^+$)	
442.6 3	12.0 12	442.39	(7/2)$^+$	0.0	5/2$^+$	
x451.8 3	1.1 3					
454.5 3	4.0 12	3153.4	(27/2)$^-$	2698.9	(23/2)$^-$	(E2)
463.1 3	0.7 2	1873.5	(15/2$^+$)	1410.63	(13/2$^+$)	
481.0 3	69 7	969.8	(15/2)$^-$	488.8	11/2$^-$	(E2)
489.5 3	4.0 12	1271.18	(11/2)$^+$	781.99	9/2$^+$	
522.2 3	0.4	1010.93	(11/2)$^+$	488.8	11/2$^-$	
530.3 3	2.1 6	1853.7	(13/2$^+$)	1323.7	(11/2$^+$)	
x535.7 3	0.8 2					
538.8 3	5.3 5	3293.3	(23/2)$^+$	2754.5	(19/2)$^+$	(E2)
549.1 3	0.4 1	1873.5	(15/2$^+$)	1323.7	(11/2$^+$)	
560.2 3	1.4 4	560.50	5/2$^+$	0.0	5/2$^+$	(E2)
x566.8 3	1.3 4					
578.0‡	3.1‡ 9	1900.8	(15/2)$^+$	1323.7	(11/2$^+$)	(E2)
578.0‡	3.1‡ 4	3871.3	(27/2)$^+$	3293.3	(23/2)$^+$	(E2)
582.0 3	4.0 12	1853.7	(13/2$^+$)	1271.18	(11/2)$^+$	
x595.7 3	≤4.3					
x599.0 3	1.8 5					
602.7 3	5.5 6	1873.5	(15/2$^+$)	1271.18	(11/2)$^+$	
x609.5 3	1.5 5					
628.1 3	1.0 3	1410.63	(13/2$^+$)	781.99	9/2$^+$	(E2)
x644.7 3	4.1 12					
x646.4 3	1.5 5					
x669.0 3	2.4 7					
x681.5 3	1.8 5					
x692.9 3	≤4					
697.1 3	3.7 11	696.60	(7/2$^+$)	0.0	5/2$^+$	
x700.0 3	1.5 5					
705.1 3	14.7 15	1010.93	(11/2)$^+$	306.03	7/2$^+$	(E2)
x748.9 3	2.3 7					(E2)
771.4 3	42 4	1741.2	(19/2)$^-$	969.8	(15/2)$^-$	(E2)

Continued on next page (footnotes at end of table)

^{104}Ru(α,3nγ) 1977Gr22,1969Iv02 (continued)

$\gamma(^{105}Pd)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]
781.7 *3*	8.8 *9*	781.99	$9/2^+$	0.0	$5/2^+$	(E2)
[x]792.9 *3*	4.6 *14*					(E2)
[x]804.1 *3*	≈2					
[x]808.4 *3*	2.7 *8*					
[x]814.9 *3*	2.5 *8*					(E2)
[x]825.1 *3*	1.2 *4*					
829.1 *3*	4.3 *13*	1271.18	$(11/2)^+$	442.39	$(7/2)^+$	(E2)
834.9 *3*	≤1.9	1323.7	$(11/2^+)$	488.8	$11/2^-$	
843.0 *3*	2.8 *8*	1853.7	$(13/2^+)$	1010.93	$(11/2)^+$	
853.6 *3*	6.6 *7*	2754.5	$(19/2)^+$	1900.8	$(15/2)^+$	(E2)
862.7 *3*	1.3 *4*	1873.5	$(15/2^+)$	1010.93	$(11/2)^+$	(E2)
881.3[‡]	4.3[‡] *13*	1323.7	$(11/2^+)$	442.39	$(7/2)^+$	(E2)
881.3[‡]	4.3[‡] *13*	2754.5	$(19/2)^+$	1873.5	$(15/2^+)$	(E2)
889.8 *3*	10 *1*	1900.8	$(15/2)^+$	1010.93	$(11/2)^+$	
[x]893.9 *3*	≤2.9					
[x]911.8 *3*	1.2 *4*					
[x]918.5 *3*	1.9 *6*					
[x]952.3 *3*	2.6 *8*					
957.7 *3*	15 *2*	2698.9	$(23/2)^-$	1741.2	$(19/2)^-$	(E2)
[x]961.8 *3*	1.3 *4*					
[x]990.6 *3*	7.7 *8*					(E2)
[x]1013.7 *3*	≤1.8					
[x]1058.2 *3*	1.2 *4*					
[x]1077.5 *3*	1.0 *3*					
[x]1095.8 *3*	0.8 *2*					(E2)
1098.8 *3*	4.3 *13*	3797.7	$(27/2^-)$	2698.9	$(23/2)^-$	(E2)
[x]1151.6 *3*	1.7 *5*					(E2)
[x]1273.6 *3*	2.3 *7*					
[x]1521.2 *3*	3 *1*					

[†] From 1977Gr22.
[‡] Multiply placed with undivided intensity.
[x] γ ray not placed in level scheme.

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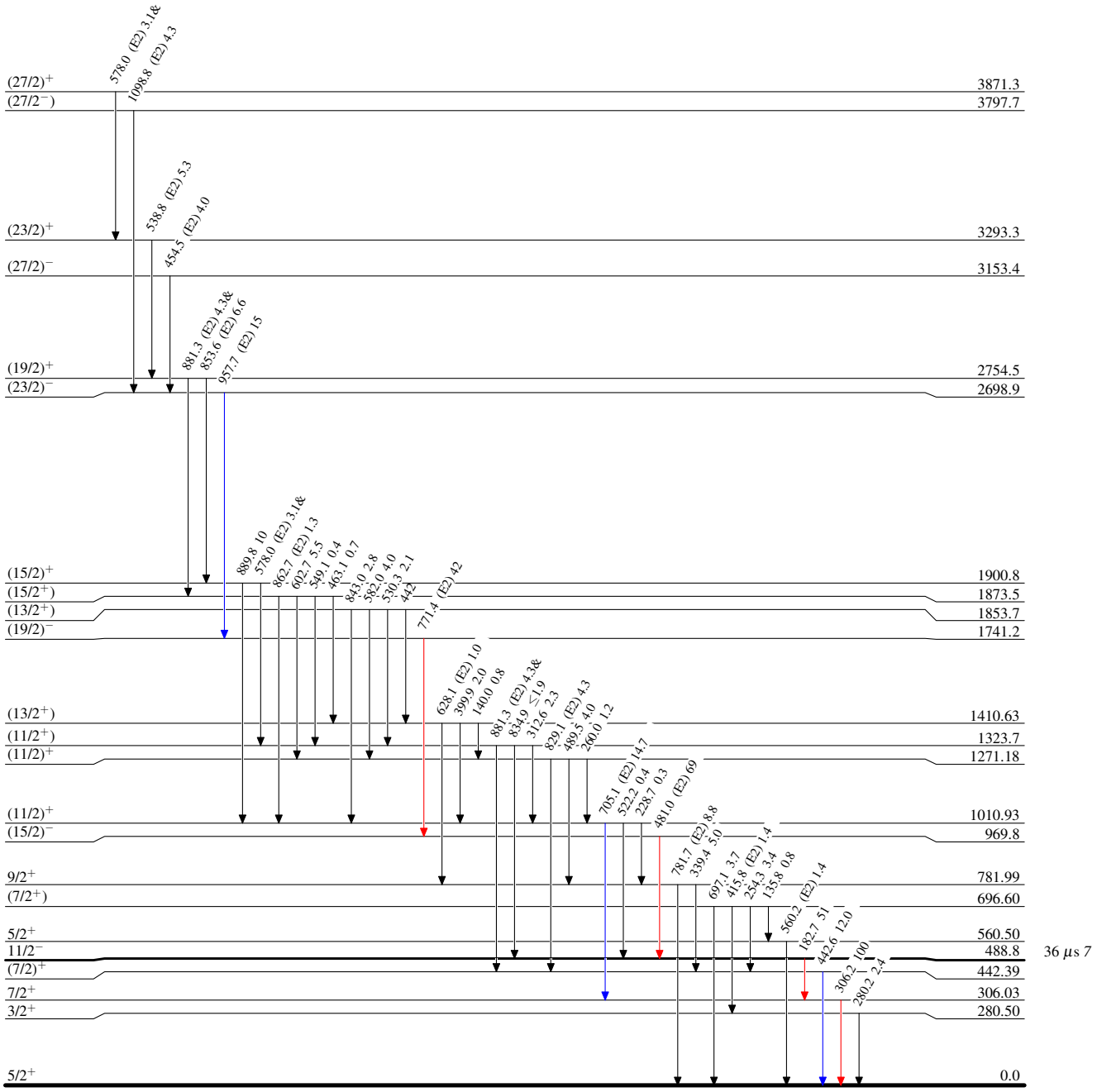
Level Scheme

Intensities: Type not specified
& Multiply placed: undivided intensity given

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



$^{105}_{46}Pd_{59}$