^{96}Mo(α,nγ) 1983Ka25

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 145, 25 (2017)	1-Jul-2017

E=10 MeV to 18 MeV (1983Ka25), 18 MeV (1987Do15,1987PaZQ).
Measured: γ, $\gamma\gamma$, excit, α,$\gamma(\theta)$ (1983Ka25); γ(t) (Doppler shift) (1987Do15,1987PaZQ).

^{99}Ru Levels

E(level)	J$^{\pi}$[†]	T$_{1/2}$[#]	Comments
0	5/2$^+$		
89.5	3/2$^+$		
322.2	3/2$^+$		
340.6	7/2$^+$		
442.2	(3/2$^+$)		
575.7	(5/2)$^+$		
617.7	7/2$^+$		
617.9	(1/2)$^+$		
719.8	9/2$^+$	3.5 ps *14*	
734.2	5/2$^+$		
1048.3	11/2$^+$	4.5 ps *25*	
1069.6	11/2$^-$		
1118.3	(7/2$^+$)[‡]		
1200.7	5/2$^+$[‡]		
1261.3	7/2$^+$		
1277.6	9/2$^+$		
1319.6	11/2$^+$	2.4 ps *11*	
1407.2		0.21 ps *10*	
1473.8	(7/2,5/2)	0.17 ps *10*	
1497.0	13/2$^+$	0.62 ps *21*	
1499.5	9/2$^+$	0.24 ps *11*	
1571.6	15/2$^-$		
1582.9	(7/2,5/2)	0.14 ps *5*	T$_{1/2}$: from 1987PaZQ.
1717.2	9/2$^-$		
1846.9	(11/2$^+$)[‡]	0.31 ps *11*	
1861.5	13/2$^-$	0.49 ps *18*	
1944.2	11/2$^-$		
2020.4	15/2$^+$	0.35 ps *14*	
2268.1	19/2$^-$		
2383.1	9/2$^{(+)}$	0.09 ps *3*	
2392.7	(15/2$^-$)	0.17 ps *7*	
2401.0	(17/2)$^+$	0.6 ps *3*	
3036.9	(19/2$^-$)	0.35 ps *14*	

[†] From Adopted Levels, except where noted otherwise.
[‡] Tentative assignments of 1983Ka25 on the basis of rather weak arguments.
[#] From 1987Do15, except where noted.

^{96}Mo(α,nγ) 1983Ka25 (continued)

$\gamma(^{99}Ru)$

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ[†&]	α[@]	Comments
89.4	18.4 *5*	89.5	$3/2^+$	0	$5/2^+$				
101.9	1.4[‡] *1*	719.8	$9/2^+$	617.7	$7/2^+$				
177.2	<1	1497.0	$13/2^+$	1319.6	$11/2^+$				
232.6	0.8[‡] *1*	322.2	$3/2^+$	89.5	$3/2^+$				
251.1	0.5[‡] *1*	340.6	$7/2^+$	89.5	$3/2^+$	E2		0.0491	α(K)=0.0420 *6*; α(L)=0.00587 *9*; α(M)=0.001084 *16* α(N)=0.0001699 *24*; α(O)=6.93×10^{-6} *10*
271.0	1.3[‡] *1*	1319.6	$11/2^+$	1048.3	$11/2^+$				
276.8	3.5 *1*	617.7	$7/2^+$	340.6	$7/2^+$				
322.0	10.7 *2*	322.2	$3/2^+$	0	$5/2^+$				
328.3	2.8[‡] *1*	1048.3	$11/2^+$	719.8	$9/2^+$				
340.5	76.1[‡] *8*	340.6	$7/2^+$	0	$5/2^+$				
349.7	48.4 *6*	1069.6	$11/2^-$	719.8	$9/2^+$	E1		0.00412	α(K)=0.00362 *5*; α(L)=0.000415 *6*; α(M)=7.57×10^{-5} *11* α(N)=1.220×10^{-5} *17*; α(O)=6.25×10^{-7} *9*
352.7	4.1 *1*	442.2	$(3/2^+)$	89.5	$3/2^+$				
378.9	2.9[‡] *1*	719.8	$9/2^+$	340.6	$7/2^+$				
411.7	0.7[‡] *1*	734.2	$5/2^+$	322.2	$3/2^+$				
448.9	≤1	1497.0	$13/2^+$	1048.3	$11/2^+$				
466.6[#]	2.7 *3*	1200.7	$5/2^+$	734.2	$5/2^+$				
486.2	8.8 *2*	575.7	$(5/2)^+$	89.5	$3/2^+$				
502.0	21.2 *3*	1571.6	$15/2^-$	1069.6	$11/2^-$	E2		0.00528	α(K)=0.00459 *7*; α(L)=0.000566 *8*; α(M)=0.0001040 *15* α(N)=1.661×10^{-5} *24*; α(O)=7.99×10^{-7} *12*
528.4[a]	5.6[a] *2*	617.7	$7/2^+$	89.5	$3/2^+$	E2		0.00455	α(K)=0.00396 *6*; α(L)=0.000485 *7*; α(M)=8.91×10^{-5} *13* α(N)=1.425×10^{-5} *20*; α(O)=6.91×10^{-7} *10*
528.4[a]	5.6[a] *2*	617.9	$(1/2)^+$	89.5	$3/2^+$				
542.8[a]	2.7[a] *1*	1118.3	$(7/2^+)$	575.7	$(5/2)^+$				
542.8[ab]	2.7[a] *1*	1277.6	$9/2^+$	734.2	$5/2^+$				
575.6	5.1 *1*	575.7	$(5/2)^+$	0	$5/2^+$				
600.0	4.5 *2*	1319.6	$11/2^+$	719.8	$9/2^+$	M1+E2	−1.3 *3*	0.00312	α(K)=0.00273 *5*; α(L)=0.000324 *6*; α(M)=5.93×10^{-5} *11* α(N)=9.55×10^{-6} *17*; α(O)=4.86×10^{-7} *7*
618.0	26.4 *5*	617.7	$7/2^+$	0	$5/2^+$	M1+E2	−1.2 *2*	0.00289 *5*	α(K)=0.00252 *4*; α(L)=0.000298 *5*; α(M)=5.47×10^{-5} *9* α(N)=8.81×10^{-6} *14*; α(O)=4.50×10^{-7} *7*
644.2	2.8 *1*	3036.9	$(19/2^-)$	2392.7	$(15/2^-)$				
647.6	2.5 *1*	1717.2	$9/2^-$	1069.6	$11/2^-$				
660.3	1.60 *5*	1277.6	$9/2^+$	617.7	$7/2^+$				
696.5	4.8 *2*	2268.1	$19/2^-$	1571.6	$15/2^-$	E2		0.00213	α(K)=0.00186 *3*; α(L)=0.000221 *4*; α(M)=4.06×10^{-5} *6* α(N)=6.53×10^{-6} *10*; α(O)=3.29×10^{-7} *5*
702.0	11.9 *2*	1319.6	$11/2^+$	617.7	$7/2^+$	E2		0.00209	α(K)=0.00182 *3*; α(L)=0.000217 *3*;

Continued on next page (footnotes at end of table)

^{96}Mo(α,nγ) 1983Ka25 (continued)

γ(^{99}Ru) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]	Comments
								α(M)=3.98×10^{-5} *6* α(N)=6.39×10^{-6} *9*; α(O)=3.22×10^{-7} *5*
707.8	32.0 *6*	1048.3	11/2$^+$	340.6	7/2$^+$	E2	0.00204	α(K)=0.00179 *3*; α(L)=0.000212 *3*; α(M)=3.89×10^{-5} *6* α(N)=6.26×10^{-6} *9*; α(O)=3.15×10^{-7} *5*
720.0	100	719.8	9/2$^+$	0	5/2$^+$	E2	0.00196	α(K)=0.001709 *24*; α(L)=0.000203 *3*; α(M)=3.72×10^{-5} *6* α(N)=5.98×10^{-6} *9*; α(O)=3.02×10^{-7} *5*
729.0	2.8 *1*	1069.6	11/2$^-$	340.6	7/2$^+$	M2	0.00526	α(K)=0.00459 *7*; α(L)=0.000549 *8*; α(M)=0.0001010 *15* α(N)=1.635×10^{-5} *23*; α(O)=8.61×10^{-7} *12*
734.2	7.4 *2*	734.2	5/2$^+$	0	5/2$^+$			
777.1[#]	36.5 *10*	1497.0	13/2$^+$	719.8	9/2$^+$	E2	1.61×10^{-3}	α(K)=0.001410 *20*; α(L)=0.0001661 *24*; α(M)=3.04×10^{-5} *5* α(N)=4.90×10^{-6} *7*; α(O)=2.50×10^{-7} *4*
791.9	7.8 *3*	1861.5	13/2$^-$	1069.6	11/2$^-$			
821.1	3.0 *1*	2392.7	(15/2$^-$)	1571.6	15/2$^-$			
860.1	2.8 *2*	1200.7	5/2$^+$	340.6	7/2$^+$			
874.6	3.2 *1*	1944.2	11/2$^-$	1069.6	11/2$^-$			
898.1[#]	1.7 *2*	1473.8	(7/2,5/2)	575.7	(5/2)$^+$			
904.0	8.8 *2*	2401.0	(17/2)$^+$	1497.0	13/2$^+$	E2	1.12×10^{-3}	α(K)=0.000978 *14*; α(L)=0.0001139 *16*; α(M)=2.09×10^{-5} *3* α(N)=3.37×10^{-6} *5*; α(O)=1.738×10^{-7} *25*
937.0	4.5 *1*	1277.6	9/2$^+$	340.6	7/2$^+$			
972.1	6.2 *5*	2020.4	15/2$^+$	1048.3	11/2$^+$	E2	9.43×10^{-4}	α(K)=0.000827 *12*; α(L)=9.58×10^{-5} *14*; α(M)=1.754×10^{-5} *25* α(N)=2.83×10^{-6} *4*; α(O)=1.471×10^{-7} *21*
1028.8[#]	2.5 *1*	1118.3	(7/2$^+$)	89.5	3/2$^+$			
1066.6[#]	<1	1407.2		340.6	7/2$^+$			
1118.4	2.2 *1*	1118.3	(7/2$^+$)	0	5/2$^+$			
1127.1	2.6 *1*	1846.9	(11/2$^+$)	719.8	9/2$^+$			
1158.9	<1	1499.5	9/2$^+$	340.6	7/2$^+$			
1200.6	5.1 *5*	1200.7	5/2$^+$	0	5/2$^+$			
1242.3[#]	5.0 *5*	1582.9	(7/2,5/2)	340.6	7/2$^+$			
1261.3[#]		1261.3	7/2$^+$	0	5/2$^+$			
1335.0[#]	10.0 *10*	2383.1	9/2$^{(+)}$	1048.3	11/2$^+$			

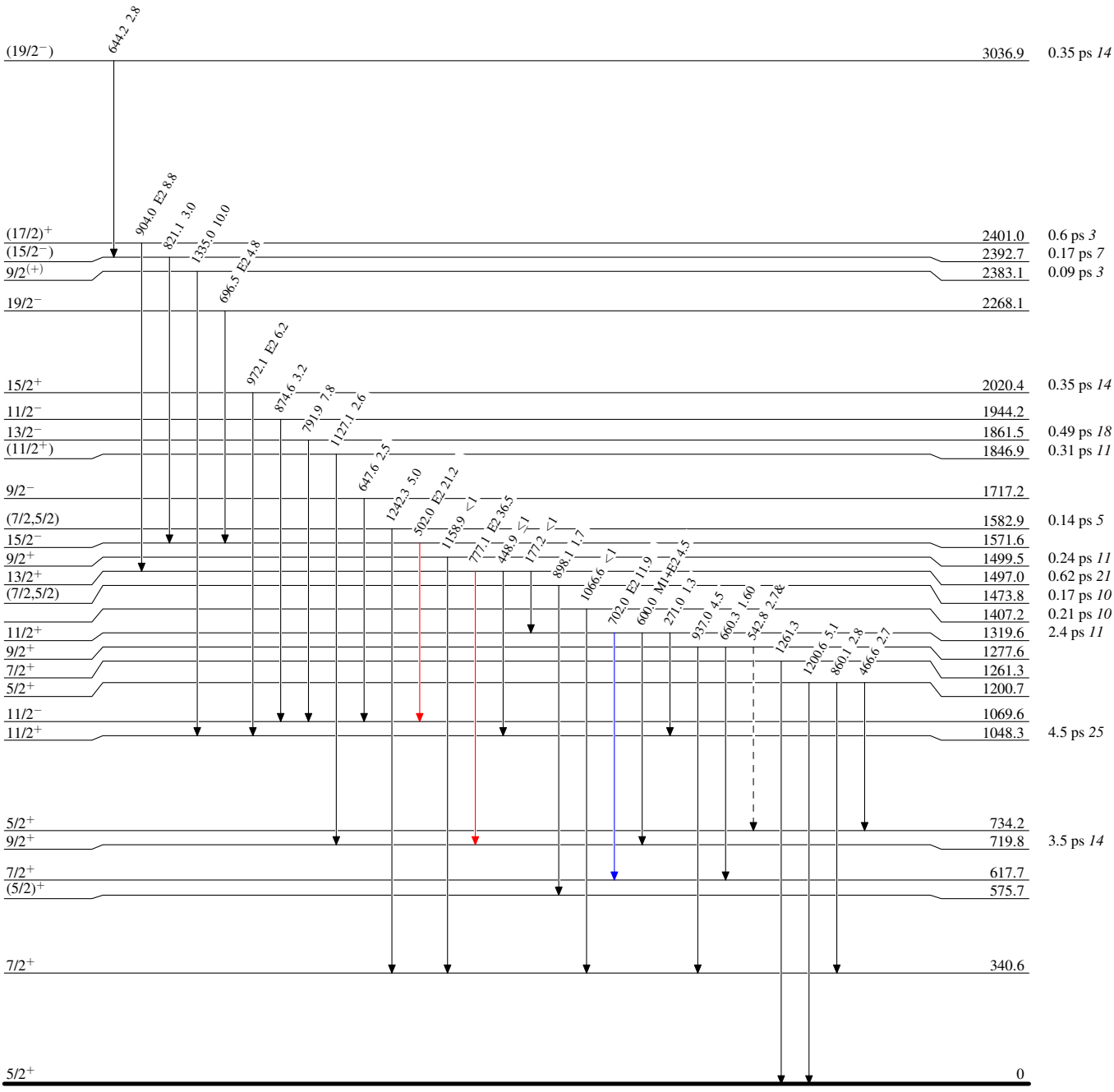
[†] From α,γ(θ). $\Delta\pi$ from Adopted Levels. Authors apparently quote only the large solutions, see (^{3}He,2nγ).
[‡] Uncertainty increased by the evaluators since authors quoted uncertainty with more digits than the measured value.
[#] Unresolved doublet.
[@] Additional information 1.
[&] If No value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.
[a] Multiply placed with undivided intensity.
[b] Placement of transition in the level scheme is uncertain.

^{96}Mo(α,nγ) 1983Ka25

Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



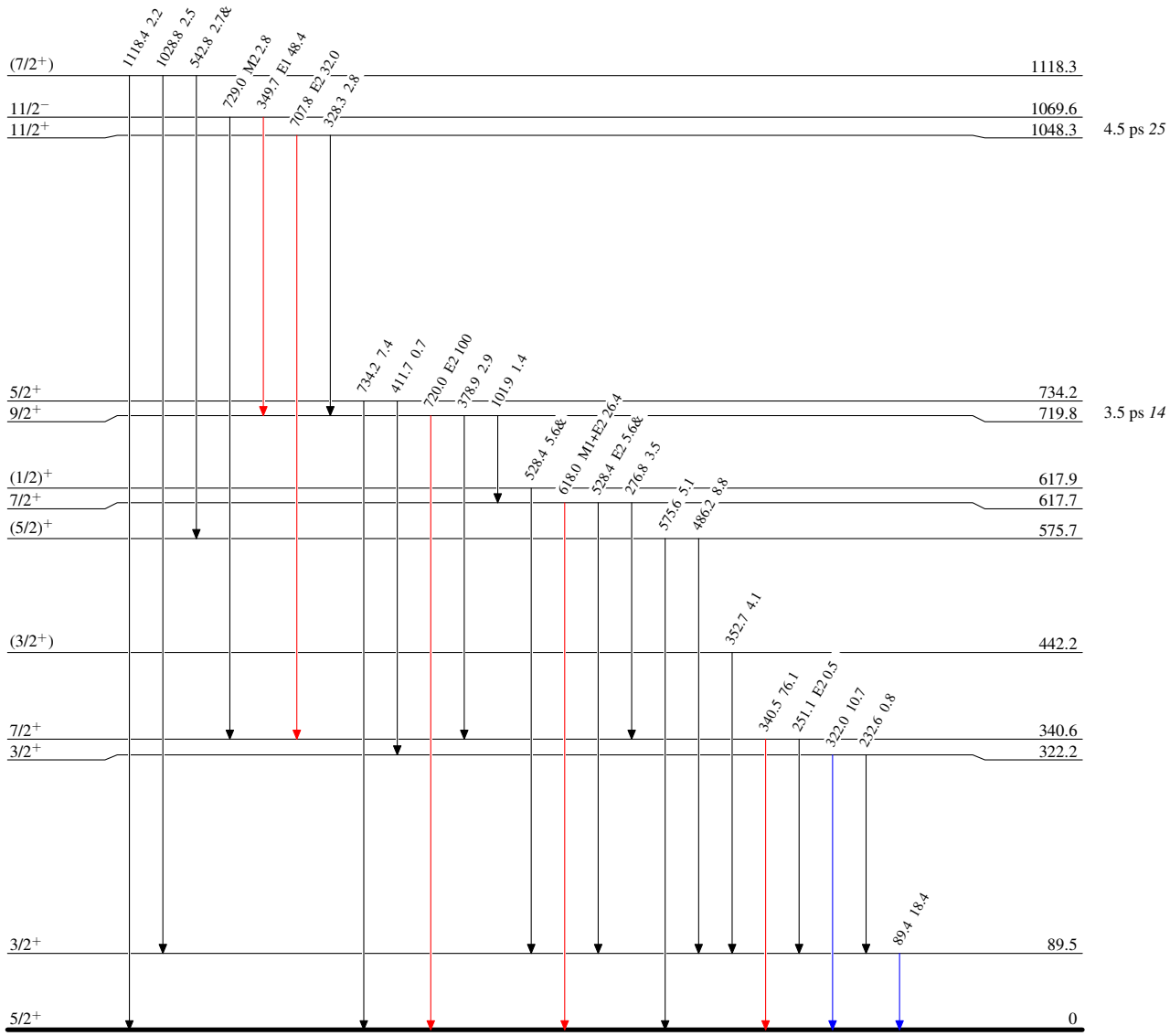
$^{99}_{44}Ru_{55}$

^{96}Mo(α,nγ) 1983Ka25

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



$^{99}_{44}Ru_{55}$