^{92}Zr(α,nγ), ^{94}Zr(α,3nγ) 1972Me03,1971Le20

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, G. Mukherjee, A. A. Sonzogni	NDS 111, 2555 (2010)	30-Jun-2009

1971Le20: ^{94}Zr(α,3nγ) E=30 MeV. Measured γ's, $\gamma\gamma$-coincidences, and γ(t); Ge(Li).
1972Me03: ^{92}Zr(α,nγ), ^{94}Zr(α,3nγ) E=12-43 MeV. Measured excit, γ's, $\gamma\gamma$-coin, $\gamma(\theta)$, γ-polarization, and γ(t); Ge(Li), NaI.
All information is from 1972Me03, except as noted.

^{95}Mo Levels

E(level)	J$^\pi$[†]	T$_{1/2}$[‡]	Comments
0.0	5/2$^+$		
204.02 *17*	3/2$^+$	≤6.9 ns	
765.98 *23*	7/2$^+$	≤6.9 ns	
786.20 *22*	1/2$^+$	≤6.9 ns	
820.66 *23*	3/2$^+$	≤6.9 ns	
947.82 *22*	9/2$^+$	≤6.9 ns	J$^\pi$: ≠7/2 from $\gamma(\theta)$.
1039.17 *23*	1/2$^+$	≤6.9 ns	
1057.0 *3*	5/2$^+$	≤6.9 ns	
1073.90 *25*	7/2$^+$	≤6.9 ns	J$^\pi$: 7/2 from $\gamma(\theta)$.
1318.46? *16*	(3/2$^+$,5/2$^+$)	≤6.9 ns	
1369.67 *23*	(3/2)	≤6.9 ns	J$^\pi$: 3/2 from excit.
1426.2 *3*	(5/2)$^+$	≤6.9 ns	J$^\pi$: 5/2 from excit.
1440.25? *15*	(7/2$^+$,9/2,11/2)	≤6.9 ns	
1541.21 *23*	11/2$^+$	≤6.9 ns	J$^\pi$: 11/2$^+$ from $\gamma(\theta)$ and γ-polarization.
1552.0 *3*	(9/2)$^+$	≤6.9 ns	
1743.26? *16*	(9/2)	≤6.9 ns	
1796.66? *18*		≤6.9 ns	
1808.24? *22*	(7/2$^+$)	≤6.9 ns	
1889.00 *22*	(9/2)$^+$	≤6.9 ns	
1938.1? *3*	11/2$^-$	≤6.9 ns	J$^\pi$: 11/2$^{(-)}$ from $\gamma(\theta)$ and γ-pol.
2059.2 *3*	13/2$^{(+)}$	≤6.9 ns	J$^\pi$: 13/2 from $\gamma(\theta)$. π=+ from competitive Q γ's to 9/2$^+$ and from 17/2$^+$.
2232.98 *23*	(15/2)$^+$	≤6.9 ns	J$^\pi$: ≥13/2 from excit. 15/2$^+$ from $\gamma(\theta)$ and γ-polarization.
2580.9 *4*	(17/2)$^+$	≤6.9 ns	J$^\pi$: 17/2$^+$ from $\gamma(\theta)$ and γ-polarization.
2611.91? *18*		≤6.9 ns	
2732.3 *5*	($^+$)	≤6.9 ns	J$^\pi$: 19/2$^+$ from $\gamma(\theta)$ and γ-polarization.
3635.0? *3*	(23/2$^+$)	≤6.9 ns	J$^\pi$: (23/2$^+$) from $\gamma(\theta)$ and γ-polarization. Not included in Adopted Levels, following placement of 902.7 keV from 3672.4 keV level in ^{16}O(^{82}Se,3nγ).

[†] From the Adopted Levels. Contributing arguments from this data set are given in the comments.
[‡] From γ(t).

$\gamma(^{95}Mo)$

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	Comments
101.5[f] 3	1.6 2	1541.21	11/2$^+$	1440.25?	(7/2$^+$,9/2,11/2)	D,E2		
111.3[f] 3	1.4 2	1552.0	(9/2)$^+$	1440.25?	(7/2$^+$,9/2,11/2)	D,E2		
[x]115.5 3	0.9 1							
140.4[f] 3	2.6 3	1938.1?	11/2$^-$	1796.66?		D,E2		
151.4[@] 3	52 6	2732.3	($^+$)	2580.9	(17/2)$^+$	M1(+E2)[&a]		
170.5[f] 3	1.3 2	2059.2	13/2$^{(+)}$	1889.00	(9/2)$^+$	(E2)		
173.5[@] 3	6.6 7	2232.98	(15/2)$^+$	2059.2	13/2$^{(+)}$	D+Q[#]		
194.5[f] 3	1.6 2	1938.1?	11/2$^-$	1743.26?	(9/2)	D,E2		
201.9[f] 3	3.7 4	1743.26?	(9/2)	1541.21	11/2$^+$	D,E2		
203.9[@] 3	7.2 8	204.02	3/2$^+$	0.0	5/2$^+$	E2(+M1)	≤−0.3	Mult.: Q(+D) from $\gamma(\theta)$. ≠M2(+E1) from δ and comparison to RUL (evaluator).
[x]217.3 3	1.5 2							
[x]221.8 3	6.0 6							
[x]226.7 3	2.8 3							
[x]234.9 3	1.0 1							
236.8[f] 3	3.8 4	1057.0	5/2$^+$	820.66	3/2$^+$	D,E2		
244.1[f] 3	2.3 3	1318.46?	(3/2$^+$,5/2$^+$)	1073.90	7/2$^+$	D,E2		
252.6[df] 3		1039.17	1/2$^+$	786.20	1/2$^+$			I_γ: 1.0 1 at θ=80° and Eα=14 MeV in (α,nγ).
252.6[df] 3		1073.90	7/2$^+$	820.66	3/2$^+$			I_γ: 1.0 1 at θ=80° and Eα=14 MeV in (α,nγ).
255.6[f] 3	0.7 1	1796.66?		1541.21	11/2$^+$	D,E2		
261.3[f] 3	4.7 5	1318.46?	(3/2$^+$,5/2$^+$)	1057.0	5/2$^+$	D,E2		
266.9 3	1.1 1	1808.24?	(7/2$^+$)	1541.21	11/2$^+$	E2		
337.3[f] 3	2.9 3	1889.00	(9/2)$^+$	1552.0	(9/2)$^+$	D,E2		
[x]339.0 3								
347.8[@] 3	65 7	2580.9	(17/2)$^+$	2232.98	(15/2)$^+$	M1(+E2)[&a]		
[x]385.7 3	<21.1					(E1)		
385.9[@bf] 3	≤21.1	1938.1?	11/2$^-$	1552.0	(9/2)$^+$	(E1)[a]		
396.6 3	1.5 2	1938.1?	11/2$^-$	1541.21	11/2$^+$	D,Q		
424.3 3	0.8 1	1743.26?	(9/2)	1318.46?	(3/2$^+$,5/2$^+$)	Q		
467.3 3	4.7 5	1541.21	11/2$^+$	1073.90	7/2$^+$	Q		
[x]476.9 3								
517.4[f] 3	1.3 2	2059.2	13/2$^{(+)}$	1541.21	11/2$^+$	D,Q		
521.8 3	2.1 2	2580.9	(17/2)$^+$	2059.2	13/2$^{(+)}$	Q		
[x]547.8 3								
552.6[ef] 3	4.1[e] 4	1318.46?	(3/2$^+$,5/2$^+$)	765.98	7/2$^+$	D,E2		
552.6[ef] 3	4.1[e] 4	2611.91?		2059.2	13/2$^{(+)}$	D,Q		
[x]553.2 3								
[x]561.2 3	2.0 2							

From ENSDF

^{92}Zr(α,nγ), ^{94}Zr(α,3nγ) 1972Me03,1971Le20 (continued)

$\gamma(^{95}Mo)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
582.2 *3*	<0.7	786.20	$1/2^+$	204.02	$3/2^+$	D,E2	
593.3[@] *3*	51 *6*	1541.21	$11/2^+$	947.82	$9/2^+$	D+Q[#]	
604.0[@] *3*	9.6 *10*	1552.0	$(9/2)^+$	947.82	$9/2^+$	D+Q[#]	
616.5 *3*	<0.3	820.66	$3/2^+$	204.02	$3/2^+$	D,Q	I_γ: 4.1 *4* at θ=80° and Eα=14 MeV in (α,nγ).
640.0 *3*	2.2 *2*	1426.2	$(5/2)^+$	786.20	$1/2^+$		I_γ: 2.2 *2* at θ=80° and Eα=14 MeV in (α,nγ).
[x]644	1.4 *2*						
[x]666.2 *3*	7.1 *7*						
[x]670.1 *3*							
674.1[e@f] *3*	14.9[e] *15*	1440.25?	$(7/2^+,9/2,11/2)$	765.98	$7/2^+$	D,Q	I_γ: 5.6 *6* at θ=80° and Eα=14 MeV in (α,nγ).
674.1[e@f] *3*	14.9[e] *15*	2611.91?		1938.1?	$11/2^-$	D,Q	
[x]680.0 *3*							
691.7[@] *3*	84 *9*	2232.98	$(15/2)^+$	1541.21	$11/2^+$	E2[&a]	
[x]728.7 *3*	0.7 *1*						
765.9[@] *3*	51 *5*	765.98	$7/2^+$	0.0	$5/2^+$	(M1(+E2))[a]	
[x]771.1 *3*	13.7 *14*						
775.2[@] *3*	40 *4*	1541.21	$11/2^+$	765.98	$7/2^+$	E2[a]	
785.9[@] *3*	4.4 *5*	1552.0	$(9/2)^+$	765.98	$7/2^+$	D+Q[#]	
786.2[@] *3*	<0.2	786.20	$1/2^+$	0.0	$5/2^+$	Q	
820.8 *3*	<0.8	820.66	$3/2^+$	0.0	$5/2^+$	D,Q	I_γ: 19.1 *19* at θ=80° and Eα=14 MeV in (α,nγ).
[x]825.3 *3*	3.8 *4*						
835.3 *3*	<1.0	1039.17	$1/2^+$	204.02	$3/2^+$	D,Q	I_γ: ≤8.9 *9* at θ=80° and Eα=14 MeV in (α,nγ).
[x]841.3 *3*	2.8 *3*						
[x]846.6 *3*							
[x]895.7 *3*	<0.5						
902.7[@f] *3*	25.9 *26*	3635.0?	$(23/2^+)$	2732.3	$(^+)$	E2[a]	
947.9[@] *3*	100 *10*	947.82	$9/2^+$	0.0	$5/2^+$	(E2)[a]	
[x]962.4 *3*	2.7 *3*						
974.8[f] *3*	0.8 *1*	1796.66?		820.66	$3/2^+$	D,Q	
977.6[f] *3*	4.7 *5*	1743.26?	(9/2)	765.98	$7/2^+$	D,Q	
987.7 *3*	3.7 *4*	1808.24?	$(7/2^+)$	820.66	$3/2^+$	Q	
[x]990.4 *3*	<10.9					(D+Q)	
990.7 *3*	<10.9	1938.1?	$11/2^-$	947.82	$9/2^+$	(D+Q)[#]	
[x]1031.9 *3*							
1039.0 *3*	1.7 *2*	1039.17	$1/2^+$	0.0	$5/2^+$	Q	I_γ: 2.5 *3* at θ=80° and Eα=14 MeV in (α,nγ).
1057.0 *3*	2.3 *3*	1057.0	$5/2^+$	0.0	$5/2^+$		
1070.5[f] *3*	1.2 *2*	2611.91?		1541.21	$11/2^+$		
1073.9[@] *3*	8.0 *8*	1073.90	$7/2^+$	0.0	$5/2^+$	D+Q[#]	I_γ: 61 *6* at θ=80° and Eα=14 MeV in (α,nγ).
[x]1078.7 *3*	2.3 *3*						
1111.2[@] *3*	19.0 *19*	2059.2	$13/2^{(+)}$	947.82	$9/2^+$	Q[#&]	

From ENSDF

$^{95}_{42}Mo_{53}$-3

^{92}Zr(α,nγ), ^{94}Zr(α,3nγ) 1972Me03,1971Le20 (continued)

γ(^{95}Mo) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Comments
[x]1116.2 *3*	2.2 *3*					
[x]1138.6 *3*	3.7 *4*					
1165.5 *3*	2.8[c] *3*	1369.67	(3/2)	204.02	3/2$^+$	I_γ: 5.6 *6* at θ=80° and Eα=14 MeV in (α,nγ).
[x]1213.9 *3*						
[x]1217.8 *3*						
1222.1 *3*	11.1 *11*	1426.2	(5/2)$^+$	204.02	3/2$^+$	I_γ: 11.1 *11* at θ=80° and Eα=14 MeV in (α,nγ).
[x]1228.3 *3*						
1235.8[f] *3*		1440.25?	(7/2$^+$,9/2,11/2)	204.02	3/2$^+$	I_γ: 7.1 *7* at θ=80° and Eα=14 MeV in (α,nγ).
[x]1311.3 *3*	3.5 *4*					
1369.8 *3*	<1.0	1369.67	(3/2)	0.0	5/2$^+$	I_γ: 10.0 *10* at θ=80° and Eα=14 MeV in (α,nγ).
1440.5[c f] *3*		1440.25?	(7/2$^+$,9/2,11/2)	0.0	5/2$^+$	I_γ: 3.3 *4* at θ=80° and Eα=14 MeV in (α,nγ).
[x]1526	2.0 *2*					
[x]1674.8 *3*	3.0 *3*					
[x]1676.8 *3*						

[†] From (α,3nγ) at Eα=35 MeV and θ=125°.
[‡] From comparison to RUL, except as noted.
[#] From γ(θ).
[@] Also reported by 1971Le20.
[&] Stretched.
[a] From γ(θ) and γ-polarization.
[b] The placement of the 386γ is supported by most of the coincidence data, but is in contradiction with the observed coincidence with the 348γ (1972Me03) and the 152γ (1971Le20). Probable doublet.
[c] Composite peak.
[d] Multiply placed.
[e] Multiply placed with undivided intensity.
[f] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

From ENSDF

$^{95}_{42}Mo_{53}$-4

^{92}Zr(α,nγ), ^{94}Zr(α,3nγ) 1972Me03,1971Le20

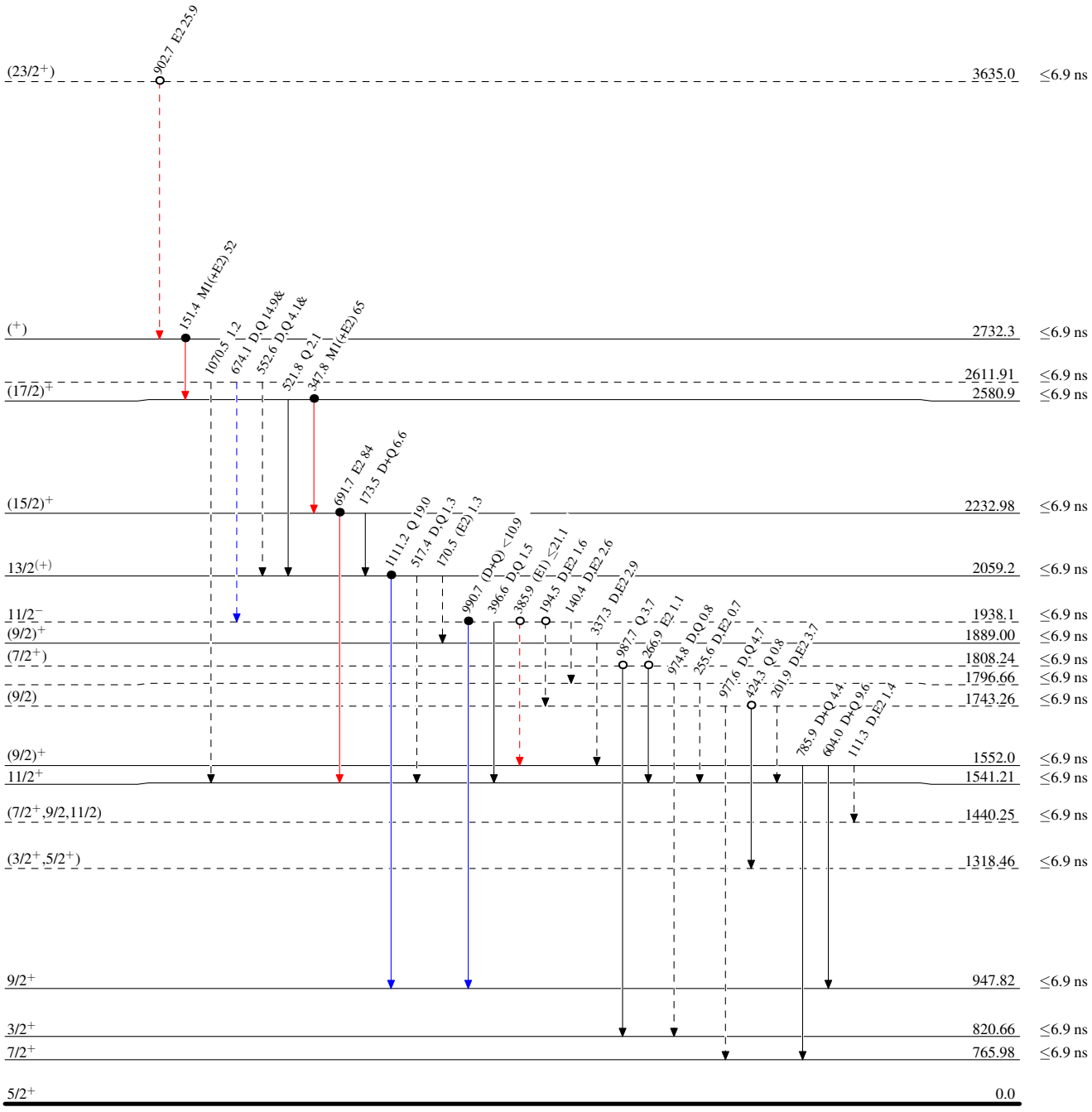
Level Scheme

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)
- Coincidence
- Coincidence (Uncertain)



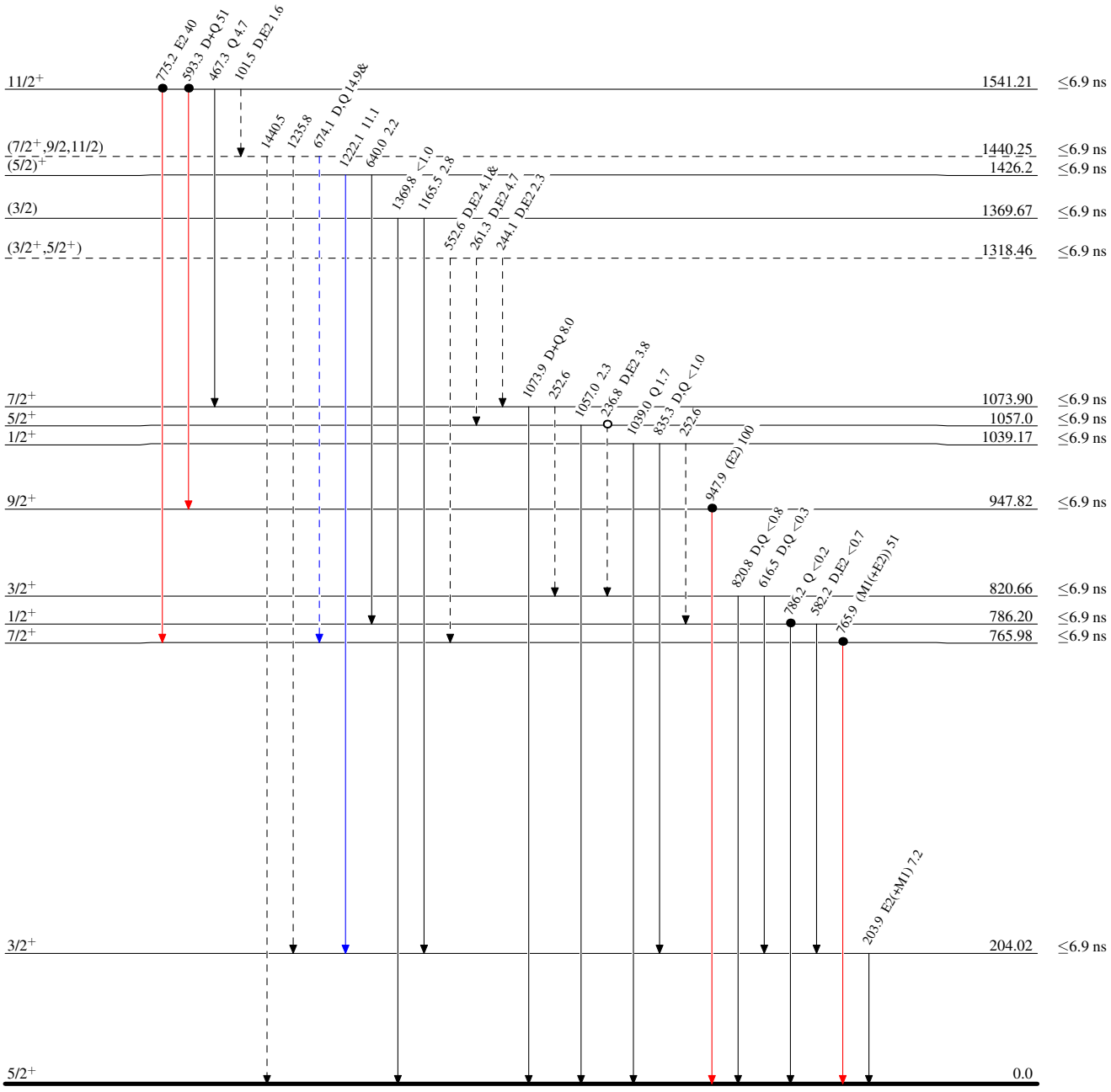
$^{95}_{42}Mo_{53}$

^{92}Zr(α,nγ), ^{94}Zr(α,3nγ) 1972Me03,1971Le20

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



$^{95}_{42}Mo_{53}$