^{46}Ti(p,nγ) 1999Fr14,1971Ki17

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. -c. Wu	NDS 91, 1 (2000)	15-Jul-2000

E=13-19 MeV (1999Fr14, 2000Vo09): COLOGNE-OSIRIS-COINCIDENCE-CUBE spectrometer; measured Eγ, Iγ, γγ coin. Level energies, J^{π}, multiplicities, mixing ratios determined. Quasi-deuteron configurations. Shell model calculations.
E=7-16 MeV (1971Ki17): Liquid scintillator at θ≈15° for n, Ge(Li) at θ=90° for γ; measured Eγ, Iγ, nγ coin.
No long-lived J=0$^-$ level observed; population<1.0×10^{-3} of g.s. population; related to weak neutral current (1979Ja10).
Other: 1970ChZV.

^{46}V Levels

E(level)†	J^{π}#	Comments
0	0^+	
801.3 *4*	3^+	
915.0 *4*	2^+	
993.2 *5*	1^+	
1179.3 *6*	4^+	
1224.4 *5*	5^+	
1236.2 *8*	(0,1,2)	
1254.3 *7*	(3$^-$)	
1263.4?‡		From 1971Ki14 only, not in Adopted Levels.
1366.1 *6*	2	
1376.2 *5*	3^+	
1431.8‡ *5*	(1,2)	
1539.4 *7*	6^+	
1603.4 *12*	7^+	
1665.8 *6*	3	
1725.6 *6*	5^+	
1794.9 *9*		
1833.8 *9*		
1956.1 *9*	4^-	
2054.4 *6*	4^+	
2062.3?‡		
2370.2 *7*	(3,4)	
2387.6 *9*		
2429.1 *10*		
2756.5 *9*		
2814.6 *10*		
2833.4 *9*		
2867.2 *13*		
2923.2 *13*		
3110.5 *9*		
3145.1 *9*		
3187.9 *14*		

† Deduced from a least-square fit assuming 1 keV γ-ray energy uncertainties, except those with higher precions from 1971Ki17.
‡ From 1971Ki17 only.
# Assigned according to the γγ(θ) in 2000Vo09.

^{46}Ti(p,nγ) 1999Fr14,1971Ki17 (continued)

γ(^{46}V)

E_i(level)	J_i^π	E_γ	I_γ [†]	E_f	J_f^π	Mult.	δ	Comments
801.3	3^+	801.4 *5*	100	0	0^+			
915.0	2^+	114	≥0.2	801.3	3^+			
		914.9 *5*	100 *15*	0	0^+	E2		
993.2	1^+	993.2 *5*		0	0^+			
1179.3	4^+	378.0 *5*		801.3	3^+	M1+E2	6 *+3−2*	δ=9 3 from γ(θ) (1999Fr14).
1224.4	5^+	423.3 *5*		801.3	3^+			
1236.2	(0,1,2)	243		993.2	1^+			
1254.3	(3^-)	339		915.0	2^+			
		453		801.3	3^+			
1263.4?		348.4[‡] *5*		915.0	2^+			Observed in 1971Ki17 only, Eγ=350 from 1999Fr14 assigned as 1726 to 1376 transition.
1366.1	2	130	1.0 *2*	1236.2	(0,1,2)			
		373	100 *15*	993.2	1^+	(E2)		
		451	32 *5*	915.0	2^+			
		1366	38 *6*	0	0^+			
1376.2	3^+	383	1.6 *4*	993.2	1^+	E2		
		461.2 *5*	100 *15*	915.0	2^+	M1+E2	0.02 *3*	Assigned as 1262.6 to 801.4 transition in 1971Ki17.
1431.8	(1,2)	1431.8[‡] *5*		0	0^+			
1539.4	6^+	315	100 *16*	1224.4	5^+	M1+E2	1.9 *+4−3*	δ=0.8 3 from γ(θ) (1999Fr14).
		360	72 *12*	1179.3	4^+	E2		
1603.4	7^+	379		1224.4	5^+			
1665.8	3	750.7 *5*		915.0	2^+	M1+E2	−0.01 *4*	
1725.6	5^+	186	3 *1*	1539.4	6^+			
		350	100 *15*	1376.2	3^+	E2		
		501	20 *3*	1224.4	5^+	M1+E2	0.9 *+3−2*	
		546	8 *2*	1179.3	4^+			
1794.9		540		1254.3	(3^-)			
1833.8		919		915.0	2^+			
1956.1	4^-	580		1376.2	3^+			
		590		1366.1	2			
2054.4	4^+	329	9 *3*	1725.6	5^+			
		678	100 *17*	1376.2	3^+	M1+E2	0.08 *4*	Eγ=680.0 5 from 1971Ki17 previously not assigned.
		830	10 *4*	1224.4	5^+	M1+E2	0.02 *6*	δ=7 +6-2, also from γγ angular correlation data, but less probable, as noted by 1999Fr14.
		1139	14 *3*	915.0	2^+	E2		
2062.3?		1261[‡] *1*		801.3	3^+			
2370.2	(3,4)	575		1794.9				
		1004		1366.1	2			
		1146		1224.4	5^+			Eγ=1150 3 from 1971Ki17 previously not assigned.
		1191		1179.3	4^+			
2387.6		333		2054.4	4^+			
		722		1665.8	3			
2429.1		634		1794.9				
		1175		1254.3	(3^-)			
2756.5		1217		1539.4	6^+			
		1532		1224.4	5^+			
2814.6		760		2054.4	4^+			
		981		1833.8				
2833.4		463		2370.2	(3,4)			
		1609		1224.4	5^+			

Continued on next page (footnotes at end of table)

^{46}Ti(p,nγ) 1999Fr14,1971Ki17 (continued)

γ(^{46}V) (continued)

E_i(level)	J_i^π	E_γ	E_f	J_f^π	Comments
2867.2		1631	1236.2	(0,1,2)	
2923.2		967	1956.1	4^-	
3110.5		1571	1539.4	6^+	Eγ=1569 3 from 1971Ki17 previously not assigned.
		1886	1224.4	5^+	
3145.1		1479	1665.8	3	Eγ=1478 3 from 1971Ki17 previously not assigned.
		1921	1224.4	5^+	
3187.9		1393	1794.9		

† Branching ratio determined (1999Fr14).
‡ Observed in 1971Ki17 only.
^{x} γ ray not placed in level scheme.

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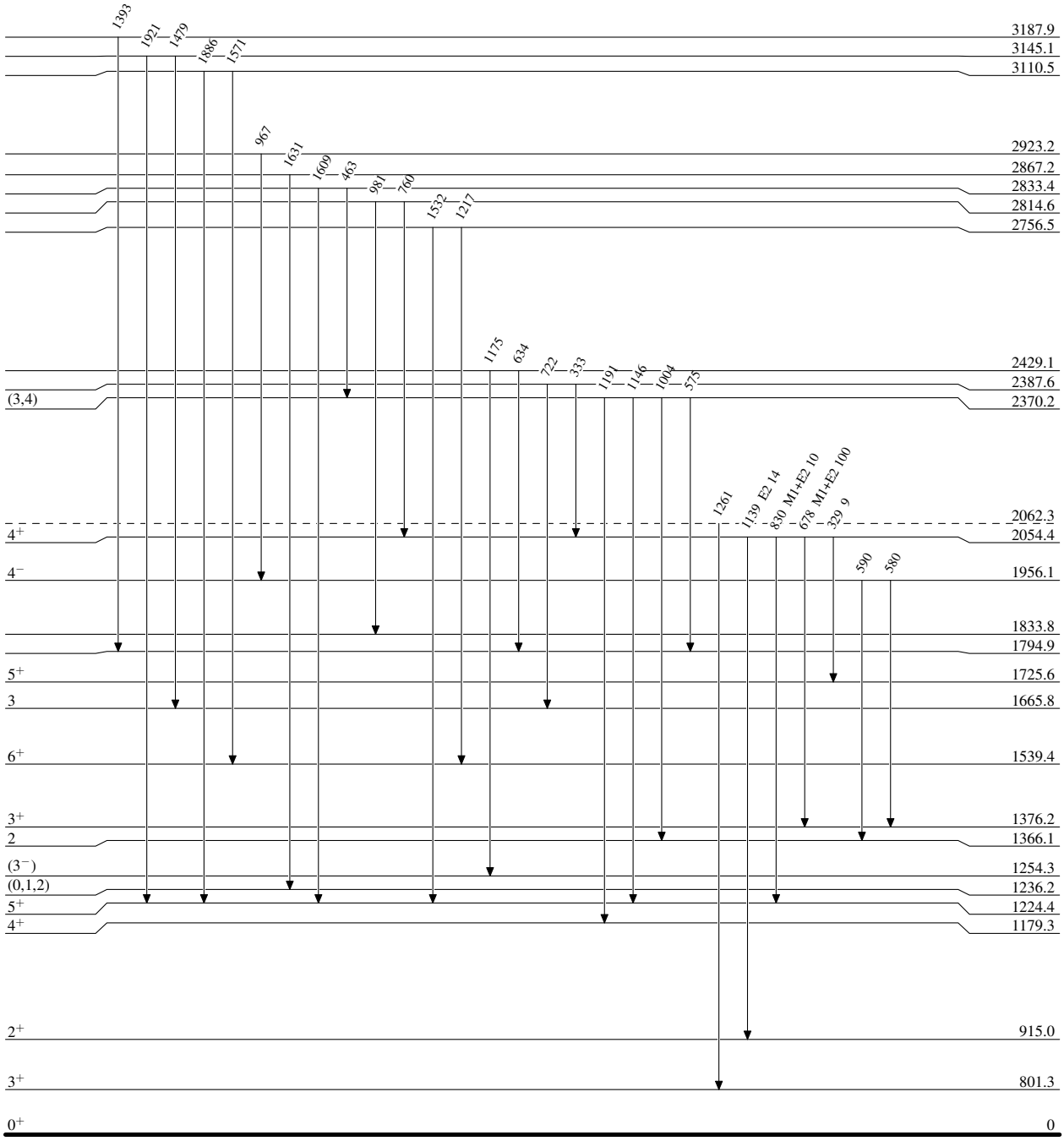
Level Scheme

Intensities: Relative photon branching from each level



$^{46}_{23}V_{23}$

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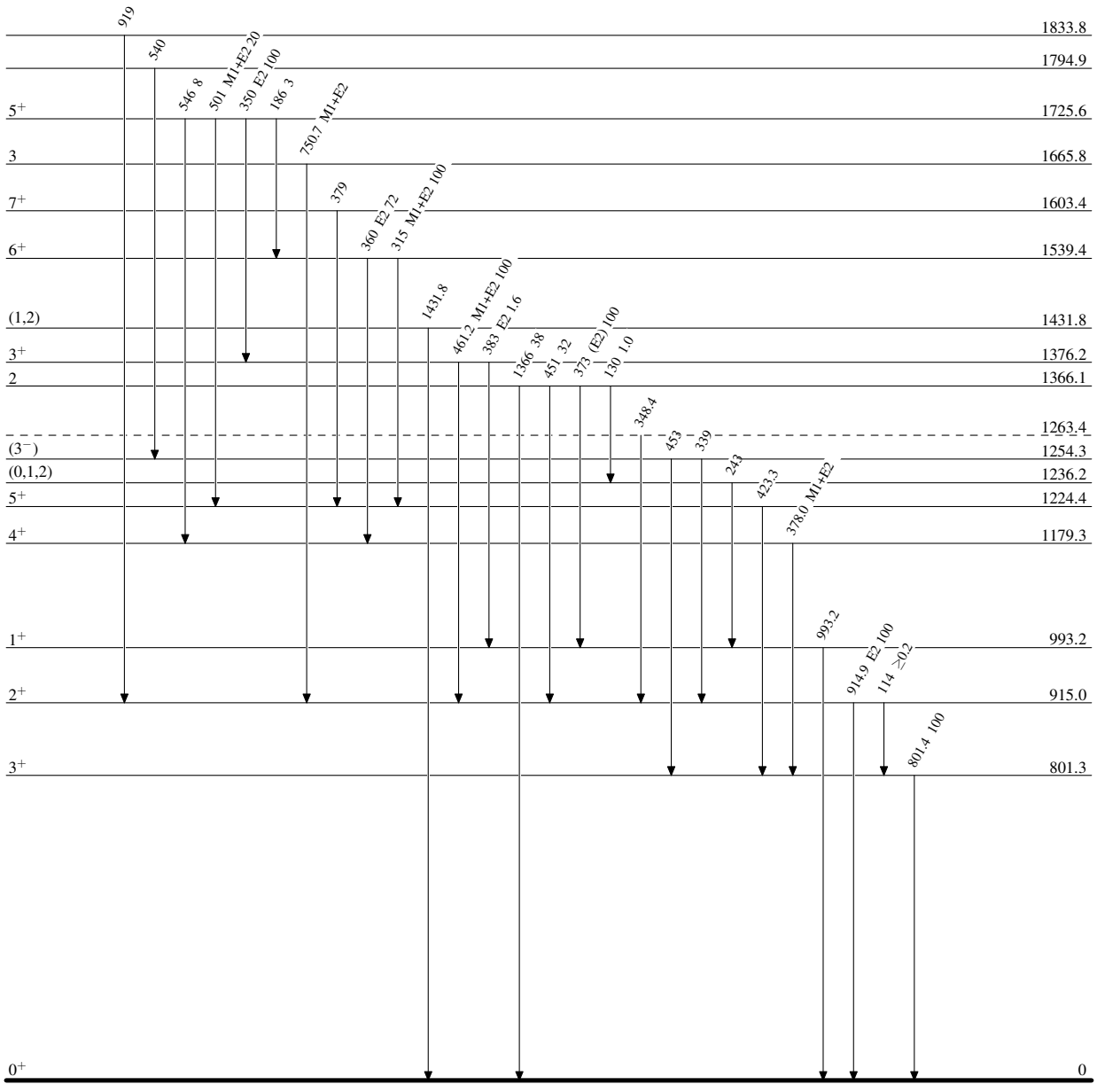
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{46}_{23}V_{23}$