^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 201,1 (2025)	31-Oct-2024

1989Mi16: thermal neutrons were produced from the high flux reactor at the Institut Laue Langevin in Grenoble. Target was 290 mg enriched $Mg_2P_2O_7$ (99.5% ^{31}P). γ rays were detected with Ge detectors and a pair spectrometer. Measured Eγ, Iγ. Deduced levels.

1990Ko43: thermal neutrons were produced from the VGR-M reactor at the Institute of Nuclear Research of the Academy of Sciences of the Ukrainian SSR. Target was 9.8 g red phosphorus. γ rays were detected with a HPGe detector. Measured Eγ, Iγ, Doppler-shift attenuation. Deduced $T_{1/2}$.

1997Ka15: obtained data for branching ratios and level scheme from priv comm (reference 10 in 1997Ka15); re-analyzed DSA data in 1990Ko43.

1985Ke11: thermal neutrons were from the McMaster university reactor. Target was 0.5 g phosphorus counted for 300 hours. Measured Eγ, Iγ. Deduced levels.

Others:

2007ChZX: Budapest-LBNL database for PGAA. A total of 89 secondary and 29 primary γ rays are assigned in the Budapest measurements. In general their γ-ray energies are in agreement with those listed here but are less precise. The intensities, normalized to the same scale of absolute cross sections are in good agreement.

1989Ze02: measured Eγ, Iγ.

1981De04: polarized neutrons from the Petten high flux reactor polarized to (90 +/− 5)%. Ge detectors for Eγ, circular polarization measurements. Deduced mixing ratios.

1970Bo01: thermal neutrons from the McMaster reactor. Using NaI detectors measured half-life of 78-keV level.

1967Ly06, 1967Va08, 1965Va07: neutrons from the high flux reactor at Petten. Measured γ rays using Ge detector.

1959Ma21: measured $\gamma\gamma(\theta)$.

1952Ki32: measured Eγ, Iγ.

^{32}P Levels

E(level)†	J$^\pi$‡	$T_{1/2}$#	Comments
0	1^+		
78.064 *18*	2^+	253 ps *25*	$T_{1/2}$: from $\gamma\gamma$(t) (1970Bo01).
512.703 *28*	0^+		J$^\pi$: spin=0 from $\gamma\gamma(\theta)$ in 1965Va07.
1149.390 *22*	1^+		J$^\pi$: spin=1 from $\gamma\gamma(\theta)$ in 1965Va07.
1322.833 *25*	2^+		
1755.02 *4*	3^+		
2177.26 *5*	3^+		
2217.74 *6*	2^+		
2229.739 *30*	1^+		
2313.46? *8*			E(level): spurious level according to calculations in 1997Ka15, as well as experimental (n,γ) data from a priv comm (reference 10 in 1997Ka15).
2579.12 *14*			E(level): spurious level according to calculations in 1997Ka15, as well as experimental (n,γ) data from a priv comm (reference 10 in 1997Ka15).
2657.64 *4*	2^+		
2740.46 *5*	1^+		
3005.0 *10*	3^+		Additional information 1. E(level): from 1997Ka15.
3073.91? *13*			
3264.011 *24*	2^-	146 fs *+70−42*	J$^\pi$: spin=2 from $\gamma\gamma(\theta)$ in 1965Va07. $T_{1/2}$: reanalyzed (1997Ka15) from original value of 125 fs *49* (DSAM,1990Ko43).
3444.39 *4*	(1,2)		
3792.53 *22*	$(1)^+$		
4009.01 *4*	2^-		
4035.596 *29*	1^-	3.5 fs *21*	J$^\pi$: spin=1 from $\gamma\gamma(\theta)$ in 1965Va07. $T_{1/2}$: reanalyzed (1997Ka15) from original value of 2.8 fs *17* (DSAM,1990Ko43).
4151.2 *5*	3^-		Additional information 2.

Continued on next page (footnotes at end of table)

^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15 (continued)

^{32}P Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	Comments
			E(level): level from 1997Ka15.
4205.3 *10*	1$^+$		Additional information 3.
			E(level): level from 1997Ka15.
4411.0 *7*	0$^-$		Additional information 4.
			E(level): level from 1997Ka15.
4549.22 *12*	1$^+$		
4661.54 *4*	2$^-$	0.02 ps *+17−2*	
4710.45 *15*	1$^+$		
4877.42 *4*	1$^-$	<2.1 fs	J$^{\pi}$: spin=1 from $\gamma\gamma(\theta)$ in 1965Va07.
5072.53 *8*	0$^+$		
5307.58? *11*	(1,2$^+$)		
5326.00? *14*	(1,2$^+$)		
5349.65 *4*	2$^-$	11 fs *+35−11*	J$^{\pi}$: spin=2 from $\gamma\gamma(\theta)$ in 1965Va07.
5509.356 *30*	(1)$^-$		
5701.49 *7*	(2)$^-$		
5778.738 *31*	1$^-$	4 fs *+8−4*	J$^{\pi}$: spin=1 from $\gamma\gamma(\theta)$ in 1965Va07.
6062.14 *5*	1$^-$		
6196.36 *5*	1$^-$		
6332.54 *18*	(0,1)$^+$		
6510.62? *19*			
6558.00 *11*	(1,2,3$^+$)		
6581.90 *6*	(0$^+$,1,2,3$^+$)		
6783.69 *15*	(0$^+$,1,2,3$^+$)		
(7935.768 *22*)	1$^+$		E(level): 7935.65 *4* from 2021Wa16. Observed deexcitation intensity is 94% of g.s. feeding. J$^{\pi}$: s-wave capture in ^{31}P g.s. with $J^{\pi}=1/2^+$; γ to 0$^+$.

[†] From a least-squares fit to γ-ray energies, unless otherwise noted.
[‡] From Adopted Levels, unless otherwise noted.
[#] From 1990Ko43 using DSAM, unless otherwise stated.

^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15 (continued)

$\gamma(^{32}P)$

Iγ normalization: To obtain cross section in b, multiply absolute intensity by 0.00172. Total cross section=172 mb (1989Mi16).

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	Comments
78.099 *25*	36.6[@]	78.064	2^+	0	1^+			
(512.699)	50[@]	512.703	0^+	0	1^+			E_γ: from level-energy difference; this γ is obscured by the 511 keV annihilation line (1989Mi16).
558.51[b] *8*	0.62 *15*	2313.46?		1755.02	3^+			
564.62[#]		4009.01	2^-	3444.39	(1,2)			Branching=1.18% *17* (1997Ka15).
636.670 *28*	21.2 *53*	1149.390	1^+	512.703	0^+	M1		
[x]724.25 *28*	0.119 *30*							
745.04 *5*	0.80 *20*	4009.01	2^-	3264.011	2^-			Branching=20.3% *9* (1997Ka15).
754.52 *10*	0.37 *9*	6062.14	1^-	5307.58?	$(1,2^+)$			
771.51 *12*	0.29 *7*	4035.596	1^-	3264.011	2^-			
[x]837.0 *5*	0.088 *22*							
887.2[#]		4151.2	3^-	3264.011	2^-			Branching=5.5% *12* (1997Ka15).
895.10 *13*	0.28 *7*	2217.74	2^+	1322.833	2^+			Branching=24.0% *13* (1997Ka15).
902.65 *18*	0.189 *47*	2657.64	2^+	1755.02	3^+			
907.07 *25*	0.135 *34*	2229.739	1^+	1322.833	2^+			
1004.0[#]		4009.01	2^-	3005.0	3^+			Branching=1.40% *20* (1997Ka15).
1034.316 *41*	1.43 *36*	3264.011	2^-	2229.739	1^+			Branching=8.47% *15* (1997Ka15).
1068.33[#]		2217.74	2^+	1149.390	1^+			Branching=11.1% *14* (1997Ka15).
1071.270 *33*	16.9 *42*	1149.390	1^+	78.064	2^+	M1+E2	+0.14 *7*	
1149.331 *42*	2.5 *6*	1149.390	1^+	0	1^+			
1152.12[a] *18*	0.24[a] *6*	5701.49	$(2)^-$	4549.22	1^+			
1152.12[a] *18*	0.24[a] *6*	(7935.768)	1^+	6783.69	$(0^+,1,2,3^+)$			
[x]1198.98 *9*	0.51 *13*							
1208.92 *29*	0.154 *39*	6558.00	$(1,2,3^+)$	5349.65	2^-			
[x]1211.39 *33*	0.135 *34*							
1214.56 *9*	0.51 *13*	3444.39	(1,2)	2229.739	1^+			
1217.65 *39*	0.100 *25*	4661.54	2^-	3444.39	(1,2)			
[x]1222.31 *25*	0.148 *37*							
1229.44 *19*	0.197 *49*	5778.738	1^-	4549.22	1^+			
1244.764 *39*	2.4 *6*	1322.833	2^+	78.064	2^+			
1256.24[a] *19*	0.197[a] *49*	2579.12		1322.833	2^+			
1256.24[a] *19*	0.197[a] *49*	6581.90	$(0^+,1,2,3^+)$	5326.00?	$(1,2^+)$			
[x]1265.73 *11*	0.70 *17*							
[x]1269.79 *16*	0.39 *10*							
[x]1272.97 *16*	0.26 *6*							

^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15 (continued)

$\gamma(^{32}P)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	Comments
1304.0[#]		5509.356	(1)$^-$	4205.3	1$^+$			Branching=6.1% *5* (1997Ka15).
1314.35 *19*	0.21 *5*	5349.65	2$^-$	4035.596	1$^-$			
1318.94[a] *21*	0.192[a] *48*	3073.91?		1755.02	3$^+$			
1318.94[a] *21*	0.192[a] *48*	6196.36	1$^-$	4877.42	1$^-$			
1322.850 *38*	3.8 *9*	1322.833	2$^+$	0	1$^+$			
1340.64 *20*	0.37 *9*	5349.65	2$^-$	4009.01	2$^-$			
1351.34[#]		4009.01	2$^-$	2657.64	2$^+$			Branching=2.2% *4* (1997Ka15).
1353.83 *6*	0.84 *21*	(7935.768)	1$^+$	6581.90	(0$^+$,1,2,3$^+$)			
1377.83[a] *12*	0.37[a] *9*	4035.596	1$^-$	2657.64	2$^+$			
1377.83[a] *12*	0.37[a] *9*	(7935.768)	1$^+$	6558.00	(1,2,3$^+$)			
[x]1401.76 *2*	0.20 *5*							
1425.33 *24*	0.172 *43*	(7935.768)	1$^+$	6510.62?				
1429.89[a] *37*	0.125[a] *31*	2579.12		1149.390	1$^+$			
1429.89[ab] *37*	0.125[a] *31*	4009.01	2$^-$	2579.12				E_γ: not reported in 1997Ka15.
1432.66 *34*	0.137 *34*	4877.42	1$^-$	3444.39	(1,2)			
1473.72 *1*	0.44 *11*	5509.356	(1)$^-$	4035.596	1$^-$			Branching=20.0% *9* (1997Ka15).
1493.5[#]		4151.2	3$^-$	2657.64	2$^+$			Branching=12.2% *26* (1997Ka15).
1509.017 *44*	2.3 *6*	3264.011	2$^-$	1755.02	3$^+$			Branching=12.64% *21* (1997Ka15).
1587.36[b] *19*	0.32 *8*	4661.54	2$^-$	3073.91?				
1591.03[#]		2740.46	1$^+$	1149.390	1$^+$			Branching=1.6% *3* (1997Ka15).
1613.7[ab] *12*	0.35[a] *9*	3792.53	(1)$^+$	2177.26	3$^+$			E_γ: not reported in 1997Ka15.
1613.7[a] *12*	0.35[a] *9*	4877.42	1$^-$	3264.011	2$^-$			
1676.992 *45*	2.9 *7*	1755.02	3$^+$	78.064	2$^+$			
1739.40 *5*	1.48 *37*	(7935.768)	1$^+$	6196.36	1$^-$			
1791.22[#]		4009.01	2$^-$	2217.74	2$^+$			Branching=2.0% *3* (1997Ka15).
1800.42 *25*	0.160 *40*	6510.62?		4710.45	1$^+$			
1805.70 *35*	0.73 *18*	4035.596	1$^-$	2229.739	1$^+$			
1808.49 *33*	0.34 *9*	4549.22	1$^+$	2740.46	1$^+$			
1831.69[#]		4009.01	2$^-$	2177.26	3$^+$			Branching=1.85% *24* (1997Ka15).
1873.534 *49*	2.2 *5*	(7935.768)	1$^+$	6062.14	1$^-$			
1921.68 *29*	0.143 *36*	4661.54	2$^-$	2740.46	1$^+$			
1933.4[#]		4151.2	3$^-$	2217.74	2$^+$			Branching=6.9% *23* (1997Ka15).
1941.160 *49*	3.0 *8*	3264.011	2$^-$	1322.833	2$^+$	E1(+M2)	−0.1 *8*	Branching=16.9% *3* (1997Ka15).
2099.67 *12*	0.324 *49*	2177.26	3$^+$	78.064	2$^+$			
2114.483 *41*	8.1 *12*	3264.011	2$^-$	1149.390	1$^+$	E1(+M2)	+0.01 *3*	Branching=47.8% *5* (1997Ka15).
2136.62 *24*	0.259 *39*	4877.42	1$^-$	2740.46	1$^+$			
2139.60[#]		2217.74	2$^+$	78.064	2$^+$			Branching=12.1% *13* (1997Ka15).
2151.621 *41*	6.7 *10*	2229.739	1$^+$	78.064	2$^+$			

$^{32}_{15}P_{17}$-4

^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15 (continued)

$\gamma(^{32}P)$ (continued)

E_γ †	I_γ †&	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	δ‡	Comments
2156.954 *41*	8.5 *13*	(7935.768)	1^+	5778.738	1^-			
2217.52 *9*	0.53 *8*	2217.74	2^+	0	1^+			Branching=53.0% *22* (1997Ka15).
2227.80 *9*	1.61 *24*	2740.46	1^+	512.703	0^+			Branching=71.0% *11* (1997Ka15).
2229.86 *30*	0.41 *6*	2229.739	1^+	0	1^+			
2234.12 *7*	0.84 *13*	(7935.768)	1^+	5701.49	$(2)^-$			
2253.91#		4009.01	2^-	1755.02	3^+			Branching=6.9% *5* (1997Ka15).
x2266.71 *21*	0.217 *33*							
2276.34 *27*	0.227 *34*	5349.65	2^-	3073.91?				
2348.16b *17*	0.281 *42*	4661.54	2^-	2313.46?				
2396.1#		4151.2	3^-	1755.02	3^+			Branching=4.9% *16* (1997Ka15).
2426.30 *5*	1.90 *29*	(7935.768)	1^+	5509.356	$(1)^-$			
2431.87 *15*	0.33 *5*	4661.54	2^-	2229.739	1^+			
x2445.50 *22*	0.228 *34*							
2514.68 *6*	1.19 *18*	5778.738	1^-	3264.011	2^-			
2579.20 *35*	0.68 *10*	2657.64	2^+	78.064	2^+			
2586.008 *48*	6.3 *10*	(7935.768)	1^+	5349.65	2^-			
2609.23a *21*	0.144a *22*	5349.65	2^-	2740.46	1^+			
2609.23a *21*	0.144a *22*	(7935.768)	1^+	5326.00?	$(1,2^+)$			
2657.55 *6*	2.02 *30*	2657.64	2^+	0	1^+			
2685.99 *48*	0.103 *15*	4009.01	2^-	1322.833	2^+			Branching=6.7% *5* (1997Ka15).
x2702.4 *5*	0.096 *14*							
2712.76 *25*	0.297 *45*	4035.596	1^-	1322.833	2^+			
2740.38 *11*	0.52 *8*	2740.46	1^+	0	1^+			Branching=27.4% *15* (1997Ka15).
2768.77#		5509.356	$(1)^-$	2740.46	1^+			Branching=2.2% *4* (1997Ka15).
2842.85 *28*	0.170 *25*	5072.53	0^+	2229.739	1^+			
2859.48#		4009.01	2^-	1149.390	1^+			Branching=5.7% *5* (1997Ka15).
2863.15 *11*	2.05 *31*	(7935.768)	1^+	5072.53	0^+			
2886.09 *6*	4.1 *6*	4035.596	1^-	1149.390	1^+	E1+M2	+0.08 *7*	
x2933.65 *17*	0.33 *5*							
x2953.72 *8*	0.96 *14*							
3058.174 *47*	6.97 *35*	(7935.768)	1^+	4877.42	1^-			
3119.86 *20*	0.390 *19*	5349.65	2^-	2229.739	1^+			
3185.76 *6*	1.99 *10*	3264.011	2^-	78.064	2^+			Branching=12.6% *4* (1997Ka15).
3196.9b *7*	0.081 *4*	5509.356	$(1)^-$	2313.46?				E_γ: not reported in 1997Ka15.
3224.92 *19*	0.342 *17*	(7935.768)	1^+	4710.45	1^+			
x3240.6 *5*	0.113 *6*							
3261.4#		4411.0	0^-	1149.390	1^+			Branching=12.8% *23* (1997Ka15).
3263.41 *20*	0.406 *20*	3264.011	2^-	0	1^+	E1+M2	−0.10 *3*	Branching=1.63% *24* (1997Ka15).
x3267.53 *14*	0.648 *32*							
3274.055 *45*	5.14 *26*	(7935.768)	1^+	4661.54	2^-			

$^{32}_{15}P_{17}$-5

$\gamma(^{32}P)$ (continued)

E_γ †	I_γ †&	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	δ‡	Comments
3338.84 *29*	0.230 *12*	4661.54	2^-	1322.833	2^+			
3366.21 *10*	0.683 *34*	3444.39	(1,2)	78.064	2^+			
3387.4[a] *6*	0.121[a] *6*	4710.45	1^+	1322.833	2^+			
3387.4[a] *6*	0.121[a] *6*	(7935.768)	1^+	4549.22	1^+			
3444.27 *10*	0.726 *36*	3444.39	(1,2)	0	1^+			
3482.89[a] *36*	0.160[a] *8*	5701.49	$(2)^-$	2217.74	2^+			
3482.89[a] *36*	0.160[a] *8*	6062.14	1^-	2579.12				
[x]3504.01 *47*	0.150 *7*							
3511.58 *28*	0.248 *12*	4661.54	2^-	1149.390	1^+			
3522.708 *44*	13.3 *7*	4035.596	1^-	512.703	0^+	E1		
3548.74 *10*	0.860 *43*	5778.738	1^-	2229.739	1^+			
3554.38 *14*	0.527 *26*	4877.42	1^-	1322.833	2^+			
3560.5[a] *5*	0.145[a] *7*	4710.45	1^+	1149.390	1^+			
3560.5[a] *5*	0.145[a] *7*	5778.738	1^-	2217.74	2^+			
3713.86 *44*	0.174 *9*	3792.53	$(1)^+$	78.064	2^+			Branching=100% (1997Ka15).
[x]3774.6 *5*	0.109 *5*							
3899.946 *47*	17.8 *9*	(7935.768)	1^+	4035.596	1^-			
3922.90 *10*	1.86 *9*	5072.53	0^+	1149.390	1^+			
3926.48 *10*	2.24 *11*	(7935.768)	1^+	4009.01	2^-			
3930.19 *19*	0.658 *33*	4009.01	2^-	78.064	2^+			Branching=24.2% *15* (1997Ka15).
3945.9 *9*	0.067 *3*	5701.49	$(2)^-$	1755.02	3^+			
3956.97 *11*	0.633 *32*	4035.596	1^-	78.064	2^+	E1+M2	−0.12 *8*	
4003.3[a] *8*	0.069[a] *3*	5326.00?	$(1,2^+)$	1322.833	2^+			
4003.3[a] *8*	0.069[a] *3*	6581.90	$(0^+,1,2,3^+)$	2579.12				
4008.66 *9*	0.742 *37*	4009.01	2^-	0	1^+			Branching=27.7% *15* (1997Ka15).
4026.6 *10*	0.049 *2*	5349.65	2^-	1322.833	2^+			
4035.6[a] *11*	0.045[a] *2*	4035.596	1^-	0	1^+			
4035.6[a] *11*	0.045[a] *2*	4549.22	1^+	512.703	0^+			
4043.2 *8*	0.064 *3*	6783.69	$(0^+,1,2,3^+)$	2740.46	1^+			
[x]4071.92 *19*	0.279 *14*							
4072.9[#]		4151.2	3^-	78.064	2^+			Branching=71% *5* (1997Ka15).
4125.73 *31*	0.237 *12*	6783.69	$(0^+,1,2,3^+)$	2657.64	2^+			
4142.75 *26*	0.208 *10*	(7935.768)	1^+	3792.53	$(1)^+$			
4199.92 *6*	3.12 *16*	5349.65	2^-	1149.390	1^+	E1(+M2)	+0.04 *7*	
4246.4 *18*	0.036 *2*	6558.00	$(1,2,3^+)$	2313.46?				
[x]4278.3 *7*	0.069 *3*							
4359.83 *9*	1.19 *6*	5509.356	$(1)^-$	1149.390	1^+			Branching=69.3% *16* (1997Ka15).
4364.45 *6*	4.44 *22*	4877.42	1^-	512.703	0^+	E1		
[x]4410.37 *15*	0.387 *19*							
4410.7[#]		4411.0	0^-	0	1^+			Branching=87.2% *23* (1997Ka15).

$\gamma(^{32}P)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
4456.26 *27*	0.196 *10*	5778.738	1^-	1322.833	2^+		
[x]4466.2 *9*	0.054 *3*						
4491.07 *6*	2.01 *10*	(7935.768)	1^+	3444.39	(1,2)		
4551.6 *7*	0.066 *3*	5701.49	$(2)^-$	1149.390	1^+		
[x]4579.8 *9*	0.056 *3*						
4629.08 *27*	0.448 *22*	5778.738	1^-	1149.390	1^+		
4632.0 *9*	0.139 *7*	4710.45	1^+	78.064	2^+		
[x]4644.1 *5*	0.101 *5*						
4661.11 *6*	3.52 *18*	4661.54	2^-	0	1^+		
4671.39 *5*	11.8 *6*	(7935.768)	1^+	3264.011	2^-		
4738.80 *38*	0.213 *11*	6062.14	1^-	1322.833	2^+		
[x]4766.10 *22*	0.246 *12*						
4792.9 *11*	0.048 *2*	5307.58?	$(1,2^+)$	512.703	0^+		
4799.56 *30*	0.186 *9*	4877.42	1^-	78.064	2^+		
4811.2 *10*	0.064 *3*	5326.00?	$(1,2^+)$	512.703	0^+		
4860.5 *9*	0.076 *4*	(7935.768)	1^+	3073.91?			
4876.78 *11*	0.634 *32*	4877.42	1^-	0	1^+		
4912.30 *11*	0.686 *34*	6062.14	1^-	1149.390	1^+		
[x]5067.9 *17*	0.045 *2*						
5071.4 *13*	0.052 *3*	5072.53	0^+	0	1^+		
[x]5114.3 *9*	0.051 *3*						
[x]5122.3 *5*	0.086 *4*						
5180.9 *8*	0.042 *2*	6332.54	$(0,1)^+$	1149.390	1^+		
5194.92 *7*	1.29 *6*	(7935.768)	1^+	2740.46	1^+		
5228.0 *8*	0.044 *2*	5307.58?	$(1,2^+)$	78.064	2^+		
5265.47 *7*	3.07 *15*	5778.738	1^-	512.703	0^+	E1	
5277.73 *7*	1.12 *6*	(7935.768)	1^+	2657.64	2^+		
5306.7 *9*	0.044 *2*	5307.58?	$(1,2^+)$	0	1^+		
5326.8 *9*	0.040 *2*	5326.00?	$(1,2^+)$	0	1^+		
[x]5340.5 *16*	0.026 *1*						
5349.03 *20*	0.237 *12*	5349.65	2^-	0	1^+		
5355.2 *9*	0.067 *3*	(7935.768)	1^+	2579.12			
5359.8 *10*	0.061 *3*	6510.62?		1149.390	1^+		
[x]5366.9 *13*	0.038 *2*						
[x]5379.2 *5*	0.081 *4*						
5431.35[ab] *24*	0.162[a] *8*	5509.356	$(1)^-$	78.064	2^+		E_γ: not reported in 1997Ka15.
5431.35[a] *24*	0.162[a] *8*	6581.90	$(0^+,1,2,3^+)$	1149.390	1^+		
[x]5437.9 *14*	0.026 *1*						
[x]5452.4 *5*	0.065 *3*						
[x]5474.85 *29*	0.118 *6*						
5508.2 *6*	0.058 *3*	5509.356	$(1)^-$	0	1^+		Branching=2.4% *5* (1997Ka15).

^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15 (continued)

$\gamma(^{32}P)$ (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
5549.27 *30*	0.142 *7*	6062.14	1^-	512.703	0^+	6478.2 *19*	0.018 *1*	6558.00	$(1,2,3^+)$	78.064	2^+
5622.17[a] *37*	0.095[a] *5*	5701.49	$(2)^-$	78.064	2^+	[x]6496.7 *22*	0.027 *1*				
5622.17[a] *37*	0.095[a] *5*	(7935.768)	1^+	2313.46?		6503.17 *27*	0.303 *15*	6581.90	$(0^+,1,2,3^+)$	78.064	2^+
5634.8 *7*	0.047 *2*	6783.69	$(0^+,1,2,3^+)$	1149.390	1^+	6508.7 *30*	0.020 *1*	6510.62?		0	1^+
5683.20 *12*	0.387 *19*	6196.36	1^-	512.703	0^+	[x]6517.4 *7*	0.056 *3*				
5700.31 *14*	0.610 *30*	5778.738	1^-	78.064	2^+	6556.2 *9*	0.041 *2*	6558.00	$(1,2,3^+)$	0	1^+
5705.40 *7*	2.57 *13*	(7935.768)	1^+	2229.739	1^+	6581.02 *21*	0.202 *10*	6581.90	$(0^+,1,2,3^+)$	0	1^+
5717.55 *13*	0.397 *20*	(7935.768)	1^+	2217.74	2^+	6612.02 *40*	0.081 *4*	(7935.768)	1^+	1322.833	2^+
[x]5745.5 *7*	0.063 *3*					[x]6671.0 *12*	0.042 *2*				
[x]5751.69 *47*	0.107 *5*					[x]6676.9 *14*	0.036 *2*				
5758.05 *5*	0.085 *4*	(7935.768)	1^+	2177.26	3^+	[x]6759.3 *8*	0.050 *2*				
5778.13 *8*	0.959 *48*	5778.738	1^-	0	1^+	6785.48 *7*	14.7 *7*	(7935.768)	1^+	1149.390	1^+
5983.4 *6*	0.064 *3*	6062.14	1^-	78.064	2^+	[x]6823.9 *7*	0.062 *3*				
[x]6050.5 *7*	0.052 *3*					[x]6836.4 *8*	0.052 *3*				
6061.40 *12*	0.422 *21*	6062.14	1^-	0	1^+	[x]6860.73 *39*	0.100 *5*				
[x]6091.60 *46*	0.148 *7*					[x]7018.4 *8*	0.051 *3*				
6117.63 *32*	0.144 *7*	6196.36	1^-	78.064	2^+	[x]7058.09 *47*	0.083 *4*				
6179.4 *7*	0.055 *3*	(7935.768)	1^+	1755.02	3^+	[x]7160.5 *6*	0.068 *3*				
6195.87 *13*	0.362 *18*	6196.36	1^-	0	1^+	[x]7179.25 *24*	0.186 *9*				
6252.8 *10*	0.036 *2*	6332.54	$(0,1)^+$	78.064	2^+	[x]7244.72 *44*	0.090 *5*				
[x]6275.1 *6*	0.083 *4*					[x]7302.1 *18*	0.040 *2*				
[x]6281.45 *39*	0.152 *8*					[x]7336.48 *24*	0.184 *9*				
[x]6287.5 *5*	0.112 *6*					7422.05 *8*	4.89 *24*	(7935.768)	1^+	512.703	0^+
[x]6294.25 *26*	0.183 *9*					[x]7769.7 *6*	0.048 *2*				
6332.01 *19*	0.223 *11*	6332.54	$(0,1)^+$	0	1^+	7856.65 *9*	0.875 *44*	(7935.768)	1^+	78.064	2^+
[x]6397.5 *24*	0.039 *2*					[x]7914.98 *48*	0.034 *2*				
[x]6419.57 *40*	0.175 *9*					7934.68 *11*	0.369 *21*	(7935.768)	1^+	0	1^+

† From 1989Mi16, unless otherwise noted. Values are also available in 1985Ke11 which are in a good agreement but less complete. 1997Ka15 report %branching for some transitions, which are used instead if more precise when considered for deducing relative branching in Adopted Gammas.

‡ From γ(circular pol) in 1981De04.

Transition reported in 1997Ka15, with Eγ from level-energy differences and branching ratios given under comments (quoted in 1997Ka15 from a priv comm). Not observed in 1989Mi16.

@ Deduced from intensity balance.

& Intensity per 100 neutron captures.

[a] Multiply placed with undivided intensity.

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

[x] γ ray not placed in level scheme.

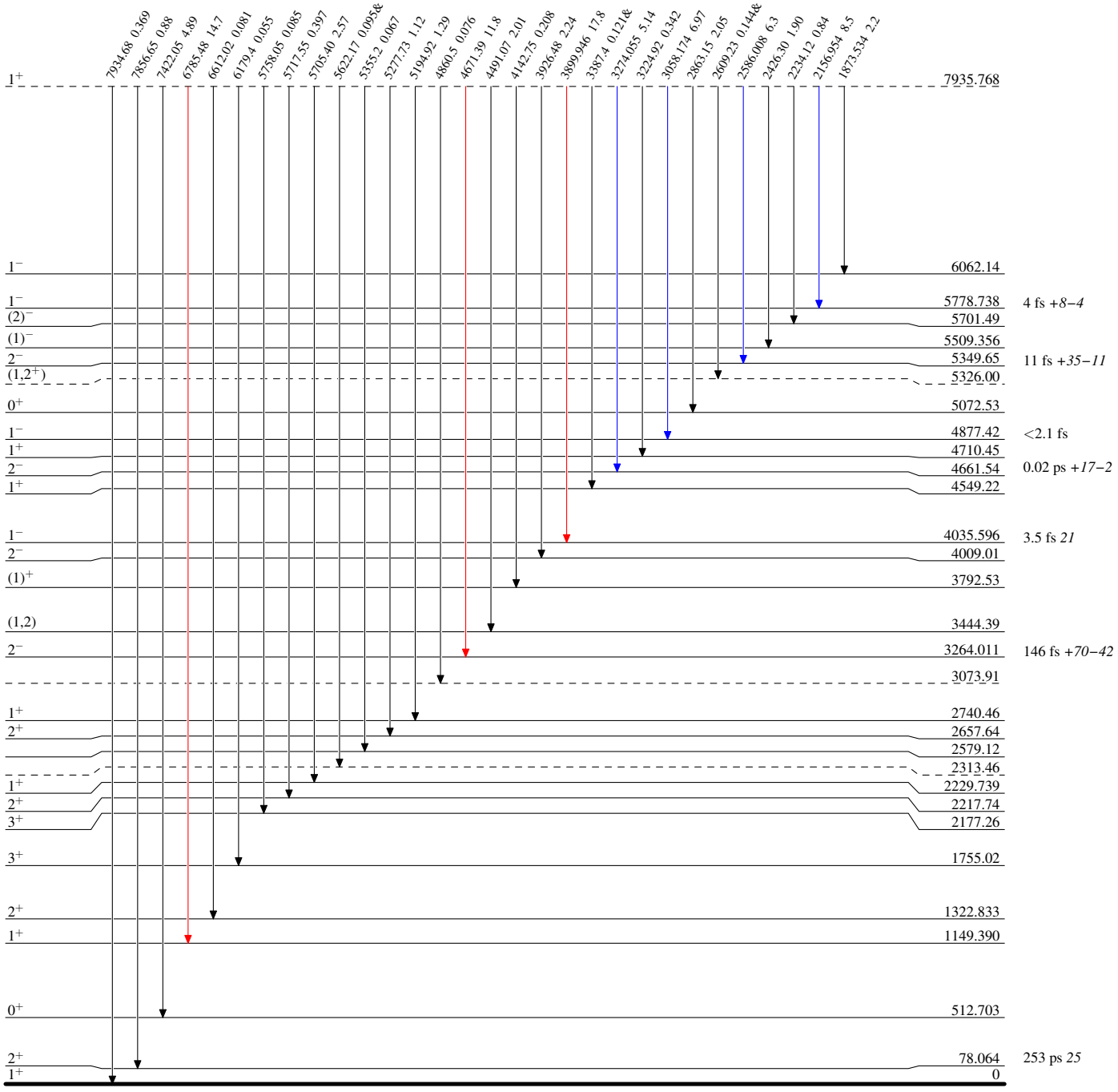
$^{32}_{15}P_{17}$-8

^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15

Level Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 neutron captures
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



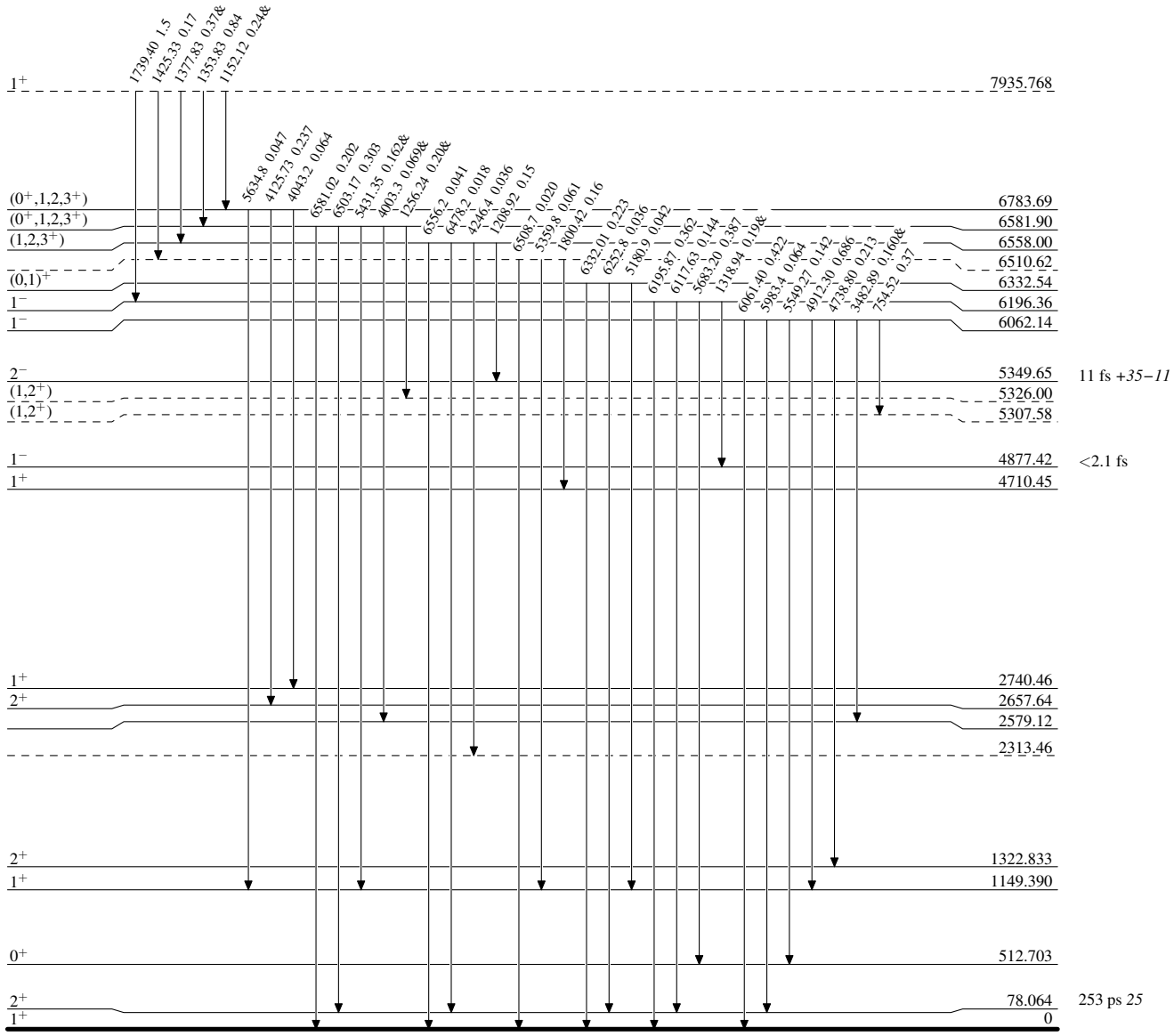
$^{32}_{15}P_{17}$

^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15

Level Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 neutron captures
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



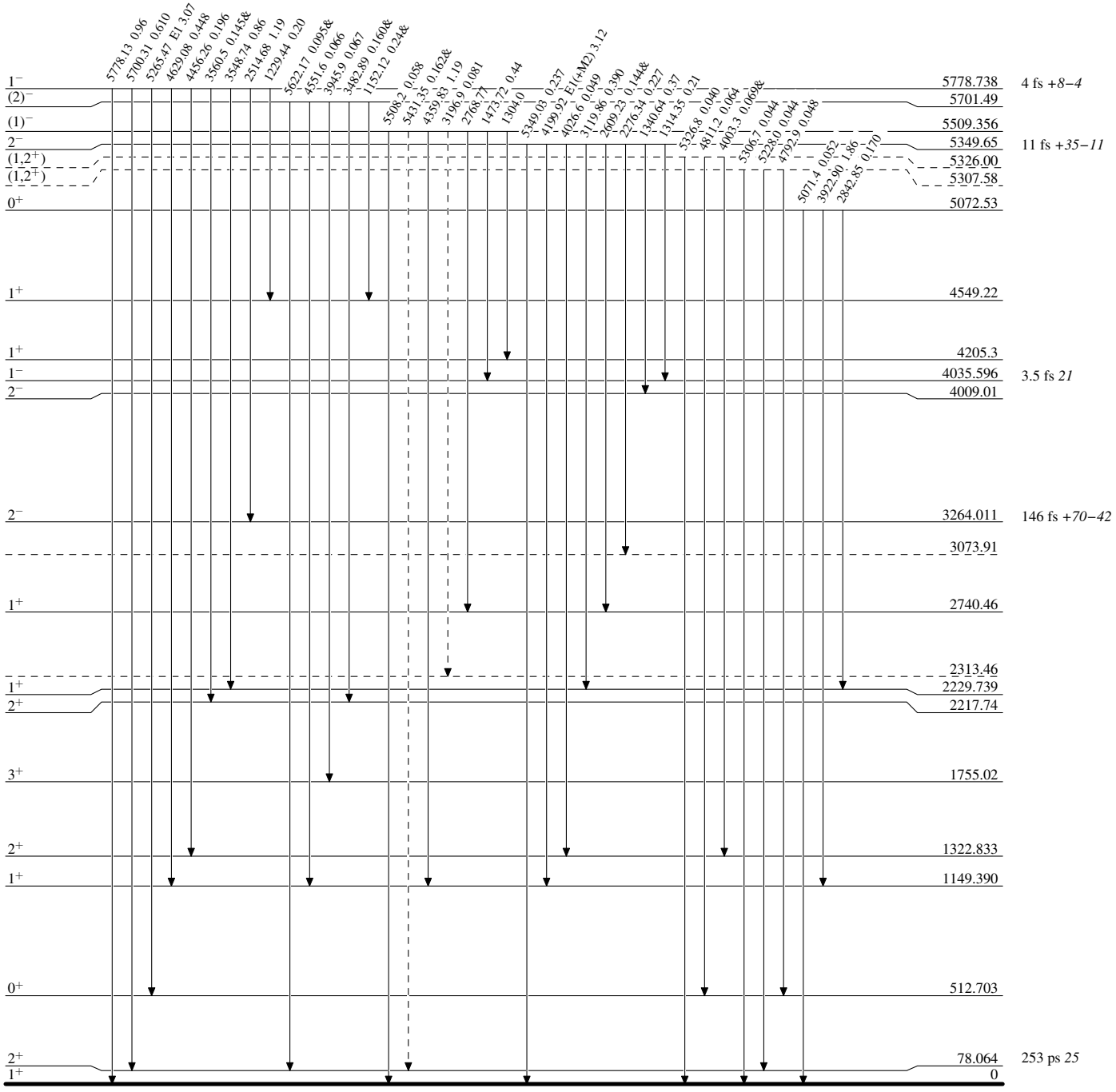
$^{32}_{15}P_{17}$

^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15

Level Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 neutron captures
& Multiply placed: undivided intensity given

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)

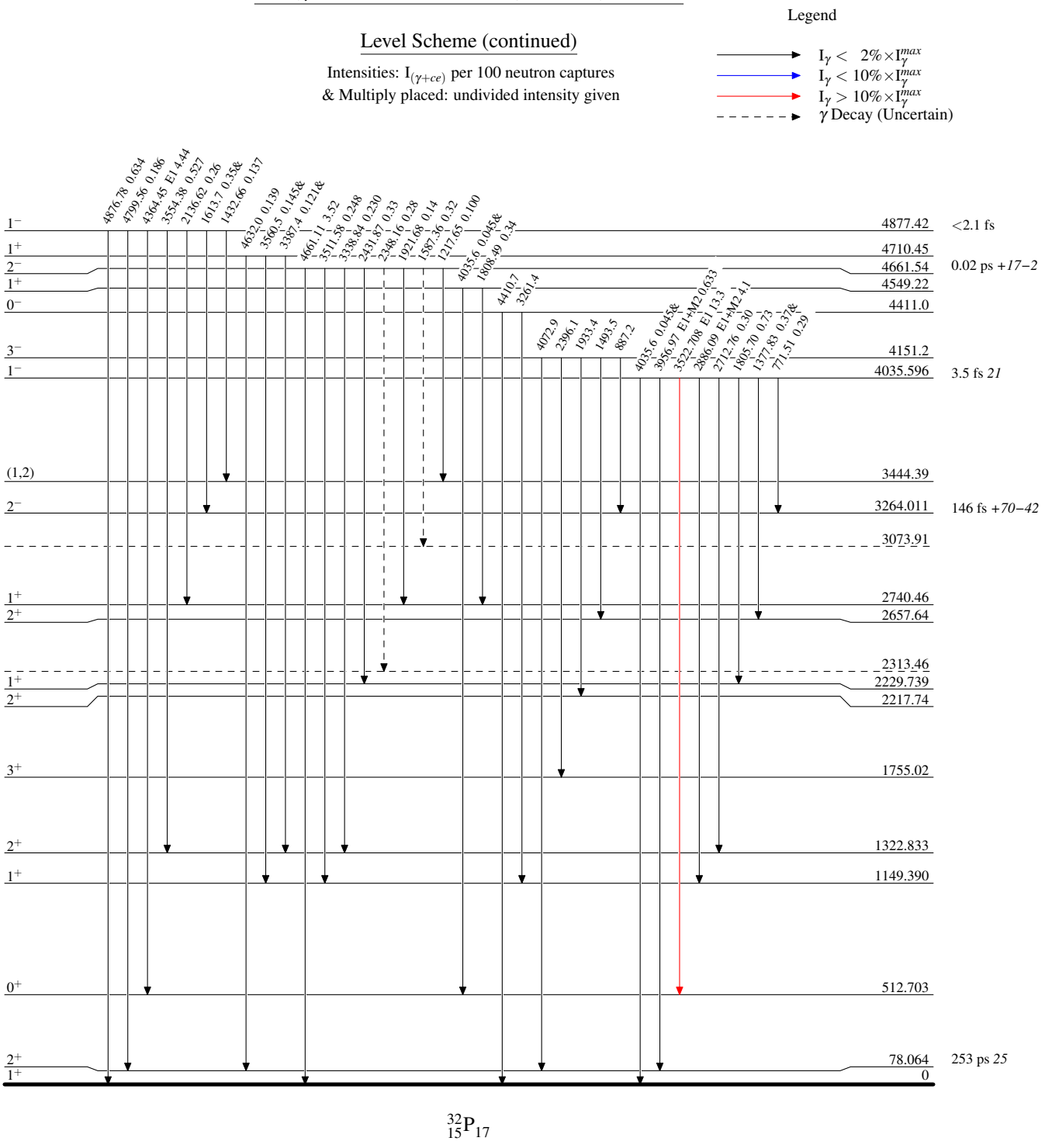


$^{32}_{15}P_{17}$

^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15

Level Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 neutron captures
& Multiply placed: undivided intensity given



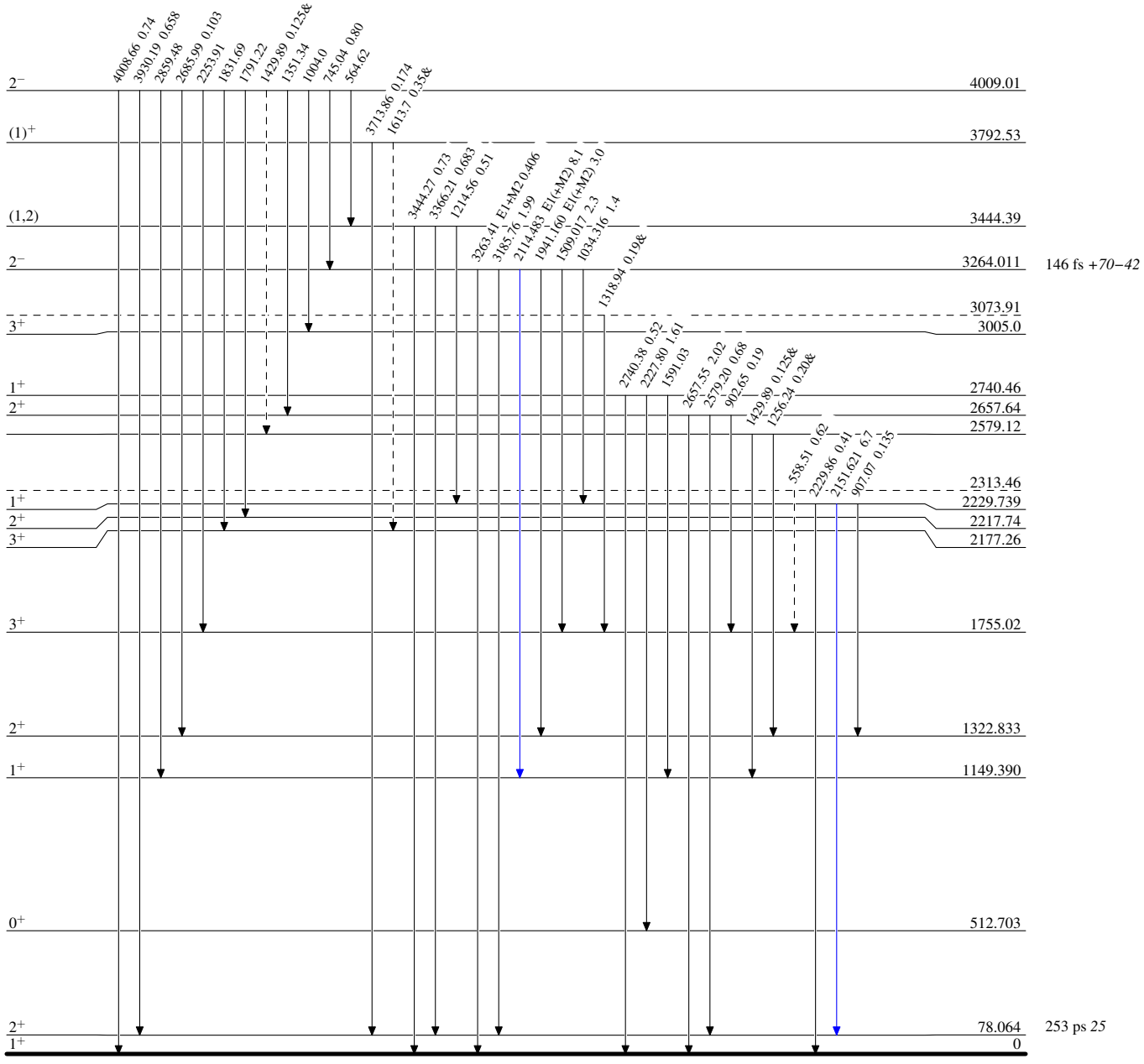
$^{32}_{15}P_{17}$

^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15

Level Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 neutron captures
& Multiply placed: undivided intensity given

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)

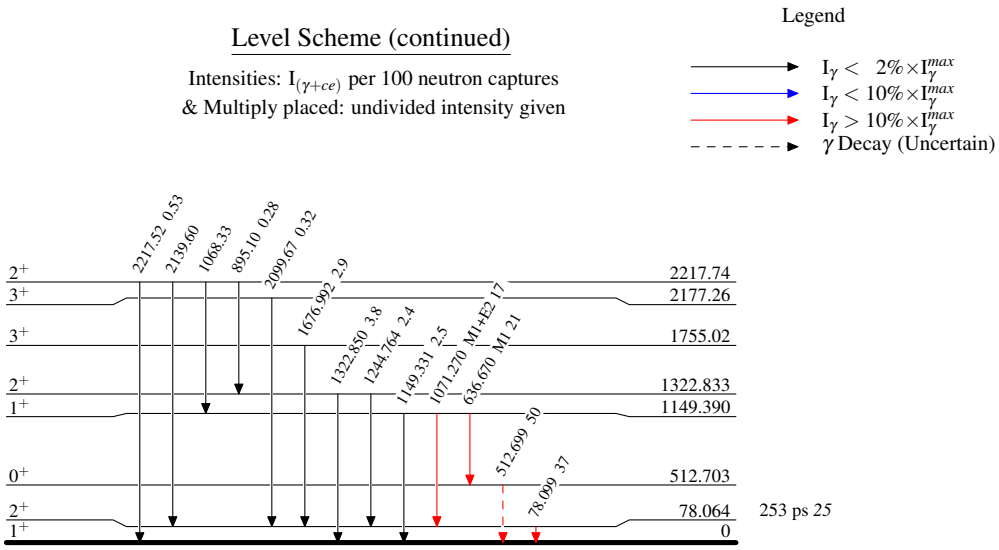


$^{32}_{15}P_{17}$

^{31}P(n,γ) E=thermal 1989Mi16,1990Ko43,1997Ka15

Level Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 neutron captures
& Multiply placed: undivided intensity given



$^{32}_{15}P_{17}$