

$^{92}\text{Zr}(\alpha, 2n\gamma)$ 1971Le19

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni		NDS 107, 2423 (2006)	1-Jan-2006

1971Le19: E=30 MeV; measured $E\gamma$, $I\gamma$, $\gamma\gamma$ coincidences, $\gamma(\theta)$, $\gamma(t)$. Comparison with other experiments shows that $E\gamma$ and the resulting level energies are systematically smaller by a few keV. This problem persists even after replacing two of the most deviant $E\gamma$ (727.4 10 and 1035.8 10) by their adopted values.

 ^{94}Mo Levels

E(level) [†]	J ^π [‡]	T _{1/2}	Comments
0.0 [#]	0 ⁺		
870.2 [#] 10	2 ⁺		
1572.2 [#] 15	4 ⁺		
2295.2? 5	4 ⁺		
2421.1 [#] 18	6 ⁺		
2610.0 [@] 16	(5) ⁻		
2739.81? 8	(1,2) ⁺		
2869.7 20	6 ⁽⁺⁾		
2953.1 [#] 20	8 ⁺	98 ns 2	g=+1.317 15 Q(8 ⁺ , ^{94}Mo)/Q(8 ⁺ , ^{92}Mo)=1.48 12 from time-differential perturbed angular distribution of the stretched-downward cascade (1974Ba11). g: From time-differential perturbed angular distribution of the 848, 702, and 870 γ 's (1975Fa04). Other: g=1.308 10 (1979LeZL). T _{1/2} : from time-differential perturbed angular distribution (1975Fa04). Other: 109 ns 10 from $\gamma(t)$ (1971Le19).
3318.3 21			
3357.4 20	(8 ⁺)		
3365.9 [@] 19	(7 ⁻)		
3802.7 22			
3867.2? 3			
3894.4 [#] 22	(10 ⁺)		
4005.5 21			
4187.2 23			
4492.8 23			

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

[‡] From Adopted Levels.

[#] Band(A): Ground State band.

[@] Band(B): Negative parity band.

 $\gamma(^{94}\text{Mo})$

E_γ	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	α^a	Comments
61.7 ^{#b} 10	≈0.02	3867.2?		3802.7				
83.6 10	3.2 5	2953.1	8 ⁺	2869.7	6 ⁽⁺⁾	E2	2.325	$\alpha(\text{exp})=2.2$ 3 $\alpha=2.325$; $\alpha(\text{K})=1.831$; $\alpha(\text{L})=0.408$; $\alpha(\text{M})=0.0738$; $\alpha(\text{N}+..)=0.01201$ $\alpha(\text{exp})$: From relative intensities in the delayed 83.6-448.7 cascade. Mult.: from $\alpha(\text{exp})$.
202.8 10	0.5 2	4005.5		3802.7				

Continued on next page (footnotes at end of table)

$^{92}\text{Zr}(\alpha, 2n\gamma)$ 1971Le19 (continued) $\gamma(^{94}\text{Mo})$ (continued)

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
261.7@ <i>b</i> 10	0.5 2	2869.7	6 ⁽⁺⁾	2610.0	(5) ⁻		
^x 275.0 10	1.6 2						
292.8 10	13 1	4187.2		3894.4	(10) ⁺		
305.6 10	2.4 2	4492.8		4187.2			
365.2 10	4.8 3	3318.3		2953.1	8 ⁺		
385.4@ <i>b</i> 10	0.6 2	4187.2		3802.7			
448.7 10	13 1	2869.7	6 ⁽⁺⁾	2421.1	6 ⁺		
484.5 10	3.7 4	3802.7		3318.3			
531.9 10	35 2	2953.1	8 ⁺	2421.1	6 ⁺		
^x 560.5 10	1.4 4						
^x 569.2 10	2.0 4						
598.4 10	1.7 4	4492.8		3894.4	(10) ⁺		
^x 651.8 10	3.7 5						
702.0 10	90 3	1572.2	4 ⁺	870.2	2 ⁺		
721.5 ^b 5	5.1 5	2295.2?	4 ⁺	1572.2	4 ⁺		E_γ : from (n,n'), (n,n'γ); 727.4 10 reported by 1971Le19.
755.9 10	7.3 5	3365.9	(7) ⁻	2610.0	(5) ⁻	(E2)	
848.9 10	69 3	2421.1	6 ⁺	1572.2	4 ⁺		
870.2 10	100	870.2	2 ⁺	0.0	0 ⁺		
911.6 ^b 10	3.0 5	3867.2?		2953.1	8 ⁺		
936.3 10	8.8 8	3357.4	(8) ⁺	2421.1	6 ⁺	(E2)	
941.3 10	29 1	3894.4	(10) ⁺	2953.1	8 ⁺	(E2)	
^x 981.9 10	2.8 4						
1037.8 6	11.3 6	2610.0	(5) ⁻	1572.2	4 ⁺		E_γ : from (n,n'), (n,n'γ); 1035.8 10 reported by 1971Le19.
1052.3 10	3.5 5	4005.5		2953.1	8 ⁺		
1166.3& <i>b</i> 10	5.2 5	2739.81?	(1,2) ⁺	1572.2	4 ⁺		
1868.9 ^b 10	2.2 6	2739.81?	(1,2) ⁺	870.2	2 ⁺		

[†] Relative intensity; total of prompt and delayed intensity in-beam at $\theta=126^\circ$.

[‡] Stretched-E2 cascades assumed on the basis of $\gamma(\theta)$, if not noted otherwise. The anisotropies of transitions with delayed components are attenuated.

Uncertain γ .

@ Assignment to ^{94}Mo uncertain.

& Not seen in ^{94}Tc β^+ decay (52.0 min). Possibly misplaced.

^a Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

^b Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

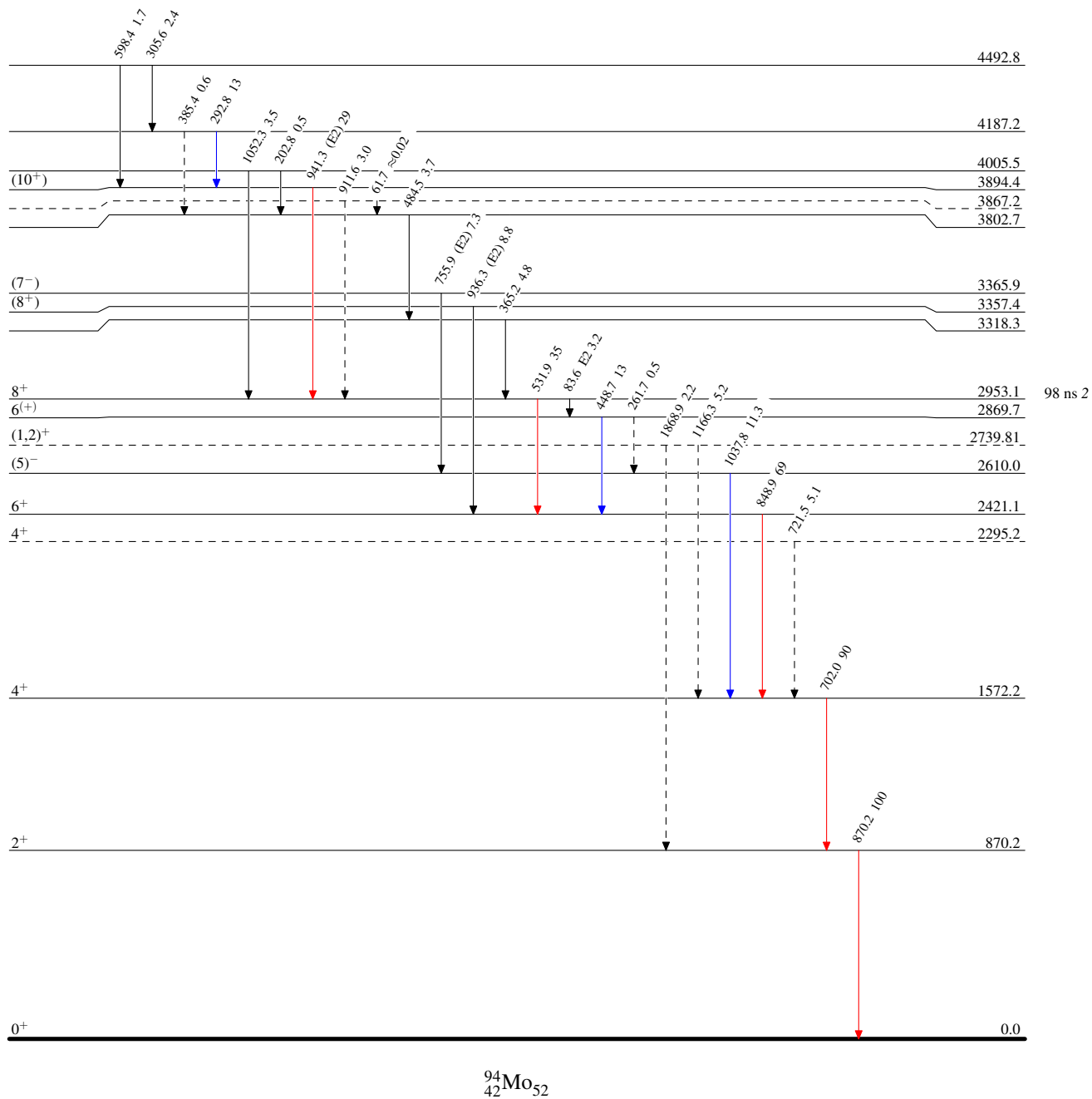
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Level Scheme

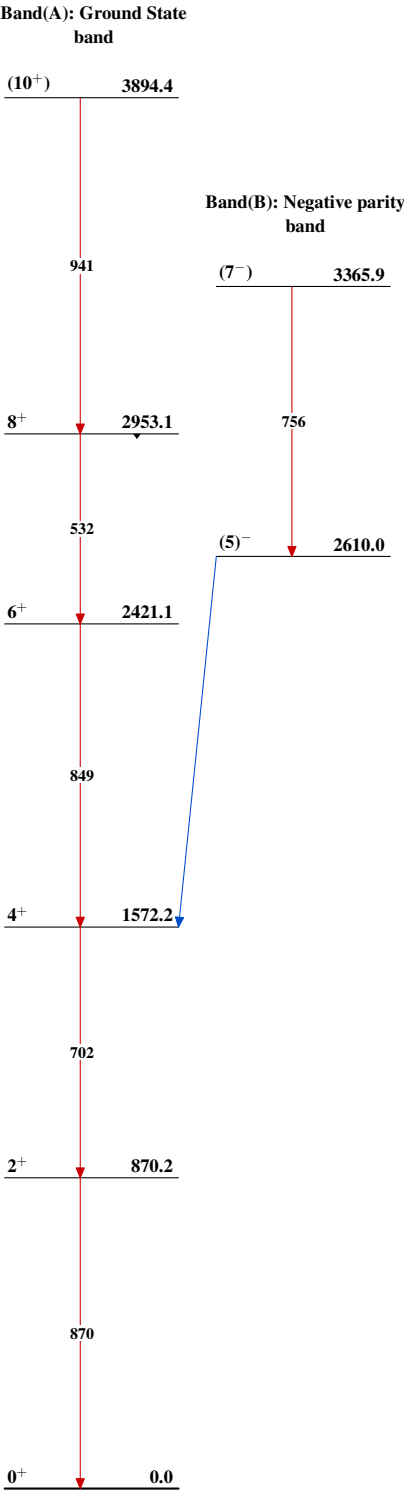
Intensities: Relative I_γ

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)



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$^{94}_{42}\text{Mo}_{52}$