

$^{114}\text{Cd}(^{40}\text{Ar},4n\gamma)$ 1987De23

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, A. A. Sonzogni		NDS 114, 435 (2013)	1-Apr-2013

1987De23: $^{114}\text{Cd}(^{40}\text{Ar},4n\gamma)$ at E=175 MeV.

Experiment conducted first with a 1 mg/cm² lead-backed target, then with two stacked 0.5 mg/cm² self-supporting targets. In the latter case the recoils were stopped 13 cm down stream, not visible to an array (HERA) of 21 Compton-suppressed germanium detectors. No significant difference appeared between the two sets of spectra indicating the absence of isomers with $T_{1/2} > 3$ ns. The decay scheme was constructed using $\gamma(\theta)$ and $\gamma\gamma\gamma$ data.

 ^{150}Dy Levels

E(level)	J^π [†]	$T_{1/2}$	E(level)	J^π [†]	E(level)	J^π [†]
0.0	0 ⁺	7.17 [#] min 5	7650 3		9974 3	(27 ⁻)
803.7 10	2 ⁺		7740 3	23 ⁻	10238 3	(29 ⁻)
1457.0 14	4 ⁺		7954 3		10327 3	(29 ⁻)
1851.0 17	6 ⁺		8008 3	24 ⁻	10889 3	
2401.9 20	8 ⁺		8303 3		11005 3	(30 ⁻)
2813.2 22	9 ⁻		8424 3		11218 3	(31 ⁻)
3025.7 22	10 ⁺	1.1 [‡] ns 3	8444 3		11304 3	(31 ⁻)
3472.1 23	(11 ⁻)		8480 3		11392 3	
3834.9 23	12 ⁺		8545 3		11701 3	(32 ⁻)
4110.3 24			8611 3	25 ⁻	11803 3	
4337.5 24	14 ⁺		8729 3		12316 3	
4566 3	16 ⁺	1.7 [‡] ns 2	8763 3		12352 3	(33 ⁻)
5070 3	18 ⁺		8777 3		12498 3	(33)
5416 3	17 ⁺		8843 3	(23 ⁻)	12735 3	(34 ⁺)
5613 3	18 ⁻		8868 3		12776 3	(34 ⁻)
5812 3	19 ⁻		8904 3		12927 3	(35)
6018 3	20 ⁻		8920 3		13597 3	(36)
6394 3	21 ⁻		8951 3		13802 3	(36 ⁺)
6815 3			9063 3		14055 3	(37)
7000 3	22 ⁽⁻⁾		9106 3	26 ⁺	14992 3	(39)
7047 3			9274 3	(25 ⁻)	15946 4	
7101 3	22 ⁺		9305 3	(27 ⁺)	16291 4	
7288 3			9398? 3			
7473 3	22 ⁻		9895 3	(26 ⁻)		

[†] Tentative assignments based on lifetimes, angular correlations, decay-scheme details and empirical assumptions generally true in this region.

[‡] From 1980LuZV, 1979LuZZ.

[#] Adopted value.

 $\gamma(^{150}\text{Dy})$

E_γ	$E_i(\text{level})$	J^π_i	E_f	J^π_f	E_γ	$E_i(\text{level})$	J^π_i	E_f	J^π_f
79	9974	(27 ⁻)	9895	(26 ⁻)	197	5613	18 ⁻	5416	17 ⁺
125 [‡]	9398?		9274	(25 ⁻)	199	5812	19 ⁻	5613	18 ⁻
151	12927	(35)	12776	(34 ⁻)	199	9305	(27 ⁺)	9106	26 ⁺
155	9106	26 ⁺	8951		206	6018	20 ⁻	5812	19 ⁻
185	7000	22 ⁽⁻⁾	6815		212	3025.7	10 ⁺	2813.2	9 ⁻
185	7473	22 ⁻	7288		212	11218	(31 ⁻)	11005	(30 ⁻)
195	9063		8868		227	4337.5	14 ⁺	4110.3	

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$^{114}\text{Cd}(^{40}\text{Ar},4n\gamma)$ **1987De23 (continued)** $\gamma(^{150}\text{Dy})$ (continued)

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π
229	4566	16 ⁺	4337.5	14 ⁺	707.0	7101	22 ⁺	6394	21 ⁻
239	9106	26 ⁺	8868		728.2	9274	(25 ⁻)	8545	
253	14055	(37)	13802	(36 ⁺)	742.0	5812	19 ⁻	5070	18 ⁺
267	7740	23 ⁻	7473	22 ⁻	769.7	8777		8008	24 ⁻
267	8008	24 ⁻	7740	23 ⁻	793.7	9274	(25 ⁻)	8480	
278	12776	(34 ⁻)	12498	(33)	796.2	12498	(33)	11701	(32 ⁻)
329	9106	26 ⁺	8777		797.0	6815		6018	20 ⁻
352	10327	(29 ⁻)	9974	(27 ⁻)	803.7	803.7	2 ⁺	0.0	0 ⁺
353 [†]	9274	(25 ⁻)	8920		804	8545		7740	23 ⁻
363	3834.9	12 ⁺	3472.1	(11 ⁻)	809	8763		7954	
370	9274	(25 ⁻)	8904		809.1	3834.9	12 ⁺	3025.7	10 ⁺
376	6394	21 ⁻	6018	20 ⁻	829.2	9274	(25 ⁻)	8444	
383 [†]	12735	(34 ⁺)	12352	(33 ⁻)	849.0	5416	17 ⁺	4566	16 ⁺
394	1851.0	6 ⁺	1457.0	4 ⁺	850	9274	(25 ⁻)	8424	
397 [†]	11701	(32 ⁻)	11304	(31 ⁻)	853.3 [†]	7954		7101	22 ⁺
405	6018	20 ⁻	5613	18 ⁻	860.0	8868		8008	24 ⁻
411	2813.2	9 ⁻	2401.9	8 ⁺	869.7	8611	25 ⁻	7740	23 ⁻
411	11803		11392		891.1	11218	(31 ⁻)	10327	(29 ⁻)
415 [‡]	11304	(31 ⁻)	10889		894	7288		6394	21 ⁻
419.1	12735	(34 ⁺)	12316		910.7	9974	(27 ⁻)	9063	
431	9274	(25 ⁻)	8843	(23 ⁻)	924.3	12316		11392	
452	7740	23 ⁻	7288		929.1 [‡]	10327	(29 ⁻)	9398?	
452.1	9063		8611	25 ⁻	932.7	10238	(29 ⁻)	9305	(27 ⁺)
458	14055	(37)	13597	(36)	932.7	12735	(34 ⁺)	11803	
473	7288		6815		936.4	14992	(39)	14055	(37)
473	7473	22 ⁻	7000	22 ⁽⁻⁾	943.2	8951		8008	24 ⁻
483	11701	(32 ⁻)	11218	(31 ⁻)	954.7	15946		14992	(39)
489.1	8444		7954		971.1	9274	(25 ⁻)	8303	
495.6	9106	26 ⁺	8611	25 ⁻	977.8 [†]	11304	(31 ⁻)	10327	(29 ⁻)
502.8	4337.5	14 ⁺	3834.9	12 ⁺	981.4	7000	22 ⁽⁻⁾	6018	20 ⁻
503.3	11392		10889		1021.4	10327	(29 ⁻)	9305	(27 ⁺)
504.1	5070	18 ⁺	4566	16 ⁺	1028.7	7047		6018	20 ⁻
511	9274	(25 ⁻)	8763		1047.6	12352	(33 ⁻)	11304	(31 ⁻)
534.8	8008	24 ⁻	7473	22 ⁻	1067.2	13802	(36 ⁺)	12735	(34 ⁺)
545	9274	(25 ⁻)	8729		1074.8 [†]	12776	(34 ⁻)	11701	(32 ⁻)
550.9	2401.9	8 ⁺	1851.0	6 ⁺	1255.3	7650		6394	21 ⁻
561.6	8303		7740	23 ⁻	1270.1	8920		7650	
561.6	10889		10327	(29 ⁻)	1299	16291		14992	(39)
590.5	8545		7954		1322.8	8424		7101	22 ⁺
602.6	8611	25 ⁻	8008	24 ⁻	1343.5	8444		7101	22 ⁺
621.8	9895	(26 ⁻)	9274	(25 ⁻)	1346.3	7740	23 ⁻	6394	21 ⁻
624.1	3025.7	10 ⁺	2401.9	8 ⁺	1369.9	8843	(23 ⁻)	7473	22 ⁻
638	4110.3		3472.1	(11 ⁻)	1444.0	8545		7101	22 ⁺
650.5 [†]	10889		10238	(29 ⁻)	1455.2	7473	22 ⁻	6018	20 ⁻
650.5	12352	(33 ⁻)	11701	(32 ⁻)	1533.9	9274	(25 ⁻)	7740	23 ⁻
653.3	1457.0	4 ⁺	803.7	2 ⁺	2030.9	8424		6394	21 ⁻
653.3	8303		7650		2087.0	8480		6394	21 ⁻
659	3472.1	(11 ⁻)	2813.2	9 ⁻	2173.2	9274	(25 ⁻)	7101	22 ⁺
670.4	13597	(36)	12927	(35)	2334.6	8729		6394	21 ⁻
678.5 [†]	11005	(30 ⁻)	10327	(29 ⁻)	2449.1	8843	(23 ⁻)	6394	21 ⁻
696.3	11701	(32 ⁻)	11005	(30 ⁻)	2510.2	8904		6394	21 ⁻
700.4	9974	(27 ⁻)	9274	(25 ⁻)	2527.0	8920		6394	21 ⁻

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$^{114}\text{Cd}(^{40}\text{Ar},4n\gamma)$ **1987De23 (continued)**

$\gamma(^{150}\text{Dy})$ (continued)

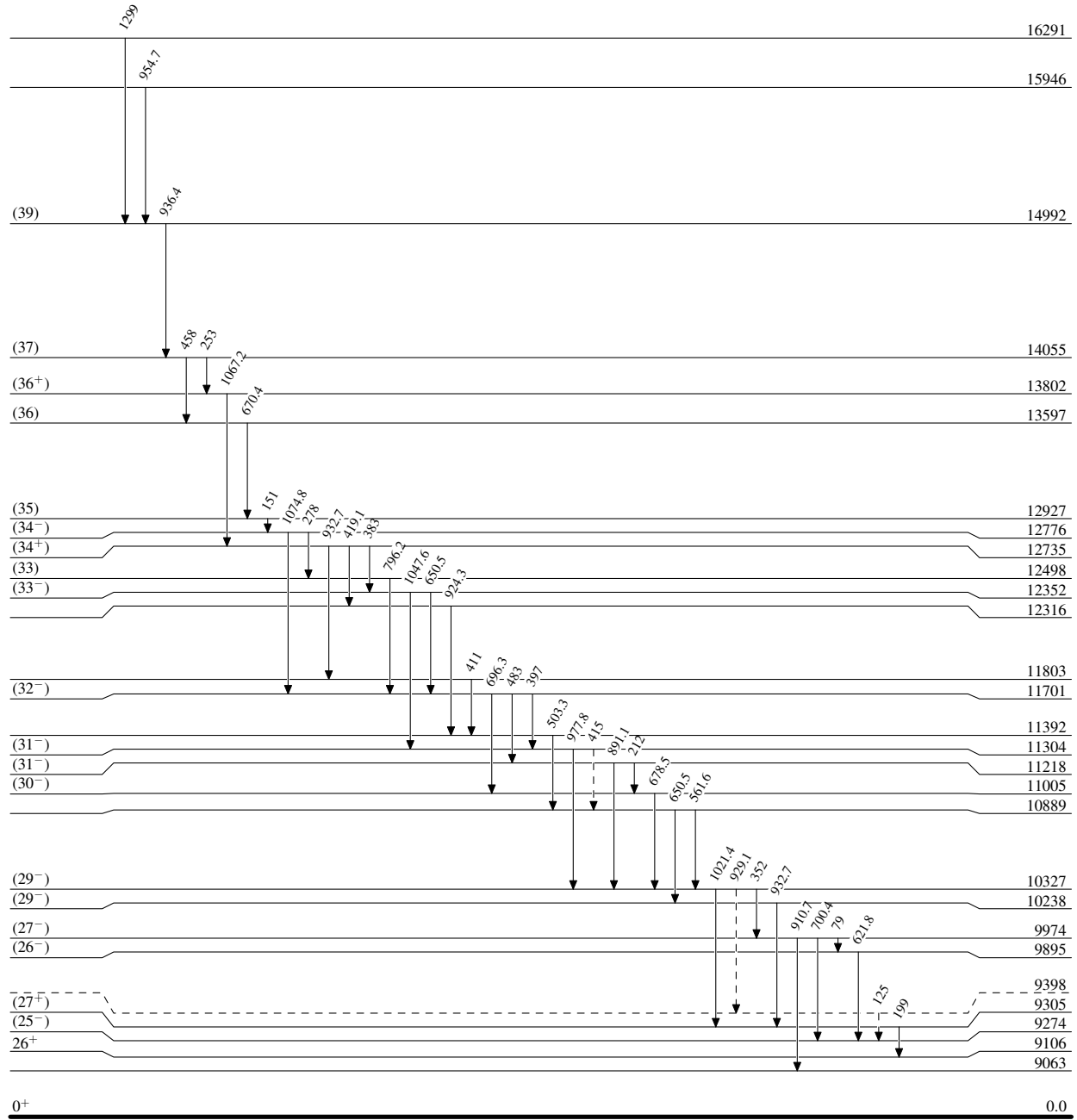
[†] Placed elsewhere in decay scheme in $^{124}\text{Sn}(^{32}\text{S},6n\gamma)$.

[‡] Placement of transition in the level scheme is uncertain.

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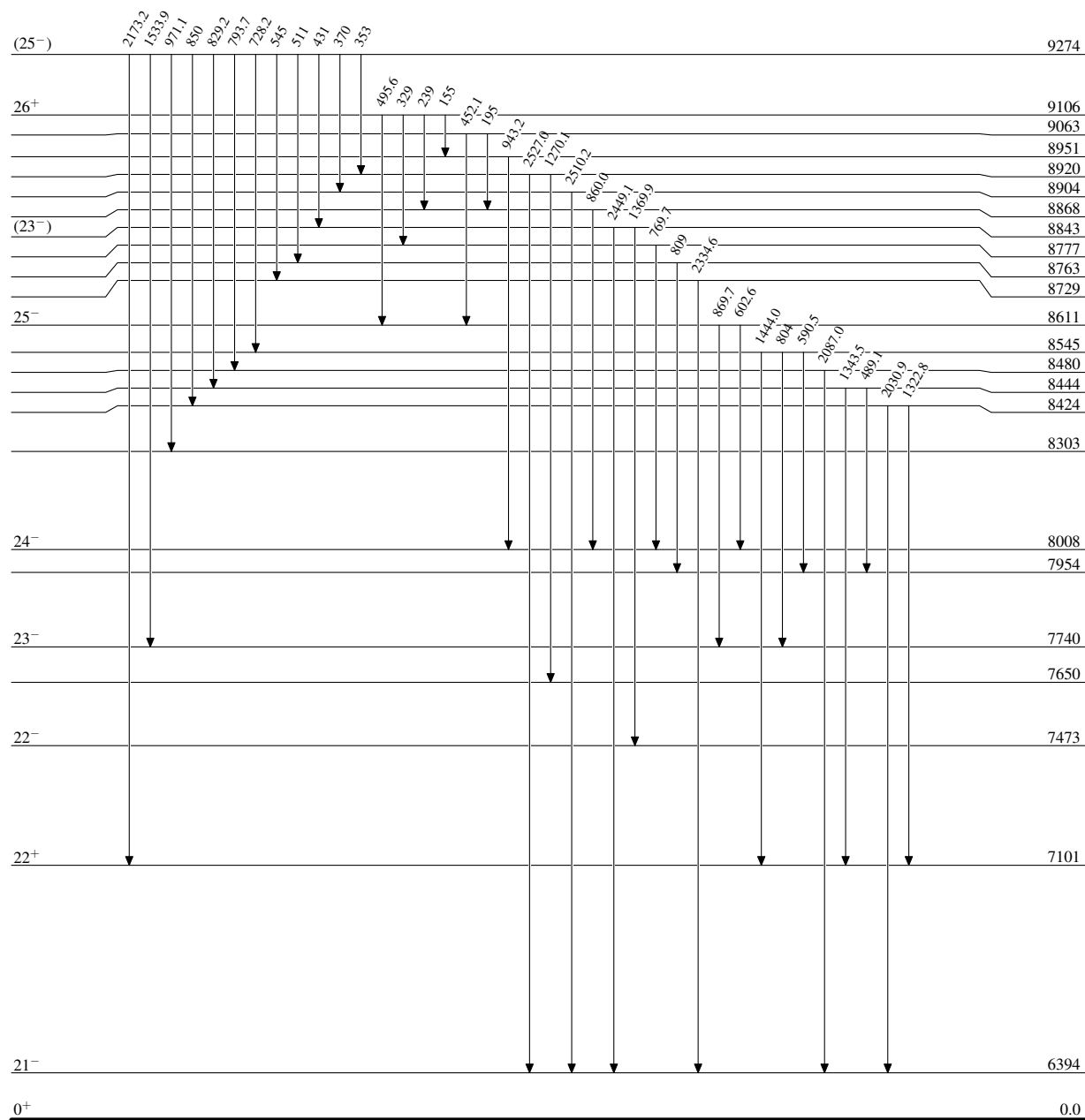
Legend

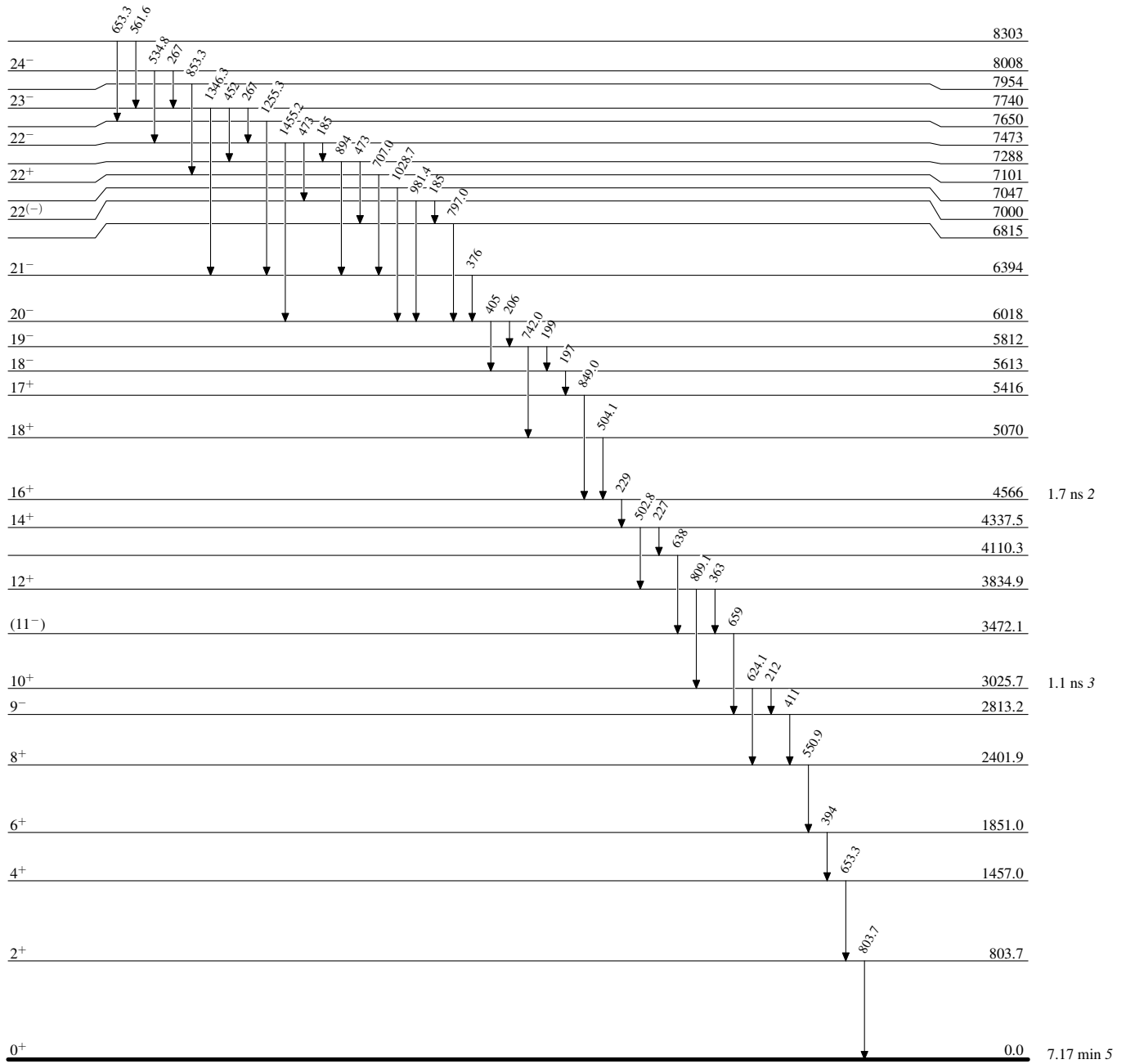
Level Scheme

-----► γ Decay (Uncertain)

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Level Scheme (continued)



$^{114}\text{Cd}(^{40}\text{Ar},4n\gamma) \quad 1987\text{De23}$ Level Scheme (continued) $^{150}_{66}\text{Dy}_{84}$