

$^{99}\text{Ru}(\alpha,2\text{np}\gamma)$ 1984Ma30

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen		NDS 172, 1 (2021)	31-Jan-2021

1984Ma30: E=30-55 MeV alpha beams were produced from the Buenos Aires Synchrocyclotron. Target was a 2 mg/cm² powder of 98% enriched ^{99}Ru fixed to a 4- μm mylar foil. γ rays were detected with three Ge(Li) detectors and a high-resolution x-ray detector. Measured E_γ , I_γ , $\gamma\gamma$ -coin, $\gamma\gamma(t)$, $\gamma(\theta)$, excitation functions. Deduced levels, isomer $T_{1/2}$. **1984Ma30** use this measurement for the basic line identification, the observation of a new isomer, and a first tentative scheme. Most data reported in **1984Ma30** are from the $^{98}\text{Mo}(^6\text{Li},4\text{n}\gamma)$ measurement at BNL with improved sensitivity. See that dataset for more details.

All data are from **1984Ma30**, unless otherwise noted.

 ^{100}Rh Levels

E(level) [†]	J^π [‡]	$T_{1/2}$	Comments
0.0	1 ⁻ #		
32.7 10	(2) ⁻ #	27.6 [#] ns 6	
74.9 10	(2) ⁺ #	214.3 [#] ns 20	
107.6 15	(5 ⁺) [#]	4.6 [#] min 2	%IT \approx 98.3; % ϵ +% β^+ \approx 1.7
219.4 16	(7 ⁺)	135 ns 20	$T_{1/2}$: from (135.7 γ)(111.9 γ)(t).
243.4 17	(6)		
357.5 17	(6)		
438.5 16	(7)		
887.1 18	(8)		
1270.4 18	(8)		
1403.4 21	(9)		
1800.9 23	(10)		
2127.5 25	(11)		
2596 3	(12)		
3064 3	(13)		
3490 3	(14)		
3948 4	(15)		

[†] From least-squares fit to E_γ data, assuming $\Delta E_\gamma=0.2$ keV or 1 keV if E_γ stated as integer.

[‡] As proposed by **1984Ma30** based on their $\gamma(\theta)$ data.

From the Adopted Levels.

 $\gamma(^{100}\text{Rh})$

E_γ [†]	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.
32.7 [#]		32.7	(2) ⁻	0.0	1 ⁻	
74.9 ^{@‡}	120 ^{@ 10}	74.9	(2) ⁺	0.0	1 ⁻	
74.9 ^{@‡}	120 ^{@ 10}	107.6	(5 ⁺)	32.7	(2) ⁻	[E3]
81.1	21 4	438.5	(7)	357.5	(6)	
111.9	100 5	219.4	(7 ⁺)	107.6	(5 ⁺)	
133.0	83 10	1403.4	(9)	1270.4	(8)	
135.7	40 6	243.4	(6)	107.6	(5 ⁺)	
195.1	81 14	438.5	(7)	243.4	(6)	
219.1	16 7	438.5	(7)	219.4	(7 ⁺)	
249.9	30 5	357.5	(6)	107.6	(5 ⁺)	
326.6	27 4	2127.5	(11)	1800.9	(10)	
330.9	10 3	438.5	(7)	107.6	(5 ⁺)	
383.2	10 4	1270.4	(8)	887.1	(8)	

Continued on next page (footnotes at end of table)

$^{99}\text{Ru}(\alpha, 2n\text{p}\gamma)$ 1984Ma30 (continued) $\gamma(^{100}\text{Rh})$ (continued)

E_γ^\dagger	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ^\dagger	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π
397.5	40 5	1800.9	(10)	1403.4	(9)	468.2 [@]	30 [@] 5	2596	(12)	2127.5	(11)
426 [#]		3490	(14)	3064	(13)	468.2 [@]	30 [@] 5	3064	(13)	2596	(12)
448.4	40 4	887.1	(8)	438.5	(7)	1051.1	32 5	1270.4	(8)	219.4	(7 ⁺)
458	5 3	3948	(15)	3490	(14)						

[†] From ($^6\text{Li}, 4n\gamma$) in 1984Ma30.

[‡] Placements from the Adopted Gammas. Transition is from 107.6 isomer through cascades: 74.9-32.7 and 32.7-74.9, with 32.7 γ too weak to be observed in this measurement. See also $^{98}\text{Mo}(^6\text{Li}, 4n\gamma)$.

[#] Not seen in the ($\alpha, 2n\text{p}\gamma$) measurement in 1984Ma30.

[@] Multiply placed with undivided intensity.

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Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- Coincidence

