^{43}Ca(p,γ) 1971PoZP

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 190,1 (2023)	20-Jun-2023

1971PoZP: E(p)=0.9-1.5 MeV. Target of ^{43}Ca. A large volume Ge(Li) detector for detecting γ-rays. Measured Eγ, Iγ, $\gamma\gamma$-coin. Deduced levels, γ-branchings. Approximately 185 resonances were identified in this energy region. Strong resonances were observed at 1066, 1132, 1144 and 1289 keV for which primary and secondary γ-ray measurements were reported.

Due to the tentative nature of the work by 1971PoZP and also the fact that most of transitions (almost all transitions from levels above 1425 level) reported in 1971PoZP are not seen and confirmed in other studies such as (α,nγ) (1973Ar14 and 1973Dr08), the level scheme in 1971PoZP except for the part confirmed in other studies is considered very doubtful and levels or gammas only from 1971PoZP are not included in the Adopted Levels, Gammas dataset.

^{44}Sc Levels

S(p)=6696.1 *17* (2021Wa16).

E(level)[†]	J$^{\pi}$[&]	T$_{1/2}$	Comments
0	2$^+$		
68 *2*	1$^-$		
146 *2*	0$^-$		
236 *2*	2$^-$		
271 *2*	6$^+$	58.61 h *10*	T$_{1/2}$: from the Adopted Levels.
350 *2*	4$^+$		
425 *2*	3$^-$		
532 *2*	3$^{(-)}$		
632 *2*	4$^-$		
642[‡] *2*			
667 *2*	1$^+$		
745[#]			
763 *2*	3$^+$		
830 *2*			
874[#] *2*			
986 *2*	3$^+$		
1007 *2*			
1027[‡] *2*			
1052 *2*			
1106[#] *2*			
1186 *2*			
1197 *2*			
1325 *2*			
1427 *2*			
1507[‡] *2*			
1532 *2*			
1567[‡] *2*			
1595[‡] *2*			
1681 *2*			
1767 *2*			
1811[‡] *2*			
1866[‡] *2*			
1903[‡] *2*			
2031[‡] *2*			
2104 *2*			

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^{43}Ca(p,γ) 1971PoZP (continued)

^{44}Sc Levels (continued)

E(level)†	E(level)†	E(level)†	E(level)†
2115‡ *2*	2524‡ *3*	2703‡ *3*	7735@
2179‡ *2*	2582‡ *3*	2769‡ *3*	7799@
2291‡ *2*	2615‡ *3*	2915‡ *3*	7814@
2333‡ *2*	2634‡ *3*	2980‡ *3*	7952@
2424‡ *2*	2684‡ *3*	2999‡ *3*	

† As given in 1971PoZP.
‡ Level with similar energy is seen in other γ studies or transfer reactions, but none of the deexciting transitions is seen in other studies.
# Level not seen in other studies.
@ Resonance.
& From the Adopted Levels.

γ(^{44}Sc)

Note that for levels above 1425 (except for 1532, 1767 and 2105 levels), none of the gammas from those levels is seen in other γ studies, even though levels with similar energies are seen in other γ studies or transfer reactions. Levels up to 1425 are confirmed with at least one transition from those levels also seen in other γ studies like (α,nγ), except for 642, 745, 874, 1027, and 1106 levels.

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	Comments
68	1^-	68	100	0	2^+		
146	0^-	78	100	68	1^-		
		146	0.1	0	2^+		
236	2^-	236	100	0	2^+		
271	6^+	271	100	0	2^+	E4	Mult.: from the Adopted Gammas.
350	4^+	350	100	0	2^+		
425	3^-	357	100	68	1^-		
		425	35	0	2^+		
532	$3^{(-)}$	464	100	68	1^-		
		532	100	0	2^+		
632	4^-	282	100	350	4^+		
642		496	100	146	0^-		
667	1^+	667	100	0	2^+		
745		395	69	350	4^+		
		745	100	0	2^+		
763	3^+	763	100	0	2^+		
830		830	100	0	2^+		
874		728	100	146	0^-		
986	3^+	986	100	0	2^+		
1007		582	69	425	3^-		
		771	100	236	2^-		
1027		1027	100	0	2^+		
1052		702	100	350	4^+		
		1052	12	0	2^+		
1106		464	100	642			
1186		836	100	350	4^+		
		1118	20	68	1^-		
		1186	59	0	2^+		

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^{43}Ca(p,γ) 1971PoZP (continued)

γ(^{44}Sc) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π
1197		565	67	632	4^-
		926	100	271	6^+
1325		658	89	667	1^+
		975	97	350	4^+
		1325	100	0	2^+
1427		321	53	1106	
		664	100	763	3^+
		1077	9	350	4^+
		1427	30	0	2^+
1507		762	100	745	
1532		890	17	642	
		1182	35	350	4^+
		1296	100	236	2^-
1567		693	100	874	
		1567	75	0	2^+
1595		543	100	1052	
		609	61	986	3^+
1681		695	80	986	3^+
		918	100	763	3^+
		1014	37	667	1^+
		1039	27	642	
1767		1100	53	667	1^+
		1417	81	350	4^+
		1699	44	68	1^-
		1767	100	0	2^+
1811		625	60	1186	
		1461	100	350	4^+
		1665	40	146	0^-
1866		1234	33	632	4^-
		1516	100	350	4^+
		1630	38	236	2^-
		1798	48	68	1^-
		1866	33	0	2^+
1903		1271	96	632	4^-
		1667	100	236	2^-
2031		845	72	1186	
		1499	100	532	$3^{(-)}$
2104		779	33	1325	
		998	51	1106	
		1274	38	830	
		1754	100	350	4^+
2115		1483	54	632	4^-
		1765	100	350	4^+
2179		1647	100	532	$3^{(-)}$
		2179	100	0	2^+
2291		2055	100	236	2^-
		2223	9	68	1^-
2333		1983	36	350	4^+
		2062	100	271	6^+
		2333	45	0	2^+
2424		1782	100	642	
		2188	14	236	2^-
2524		2253	100	271	6^+
2582		1050	81	1532	
		2232	28	350	4^+
		2514	23	68	1^-
2582		2582	100	0	2^+
2615		1852	100	763	3^+
2634		2284	96	350	4^+
		2363	100	271	6^+
2684		2042	79	642	
		2538	100	146	0^-
2703		1696	28	1007	
		2071	100	632	4^-
		2353	33	350	4^+
		2703	90	0	2^+
2769		2419	100	350	4^+
2915		1320	92	1595	
		2565	100	350	4^+
2980		1783	100	1197	
		2313	33	667	1^+
2999		2169	100	830	
		2999	67	0	2^+
7735		4736	18	2999	
		4755	9	2980	
		5032	36	2703	
		5153	36	2582	
		5211	18	2524	
		5402	27	2333	
		5620	18	2115	
		5631	27	2104	
		5704	27	2031	
		5923	27	1811	
		5968	100	1767	
		6053	27	1681	
		6202	9	1532	
		6228	18	1507	
		6308	82	1427	
		6410	18	1325	
		6538	18	1197	
		6548	55	1186	
		6727	18	1007	
		6904	18	830	
		6971	9	763	3^+
		7102	55	632	4^-
		7202	18	532	$3^{(-)}$
		7309	27	425	3^-
		7384	36	350	4^+
		7498	36	236	2^-
		7666	18	68	1^-
		7735	9	0	2^+
7799		4800	10	2999	
		4884	10	2915	
		5096	10	2703	
		5164	50	2634	
		5217	<5	2582	
		5375	10	2424	
		5465	15	2333	
		5619	15	2179	
		5896	<5	1903	
		5933	<5	1866	
		6031	10	1767	
7799		6118	25	1681	
		6204	15	1595	
		6266	10	1532	
		6292	100	1507	
		6372	10	1427	
		6474	5	1325	
		6601	5	1197	
		6612	50	1186	
		6746	5	1052	
		6771	5	1027	
		6791	10	1007	
		6812	10	986	3^+
		7035	20	763	3^+
		7166	15	632	4^-
		7266	<5	532	$3^{(-)}$
		7373	<5	425	3^-
		7448	15	350	4^+
		7730	20	68	1^-
		7799	<5	0	2^+
7814		4815	60	2999	
		4834	60	2980	
		4899	40	2915	
		5045	40	2769	
		5111	40	2703	
		5130	20	2684	
		5180	40	2634	
		5199	20	2615	
		5232	60	2582	
		5290	40	2524	
		5390	40	2424	
		5481	100	2333	
		5523	20	2291	
		5635	20	2179	
		5699	40	2115	
		5709	40	2104	
		5783	60	2031	
		5910	40	1903	
		5948	60	1866	
		6003	40	1811	
		6047	60	1767	
		6132	40	1681	
		6218	20	1595	
		6247	40	1567	
		6282	20	1532	
		6306	40	1507	
		6387	40	1427	
		6489	40	1325	
		6616	60	1197	
		6627	80	1186	
		6761	40	1052	
		6806	60	1007	
		6827	60	986	3^+
		6939	40	874	
		7050	40	763	3^+
		7068	<20	745	
		7181	60	632	4^-

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^{43}Ca(p,γ) 1971PoZP (continued)

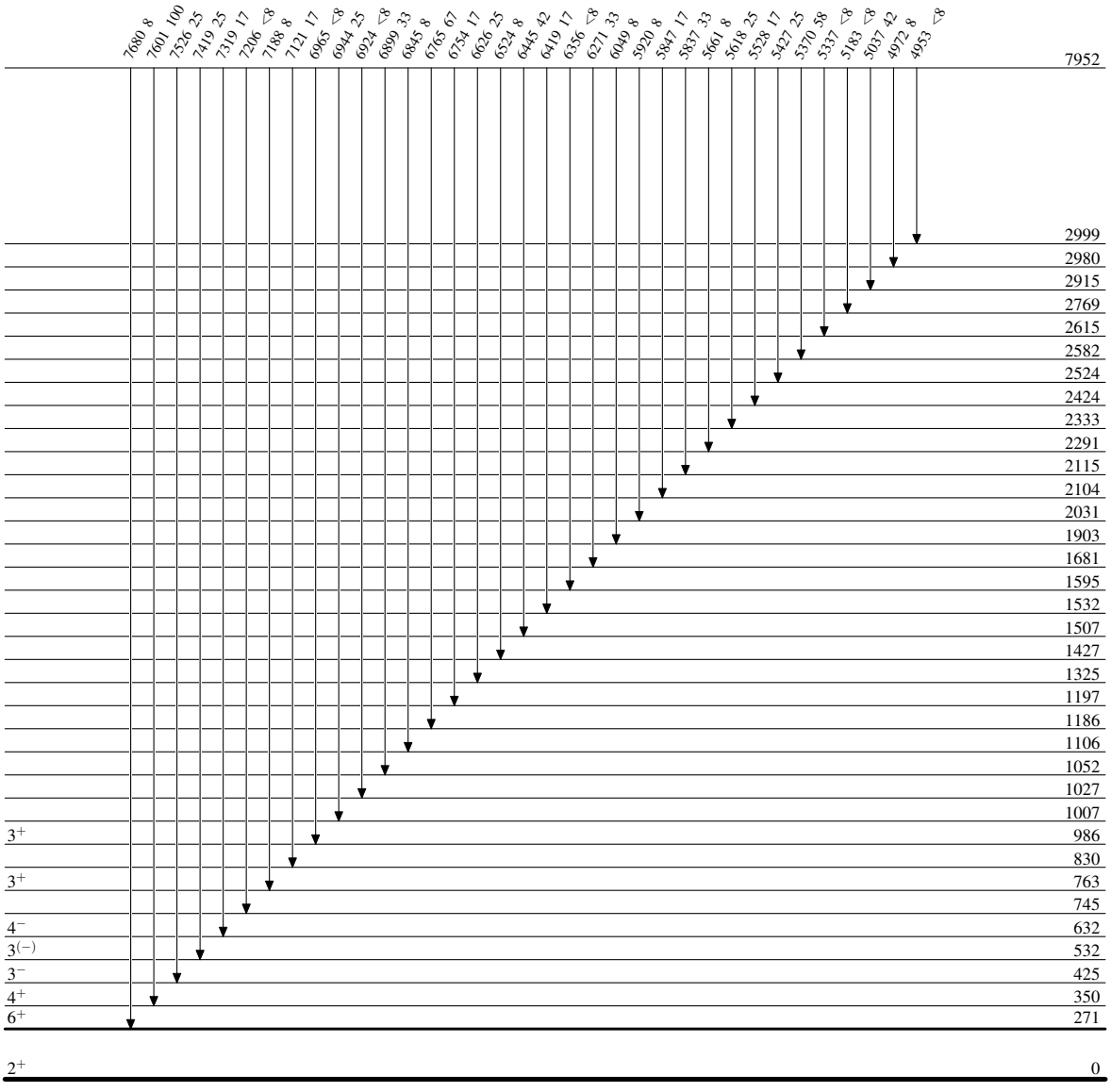
$\gamma(^{44}Sc)$ (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	E_i(level)	E_γ	I_γ	E_f	E_i(level)	E_γ	I_γ	E_f	J_f^π
7814		7281	20	532	$3^{(-)}$	7952	5528	17	2424	7952	6765	67	1186	
		7388	<20	425	3^-		5618	25	2333		6845	8	1106	
		7463	60	350	4^+		5661	8	2291		6899	33	1052	
		7542	40	271	6^+		5837	33	2115		6924	<8	1027	
		7577	20	236	2^-		5847	17	2104		6944	25	1007	
		7745	<20	68	1^-		5920	8	2031		6965	<8	986	3^+
		7814	20	0	2^+		6049	8	1903		7121	17	830	
7952		4953	<8	2999			6271	33	1681		7188	8	763	3^+
		4972	8	2980			6356	<8	1595		7206	<8	745	
		5037	42	2915			6419	17	1532		7319	17	632	4^-
		5183	<8	2769			6445	42	1507		7419	25	532	$3^{(-)}$
		5337	<8	2615			6524	8	1427		7526	25	425	3^-
		5370	58	2582			6626	25	1325		7601	100	350	4^+
		5427	25	2524			6754	17	1197		7680	8	271	6^+

^{43}Ca(p,γ) 1971PoZP

Level Scheme

Intensities: Relative photon branching from each level

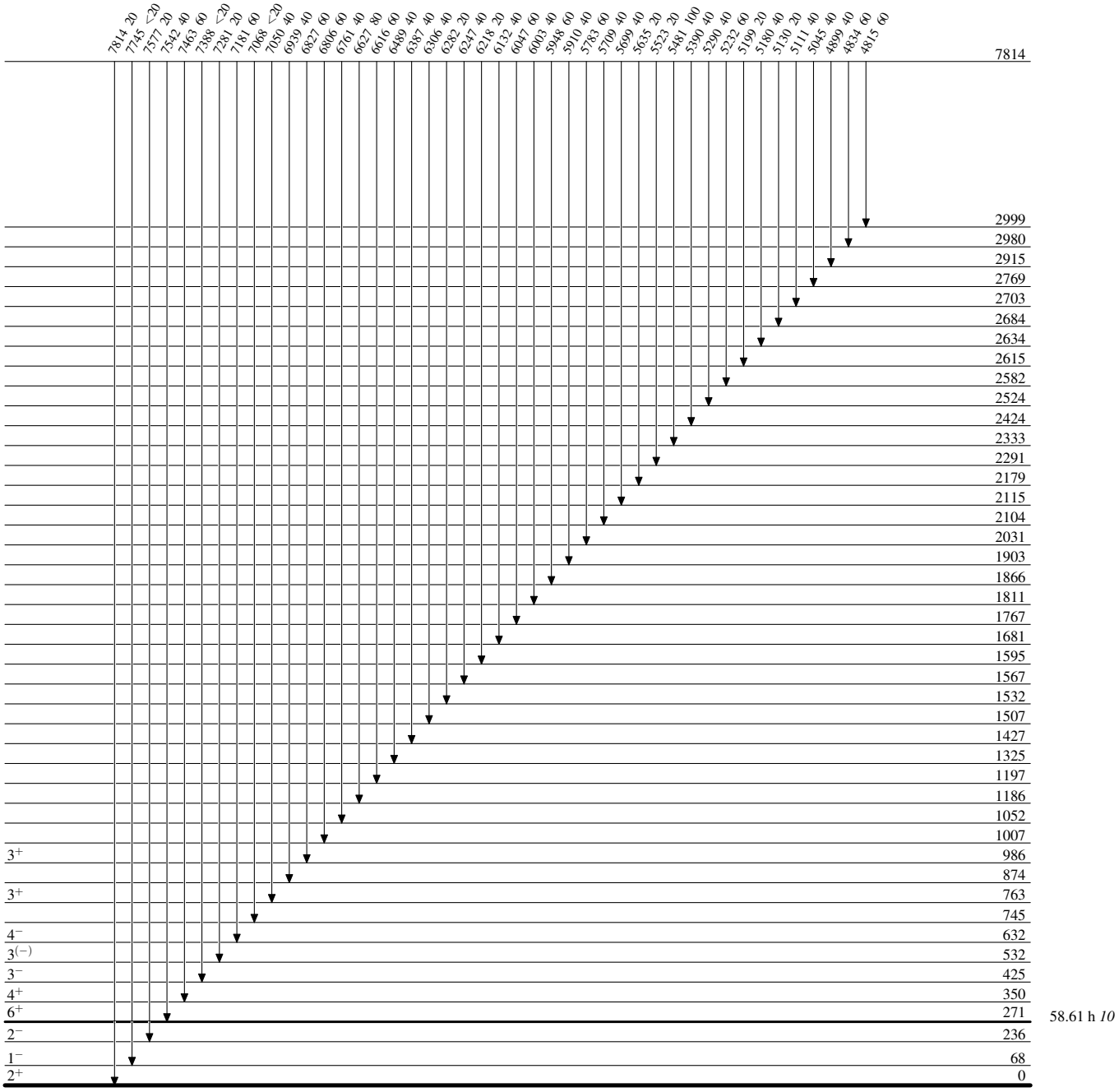


$^{44}_{21}Sc_{23}$

^{43}Ca(p,γ) 1971PoZP

Level Scheme (continued)

Intensities: Relative photon branching from each level

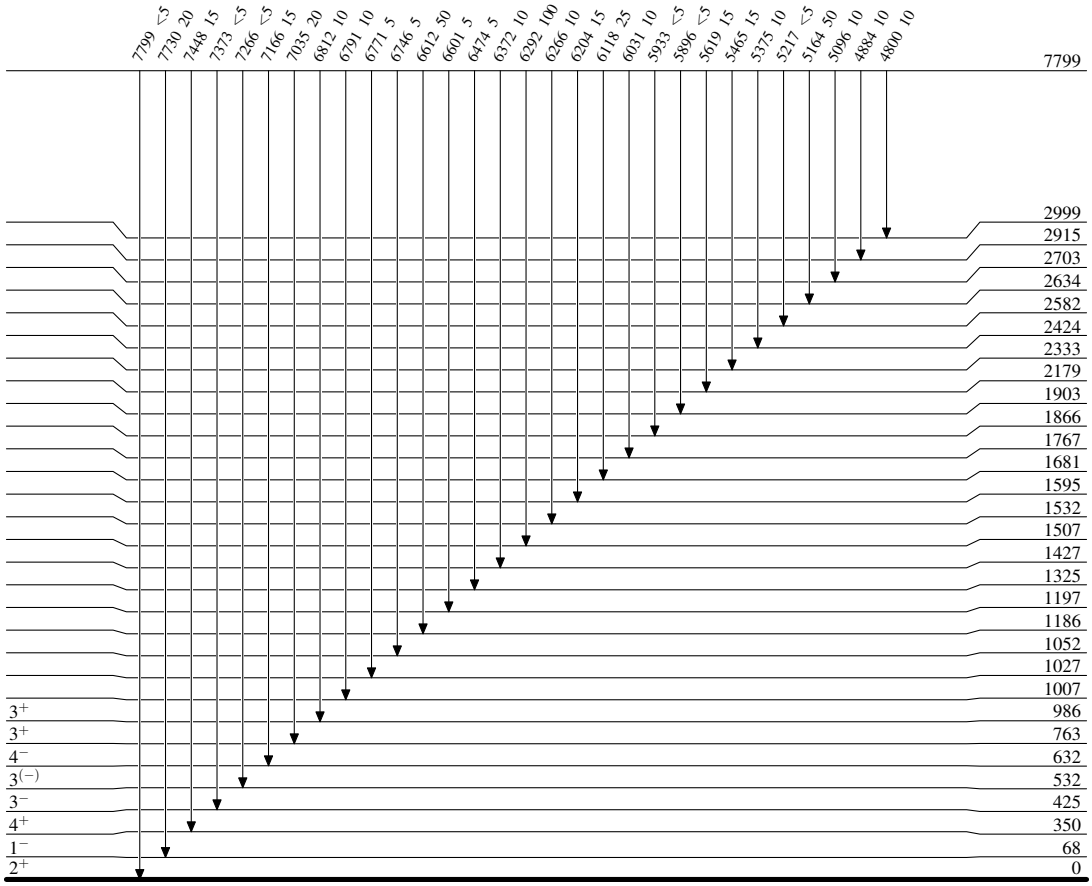


$^{44}_{21}Sc_{23}$

^{43}Ca(p,γ) 1971PoZP

Level Scheme (continued)

Intensities: Relative photon branching from each level

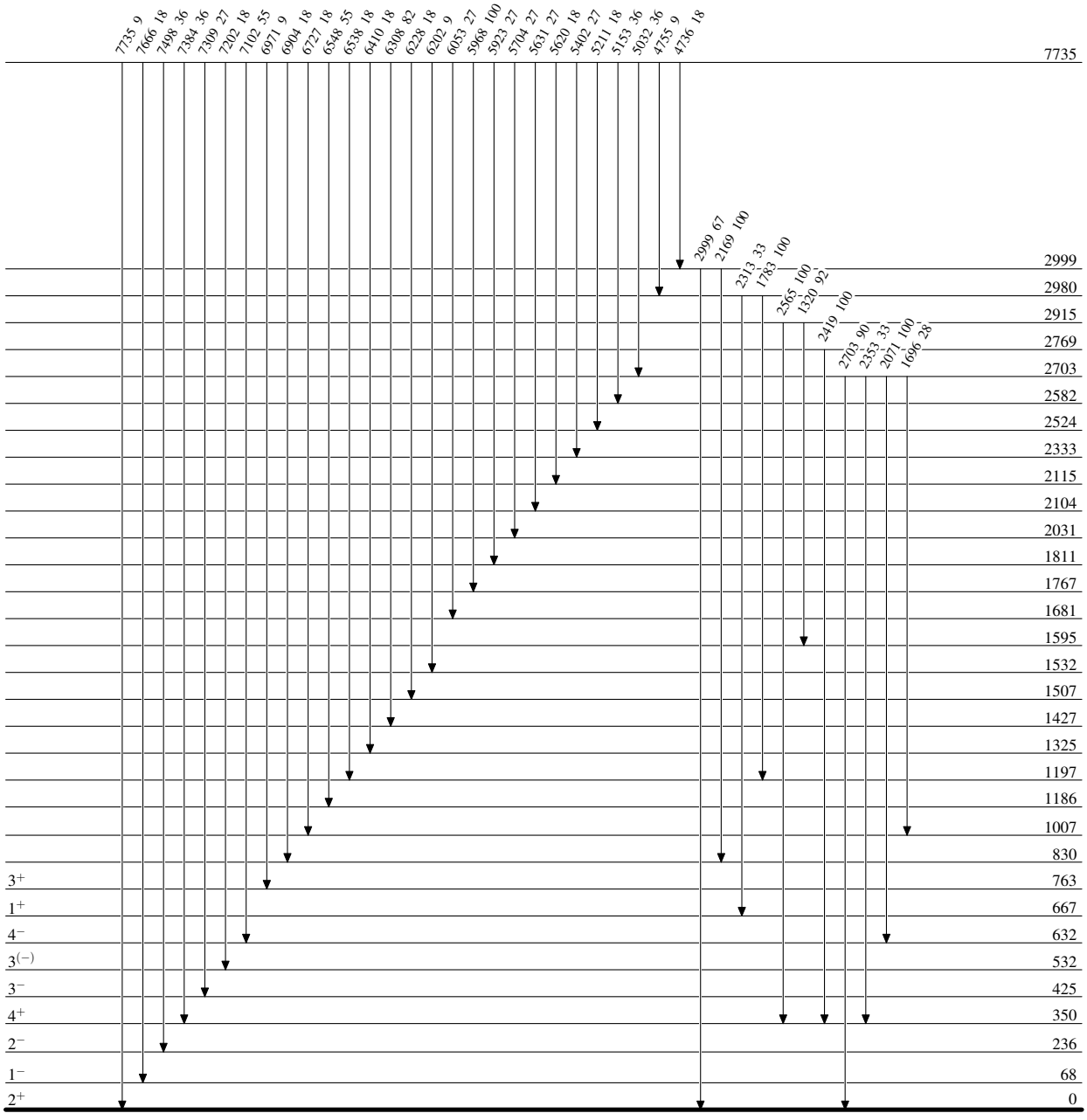


$^{44}_{21}Sc_{23}$

^{43}Ca(p,γ) 1971PoZP

Level Scheme (continued)

Intensities: Relative photon branching from each level

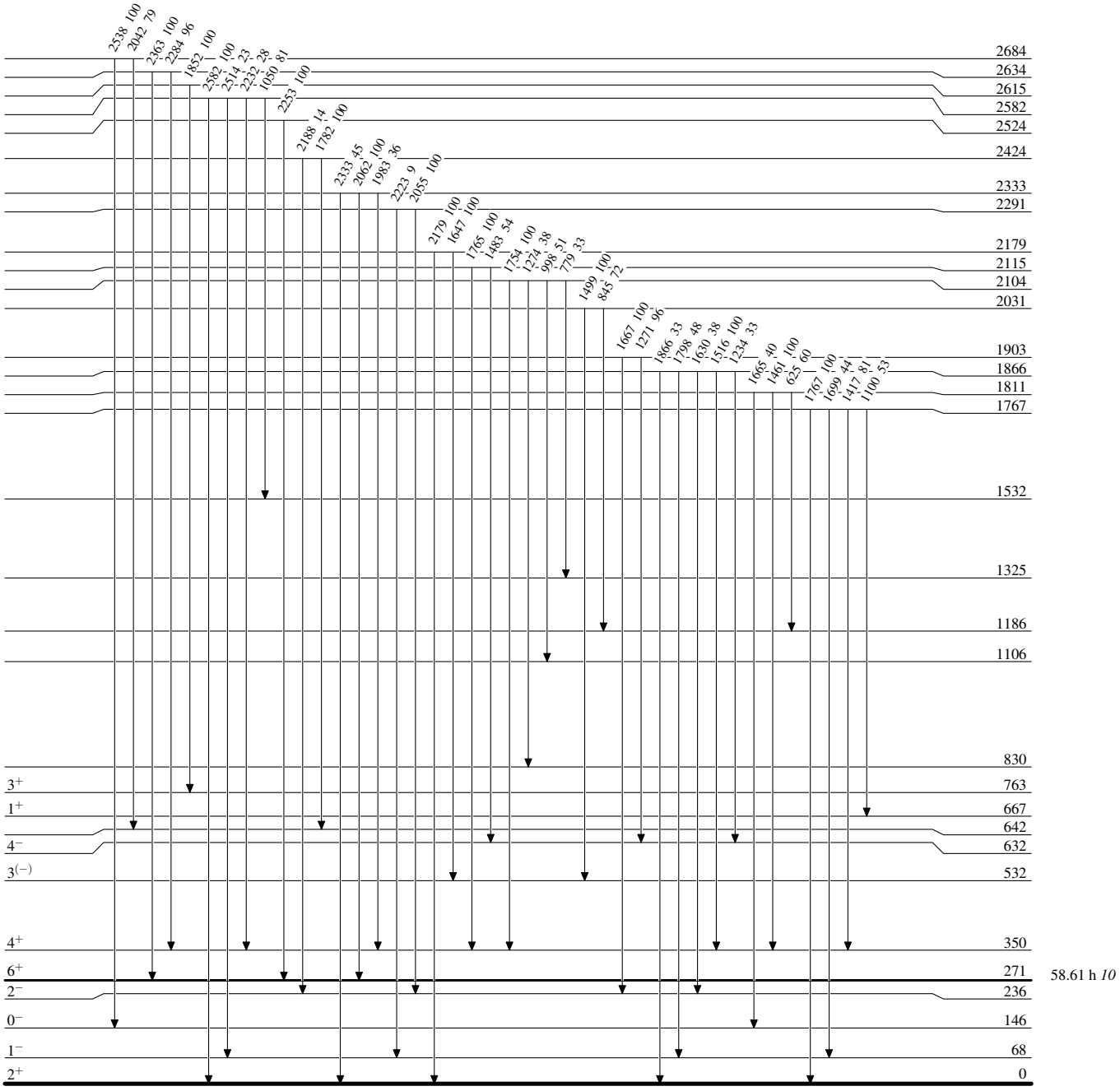


$^{44}_{21}Sc_{23}$

^{43}Ca(p,γ) 1971PoZP

Level Scheme (continued)

Intensities: Relative photon branching from each level

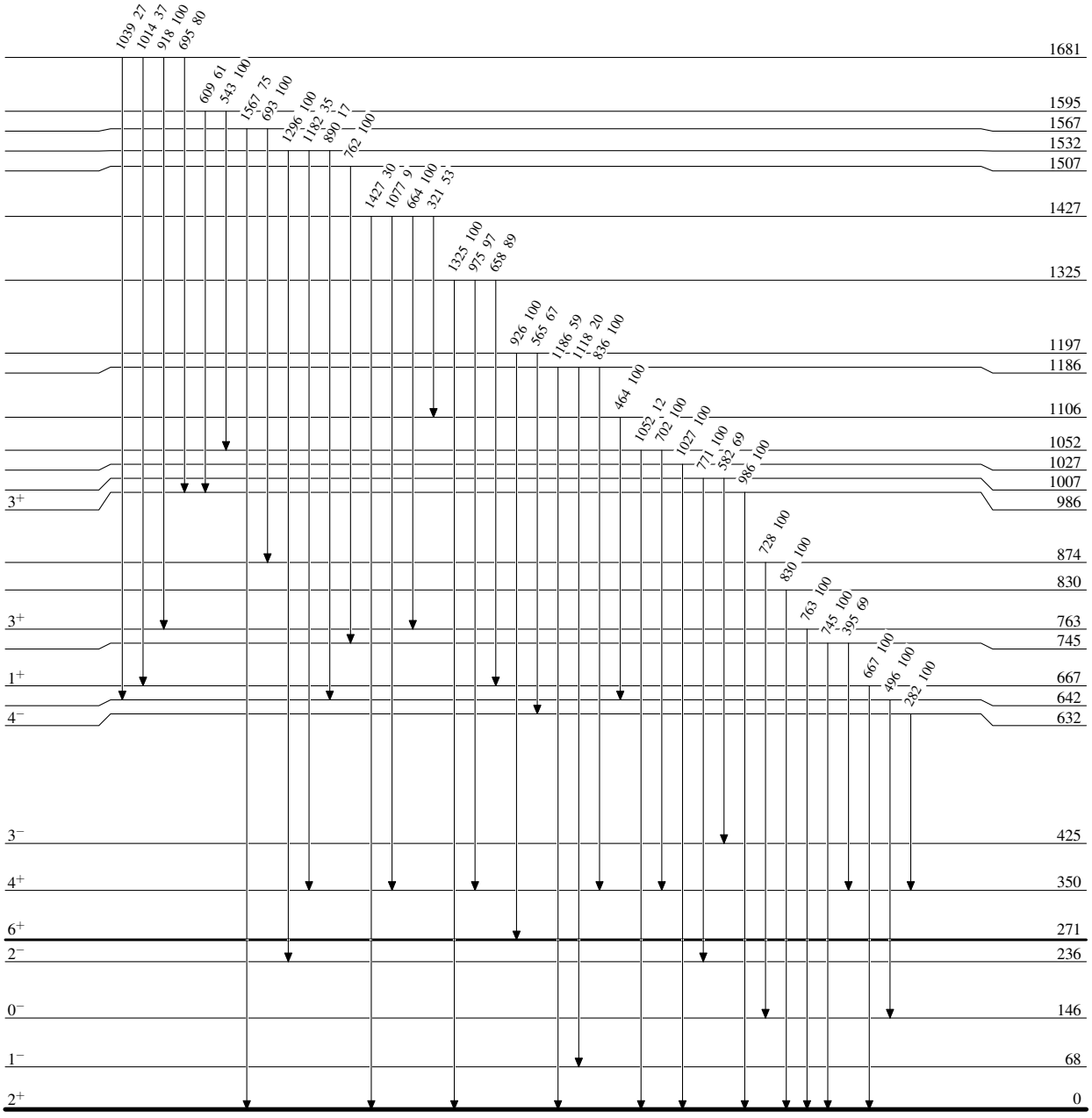


$^{44}_{21}Sc_{23}$

^{43}Ca(p,γ) 1971PoZP

Level Scheme (continued)

Intensities: Relative photon branching from each level

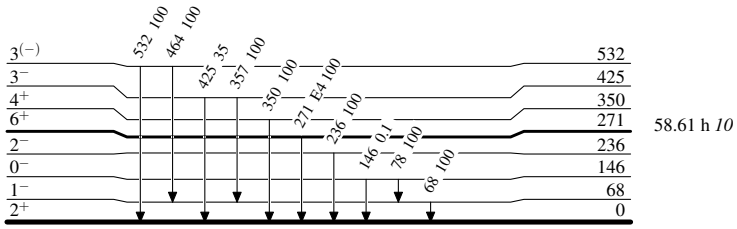


$^{44}_{21}Sc_{23}$

^{43}Ca(p,γ) 1971PoZP

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{44}_{21}Sc_{23}$