^{100}Mo(n,n′γ) 1983Mo11

History

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

1983Mo11: E(n)=fast neutrons from the 5-MW light-water-moderated research reactor at Budapest. Measured Eγ, Iγ, γ(θ), with a coaxial Ge(Li) detector. Deduced levels, J, π, mixing ratios. Comparisons with interacting boson model calculations.
Others: 1997Ko62, 1974Mc02, 1984Ke09 (abstract only), 1978AhZX.
All data are from 1983Mo11, unless otherwise noted.

^{100}Mo Levels

Relative population values are from 1997Ko62.

E(level)†	Jπ‡	Comments
0.0	0^+	
535.550 *13*	2^+	Relative population=40.8.
695.09 *2*	0^+	Relative population=12.5.
1063.76 *2*	2^+	Relative population=15.5.
1135.97 *3*	4^+	Relative population=8.5.
1463.89 *3*	2^+	Relative population=6.8.
1504.60 *5*	0^+	Relative population=1.91.
1607.34 *3*	(3^+)	Relative population=4.67.
1766.47 *10*	(2^+)	Relative population=0.27. Jπ: 1997Ko62 suggest (0^+) based on comparison of experimental and calculated population.
1771.38 *3*	(4^+)	Relative population=2.39.
1847.13? *7*	6^+	Relative population=0.8.
1908.21 *4*	3^-	Relative population=3.27.
1977.34 *6*	$(1,2^+)$	Relative population=1.44. Jπ: 1997Ko62 give (1^+) based on comparison of experimental and calculated population.
2038.0? *2*	0^+	
2042.74 *7*	$(2)^+$	
2086.77 *9*	0^+	
2103.07 *9*	4^+	
2189.4? *2*		
2201.07 *8*		
2286.4 *2*	2^+	
2369.6 *1*	3^-	
2397.0?# *3*		
2416.9 *2*	(4^+)	
2564.0 *2*	$(4)^+$	
2580.8 *3*	$(1,2^+)$	
2662.6?# *3*		
2738.0 *3*	(2^+)	
2822.2?# *1*		
2961.2?# *3*		
2969.6?# *2*	4^+	
2996.3?# *2*		
3004.2? *3*		
3042.2?# *6*		
3053.7?# *2*		

† From least-squares fit to Eγ data.
‡ From the Adopted Levels.
# Tentative level proposed on the basis of a level in (t,p) data near the same energy.

^{100}Mo(n,n′γ) 1983Mo11 (continued)

γ(^{100}Mo)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α[@]	$I_{(\gamma+ce)}$	Comments
159.547 *13*	14.2 *4*	695.09	0^+	535.550	2^+	E2		0.22		Mult.: from the Adopted Gammas.
[x]191.9 *1*	0.57 *6*									
[x]306.90 *3*	2.68 *4*									Most intense line amongst unplaced transitions. The assignment to ^{100}Mo is considered uncertain.
369.1[‡#a] *1*	0.38 *4*	1063.76	2^+	695.09	0^+					
400.17 *9*	0.23 *3*	1463.89	2^+	1063.76	2^+					
435.5 *2*	0.10 *2*	2042.74	$(2)^+$	1607.34	(3^+)					
440.83 *5*	0.48 *3*	1504.60	0^+	1063.76	2^+					
461.0 *2*	0.10 *2*	2564.0	$(4)^+$	2103.07	4^+					
471.39[‡] *9*	0.42 *5*	1607.34	(3^+)	1135.97	4^+					
528.21 *2*	18.9 *3*	1063.76	2^+	535.550	2^+	(M1+E2)	+3.4 *4*			A_2=+0.10 *3*; A_4=−0.05 *5* δ: from γ(θ). Alternate δ=−0.11 *4* is inconsistent with that from γγ(θ) data in ^{100}Nb β^-.
535.547 *13*	100	535.550	2^+	0.0	0^+	Q				A_2=+0.15 *4*; A_4=−0.08 *4* Mult.: ΔJ=2, Q from γ(θ).
543.62 *6*	2.5 *2*	1607.34	(3^+)	1063.76	2^+					A_2=+0.03 *5*; A_4=+0.04 *6*
578.8 *1*	0.41 *4*	2042.74	$(2)^+$	1463.89	2^+					
[x]591.0 *1*	0.77 *9*									
600.39 *2*	≈11.8	1135.97	4^+	535.550	2^+					I_γ: true intensity not available since strongly contaminated by a background line near this energy.
635.31 *4*	0.85 *4*	1771.38	(4^+)	1135.97	4^+					
639.2 *2*	0.20 *3*	2103.07	4^+	1463.89	2^+					
[x]681.9 *1*	0.34 *3*									
695		695.09	0^+	0.0	0^+	E0			0.16 *3*	E_γ,Mult.,$I_{(\gamma+ce)}$: from the Adopted Gammas.
702.7 *1*	0.27 *3*	1766.47	(2^+)	1063.76	2^+					
707.68 *3*	1.54 *3*	1771.38	(4^+)	1063.76	2^+					
711.16[#a] *6*	0.84 *3*	1847.13?	6^+	1135.97	4^+					
[x]744.0 *1*	0.25 *7*									
768.77 *3*	4.67 *6*	1463.89	2^+	695.09	0^+					A_2=+0.34 *9*; A_4=−0.04 *9*
822.7 *3*	0.16 *2*	2286.4	2^+	1463.89	2^+					
844.37 *4*	≈2.77	1908.21	3^-	1063.76	2^+					I_γ: unresolved from a background line near this energy. Using branching ratio from Coulomb excitation data, Iγ=2.2 *2*.
913.72 *9*	0.45 *2*	1977.34	$(1,2^+)$	1063.76	2^+					
928.34 *3*	3.40 *4*	1463.89	2^+	535.550	2^+	(M1+E2)	−0.36 *7*			A_2=−0.06 *7*; A_4=−0.07 *8* δ: from γ(θ). Alternate δ=+19.6 +∞−9.8 is inconsistent with that from γγ(θ) in ^{100}Nb β^-.
[x]934.5 *2*	0.11 *2*									
967.1 *1*	0.70 *3*	2103.07	4^+	1135.97	4^+					
969.06 *7*	1.43 *6*	1504.60	0^+	535.550	2^+					
978.95 *9*	0.29 *2*	2042.74	$(2)^+$	1063.76	2^+					

$^{100}_{42}Mo_{58}$-2

^{100}Mo(n,n′γ) 1983Mo11 (continued)

γ(^{100}Mo) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
1023.00 *8*	0.30 *2*	2086.77	0^+	1063.76	2^+		
1063.76 *3*	7.20 *8*	1063.76	2^+	0.0	0^+		A_2=+0.22 *2*; A_4=−0.17 *2*
1071.77[&] *3*	1.85 *3*	1607.34	(3^+)	535.550	2^+		I_γ: based on branching from β^- decay, 1072γ mainly deexcites 1607 level.
1071.77[&a] *3*		1766.47	(2^+)	695.09	0^+		
1137.4 *1*	0.45 *3*	2201.07		1063.76	2^+		
[x]1153.5 *2*	0.12 *2*						
[x]1161.1 *4*	0.13 *2*						
[x]1234.7 *3*	0.26 *3*						
[x]1247.2 *5*	0.11 *2*						
[x]1265.1 *6*	0.10 *4*						
[x]1266.6 *1*	0.19 *4*						
1280.9[‡] *2*	0.27 *4*	2416.9	(4^+)	1135.97	4^+		
1305.9 *1*	0.34 *4*	2369.6	3^-	1063.76	2^+		
1358.3[a] *1*	0.19 *2*	2822.2?		1463.89	2^+		
1372.73 *4*	1.00 *4*	1908.21	3^-	535.550	2^+		
1395.9[#a] *3*	0.10 *3*	3004.2?		1607.34	(3^+)		
1428.1 *3*	0.12 *2*	2564.0	$(4)^+$	1135.97	4^+		
1441.69 *7*	0.57 *3*	1977.34	$(1,2^+)$	535.550	2^+		
[x]1474.0 *3*	0.20 *3*						
[x]1487.1 *4*	0.11 *3*						
1500.2[a] *3*	0.06 *2*	2564.0	$(4)^+$	1063.76	2^+		
1502.4[a] *2*	0.45 *2*	2038.0?	0^+	535.550	2^+		
1507.5 *4*	0.12 *3*	2042.74	$(2)^+$	535.550	2^+		
[x]1512.56 *5*	0.30 *3*						
1516.8 *3*	0.15 *3*	2580.8	$(1,2^+)$	1063.76	2^+		
1532.4[a] *2*	0.20 *2*	2996.3?		1463.89	2^+		
1567.8 *2*	0.49 *3*	2103.07	4^+	535.550	2^+		
1598.8[a] *3*	0.38 *3*	2662.6?		1063.76	2^+		Placed from a 3062 level in ^{100}Nb β^- decay.
1653.8[#a] *2*	0.17 *2*	2189.4?		535.550	2^+		
1665.4 *1*	0.38 *3*	2201.07		535.550	2^+		According to ^{100}Nb β^-, the transition may be placed from a 3129 level also.
1674.3 *3*	0.10 *2*	2738.0	(2^+)	1063.76	2^+		
1750.8 *2*	0.50 *3*	2286.4	2^+	535.550	2^+		
1833.7 *3*	0.19 *3*	2369.6	3^-	535.550	2^+		
1861.4[‡a] *3*	0.35 *6*	2397.0?		535.550	2^+		
1886.0 *3*	0.12 *2*	2580.8	$(1,2^+)$	695.09	0^+		
1897.4[a] *3*	0.19 *2*	2961.2?		1063.76	2^+		
1908.2 *5*	0.10 *2*	1908.21	3^-	0.0	0^+	[E3]	
1978.4[a] *6*	0.16 *4*	3042.2?		1063.76	2^+		
[x]1980.9 *2*	0.11 *3*						
1989.9[a] *2*	0.22 *7*	3053.7?		1063.76	2^+		

^{100}Mo(n,n′γ) 1983Mo11 (continued)

γ(^{100}Mo) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π
[x]2032.3 *2*	0.16 *2*					[x]2157.3[‡] *1*	0.57 *3*				
[x]2037.4 *2*	0.13 *2*					2202.3 *3*	0.19 *2*	2738.0	(2^+)	535.550	2^+
2042.9 *2*	0.28 *4*	2042.74	$(2)^+$	0.0	0^+	2434.0[a] *2*	0.25 *3*	2969.6?	4^+	535.550	2^+
[x]2075.1[‡] *2*	0.20 *3*										

† Relative photon intensities at 125°.
‡ Unresolved multiplet.
# Placed by the evaluators on the basis of a similar energy transition in the decay of ^{100}Nb (1.5 s or 2.99 s).
@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with "Frozen Orbitals" approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
& Multiply placed.
a Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

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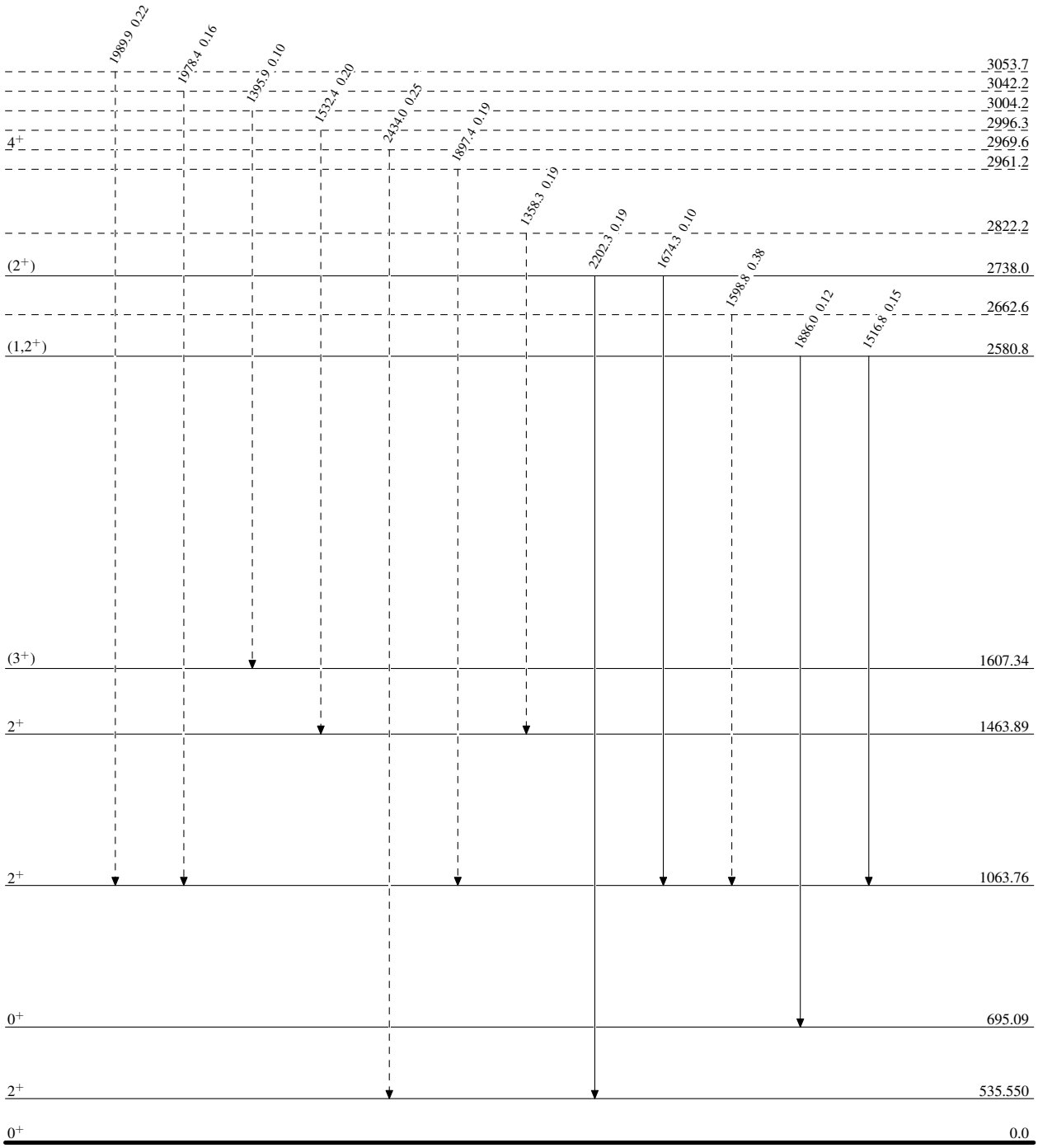
^{100}Mo(n,n′γ) 1983Mo11

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)



$^{100}_{42}Mo_{58}$

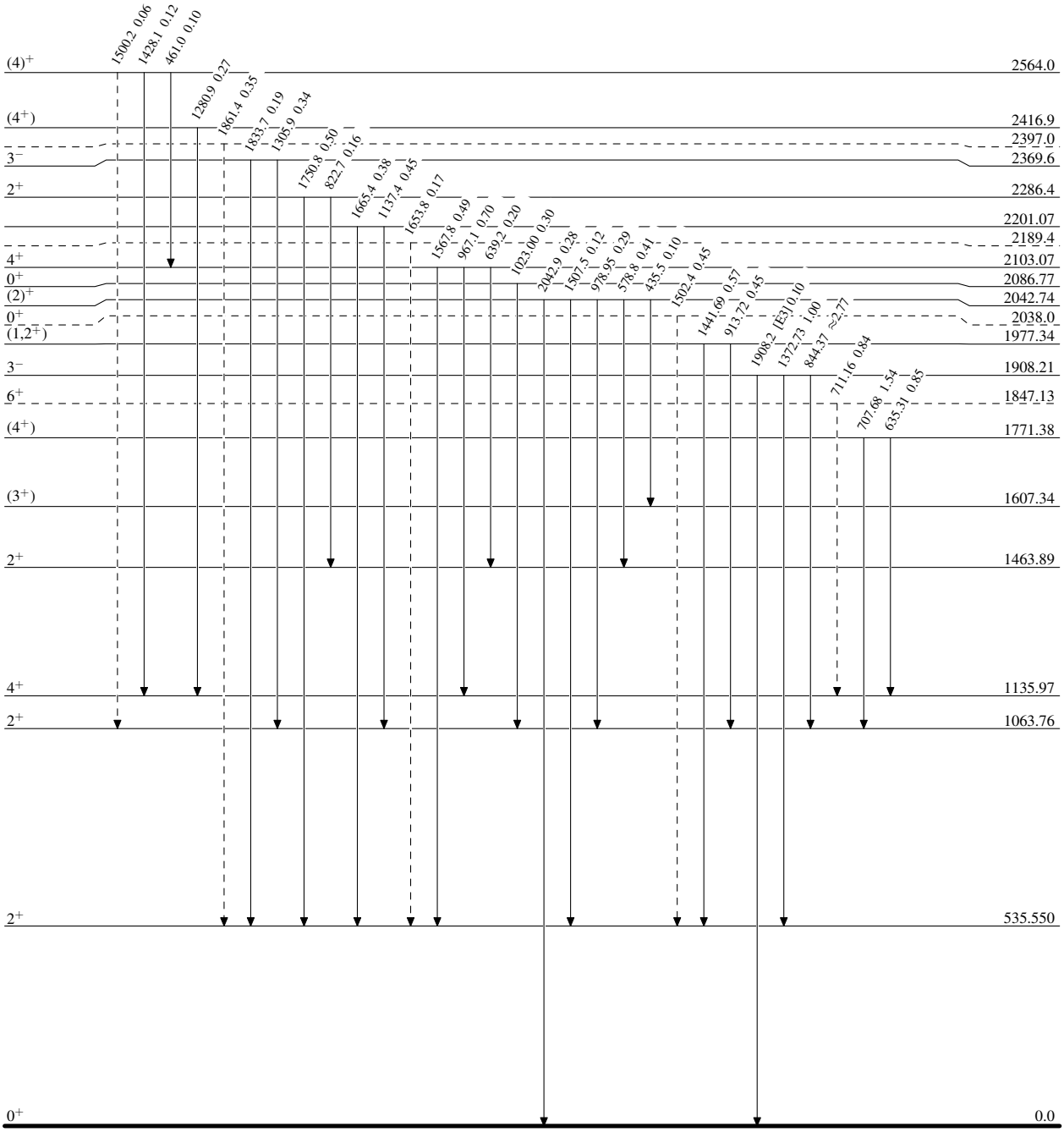
^{100}Mo(n,n′γ) 1983Mo11

Level Scheme (continued)

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)

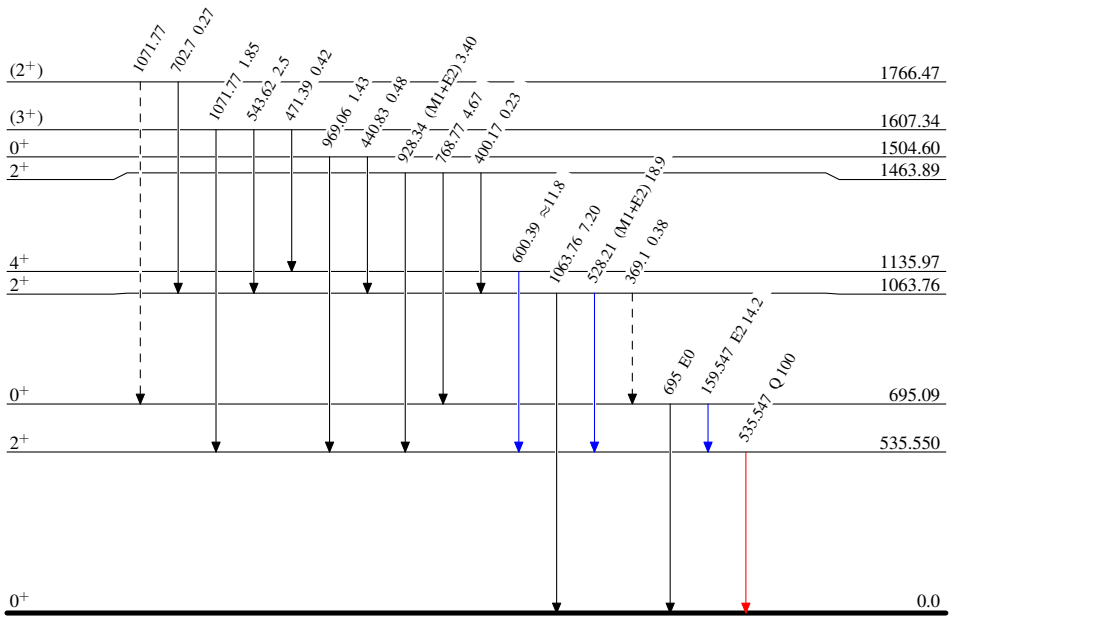


$^{100}_{42}Mo_{58}$

^{100}Mo(n,n′γ) 1983Mo11

Level Scheme (continued)

Intensities: Relative I_γ



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