^{56}Fe(^{29}Si,2pnγ) 1994Ta01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. K. Tuli, E. Browne	NDS 157, 260 (2019)	1-Mar-2019

E=95 MeV. Measured γγ coincidences, DCO ratios.

^{82}Sr Levels

E(level)†	Jπ	$T_{1/2}$‡	E(level)†	Jπ	$T_{1/2}$‡
0.0[a]	0^+		4909.15[f] 19	10^-	0.36 ps +11−8
573.54[a] 9	2^+		5237.3[g] 4	10^-	
1175.55[&] 11	2^+		5307.36[c] 18	11^-	0.30 ps +10−7
1328.44[a] 12	4^+		5426.3[&] 3	12^+	0.33 ps +11−8
1688.39[@] 12	3^+		5468.2 11		
1995.84[&] 12	4^+		5479.0[d] 3	(11^-)	
2229.17[a] 13	6^+	0.37 ps +15−11	5569.0[a] 4	12^+	0.06 ps 6
2401.42[c] 16	3^-		5737.9[b] 5	(12^+)	
2525.48[@] 13	5^+		5913.7[f] 4	12^-	0.27 ps +11−8
2817.30[c] 13	5^-		6366.4[c] 3	13^-	0.15 ps +8−6
2824.15[g] 13	4^-		6449.3 11		
2836.02[&] 13	6^+		6542.8[&] 4	14^+	0.25 ps +11−9
3006.56[f] 15	4^-		6564.7[d] 4	(13^-)	
3073.06[d] 15	(5^-)		6937.0[a] 5	(14^+)	0.04 ps +6−3
3086.18[g] 13	6^-		7066.3[f] 5	14^-	0.08 ps +5−4
3142.12[e] 22	(5^-)		7533.9 11		
3242.45[a] 15	8^+	0.24 ps +10−6	7544.7[c] 4	15^-	0.12 ps 5
3339.36[f] 13	6^-		7788.1[d] 5	(15^-)	
3476.09[@] 24	7^+		7811.3[&] 6	16^+	0.09 ps +5−4
3525.25[c] 15	7^-		8377.4[f] 7	16^-	0.14 ps 6
3565.58[d] 15	7^-		8434.6[a] 6	(16^+)	<0.18[#] ps
3607.74[e] 14	7^-		8841.2[c] 7	17^-	0.08 ps 6
3622.18[&] 15	8^+		9167.3[d] 7	(17^-)	
3685.66[b] 17	(8^+)		9237.0[&] 7	18^+	0.05 ps +7−4
4033.24[f] 16	8^-		9842.4[f] 12	(18^-)	<0.19[#] ps
4142.49[g] 15	8^-		10258.0[c] 9	(19^-)	0.08 ps +6−4
4350.28[a] 17	10^+	0.14 ps +6−4	10709.3[d] 12	(19^-)	
4366.06[c] 15	9^-		10871.6[&] 9	(20^+)	<0.21[#] ps
4423.23[&] 17	10^+		11379.4[f] 16	(20^-)	
4472.61[d] 16	9^-		11797.6[c] 10	(21^-)	<0.06[#] ps
4491.6[@] 4	9^+		13005.4[f] 19	(22^-)	
4637.03[b] 19	(10^+)		13488.6[c] 14	(23^-)	

† From least-squares fit to Eγ.
‡ Measured by DSAM.
# Effective $T_{1/2}$ not corrected for direct or side feeding.
@ Band(A): π=+.
& Band(B): π=.
a Band(C): π=+.
b Band(D): π=+.

Continued on next page (footnotes at end of table)

^{56}Fe(^{29}Si,2pnγ) 1994Ta01 (continued)

^{82}Sr Levels (continued)

[c] Band(E): π=−. Yrast odd-spin band.
[d] Band(F): π=−. Second odd-spin band.
[e] Band(G): π=−. Third odd-spin band.
[f] Band(H): π=−. Yrast even-spin band.
[g] Band(I): π=−. Second even-spin band.

γ(^{82}Sr)

Measured DCO ratios, R(DCO), are given. They are used in the J^{π} assignments. See the Adopted Levels. The DCO ratios for E2 transitions are expected to be 1, while for pure M1 or E1, states with J>10, DCO ratio should be between 0.42 and 0.52 (1994Ta01).

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
213.5 *3*	0.3 *1*	4637.03	(10^+)	4423.23	10^+	
255.4 *3*	0.1 *1*	3073.06	(5^-)	2817.30	5^-	
262.0 *1*	2.3 *2*	3086.18	6^-	2824.15	4^-	R(DCO)=1.08 *9*
266.2 *2*	0.6 *1*	3339.36	6^-	3073.06	(5^-)	R(DCO)=0.48 *6*
268.8 *1*	1.8 *2*	3086.18	6^-	2817.30	5^-	
287.0 *2*	1.1 *2*	4637.03	(10^+)	4350.28	10^+	R(DCO)=1.06 *14*
332.5 *2*	1.2 *3*	3339.36	6^-	3006.56	4^-	R(DCO)=1.12 *8*
359.9 *3*	1.5 *5*	1688.39	3^+	1328.44	4^+	R(DCO)=0.47<
379.7 *2*	1.6 *4*	3622.18	8^+	3242.45	8^+	R(DCO)=0.76 *17*
415.6 *3*	0.4 *1*	2817.30	5^-	2401.42	3^-	
422.6 *3*	0.4 *1*	2824.15	4^-	2401.42	3^-	R(DCO)=0.29<
438.9 *2*	1.0 *2*	3525.25	7^-	3086.18	6^-	R(DCO)=0.39 *1*
443.2 *1*	2.8 *4*	3685.66	(8^+)	3242.45	8^+	R(DCO)=1.04 *11*
451.9 *3*	0.5 *1*	3525.25	7^-	3073.06	(5^-)	
465.4 *2*	1.1 *3*	3607.74	7^-	3142.12	(5^-)	R(DCO)=0.75 *1*
479.3 *2*	1.2 *4*	3565.58	7^-	3086.18	6^-	R(DCO)=0.38 *6*
492.7 *4*	0.1 *1*	3565.58	7^-	3073.06	(5^-)	
507.9 *3*	0.7 *2*	4033.24	8^-	3525.25	7^-	
512.9 *2*	13.8 *20*	1688.39	3^+	1175.55	2^+	R(DCO)=1.14 *8*
521.5 *2*	3.7 *5*	3607.74	7^-	3086.18	6^-	R(DCO)=0.21 *5*
522.1 *1*	15.2 *18*	3339.36	6^-	2817.30	5^-	R(DCO)=0.21 *1*
529.8 *2*	0.9 *3*	2525.48	5^+	1995.84	4^+	R(DCO)=0.41 *7*
534.6 *2*	1.3 *3*	3607.74	7^-	3073.06	(5^-)	R(DCO)=0.89 *9*
534.7 *2*	1.0 *3*	4142.49	8^-	3607.74	7^-	
560.8 *2*	0.5 *1*	3086.18	6^-	2525.48	5^+	
573.5 *1*	100	573.54	2^+	0.0	0^+	R(DCO)=1.04 *4*
577.0 *2*	1.2 *3*	4142.49	8^-	3565.58	7^-	
602.0 *1*	25 *3*	1175.55	2^+	573.54	2^+	R(DCO)=0.72 *3*
605.1 *1*	0.6 *2*	3006.56	4^-	2401.42	3^-	
606.9 *1*	7.1 *6*	2836.02	6^+	2229.17	6^+	R(DCO)=0.71 *3*
617.1 *4*	0.3 *1*	4142.49	8^-	3525.25	7^-	
667.5 *1*	9.9 *15*	1995.84	4^+	1328.44	4^+	R(DCO)=0.57 *4*
693.9 *1*	8.5 *18*	4033.24	8^-	3339.36	6^-	R(DCO)=1.02 *4*
707.9 *2*	0.8 *3*	3525.25	7^-	2817.30	5^-	R(DCO)=1.02 *15*
748.3 *2*	1.0 *1*	3565.58	7^-	2817.30	5^-	R(DCO)=1.20 *13*
754.9 *1*	82 *4*	1328.44	4^+	573.54	2^+	R(DCO)=1.00 *7*
758.3 *1*	5.6 *4*	4366.06	9^-	3607.74	7^-	R(DCO)=0.96 *6*
771.8 *2*	2.5 *25*	3607.74	7^-	2836.02	6^+	R(DCO)=0.45 *5*
786.2 *1*	15.5 *20*	3622.18	8^+	2836.02	6^+	R(DCO)=0.97 *7*
790.6 *2*	1.2 *3*	3607.74	7^-	2817.30	5^-	R(DCO)=1.23 *15*

Continued on next page (footnotes at end of table)

^{56}Fe(^{29}Si,2pnγ) 1994Ta01 (continued)

γ(^{82}Sr) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[‡]	Comments
800.5 *2*	1.6 *2*	4366.06	9^-	3565.58	7^-			R(DCO)=0.96 *12*
801.0 *1*	19.2 *23*	4423.23	10^+	3622.18	8^+			R(DCO)=0.93 *6*
813.9 *1*	2.4 *5*	3339.36	6^-	2525.48	5^+			R(DCO)=0.61 *5*
820.3 *1*	16.4 *20*	1995.84	4^+	1175.55	2^+			R(DCO)=1.00 *3*
828.4 *2*	0.9 *2*	2824.15	4^-	1995.84	4^+			R(DCO)=0.84 *12*
837.1 *1*	6.8 *15*	2525.48	5^+	1688.39	3^+			R(DCO)=1.14 *11*
840.2 *1*	19.4 *25*	2836.02	6^+	1995.84	4^+			R(DCO)=0.99 *8*
840.8 *1*	4.4 *4*	4366.06	9^-	3525.25	7^-			R(DCO)=0.96 *6*
843.6 *2*	0.9 *2*	3073.06	(5^-)	2229.17	6^+			R(DCO)=0.65 *15*
875.9 *1*	8.9 *16*	4909.15	10^-	4033.24	8^-	E2	7.94×10^{-4}	R(DCO)=1.03 *4* α(K)=0.000702 *10*; α(L)=7.70×10^{-5} *11*; α(M)=1.292×10^{-5} *18* α(N)=1.616×10^{-6} *23*; α(O)=1.037×10^{-7} *15*
900.8 *1*	54 *3*	2229.17	6^+	1328.44	4^+	E2	7.41×10^{-4}	R(DCO)=0.96 *8* α(K)=0.000656 *10*; α(L)=7.18×10^{-5} *10*; α(M)=1.205×10^{-5} *17* α(N)=1.509×10^{-6} *22*; α(O)=9.70×10^{-8} *14*
907.0 *1*	3.2 *4*	4472.61	9^-	3565.58	7^-			R(DCO)=1.19 *16*
941.3 *1*	9.1 *7*	5307.36	11^-	4366.06	9^-	E2	6.67×10^{-4}	R(DCO)=1.05 *8* α(K)=0.000590 *9*; α(L)=6.45×10^{-5} *9*; α(M)=1.083×10^{-5} *16* α(N)=1.356×10^{-6} *19*; α(O)=8.73×10^{-8} *13*
947.2 *2*	2.3 *2*	4472.61	9^-	3525.25	7^-			R(DCO)=0.92 *15*
950.6 *2*	3.1 *7*	3476.09	7^+	2525.48	5^+			R(DCO)=0.74 *11*
951.2 *2*	2.9 *3*	4637.03	(10^+)	3685.66	(8^+)			R(DCO)=0.71 *6*
991 *1*	4.7 *12*	7533.9		6542.8	14^+			R(DCO)=0.27<
1003.1 *2*	20.3 *4*	5426.3	12^+	4423.23	10^+	E2	5.75×10^{-4}	R(DCO)=1.06 *9* α(K)=0.000509 *8*; α(L)=5.54×10^{-5} *8*; α(M)=9.30×10^{-6} *13* α(N)=1.166×10^{-6} *17*; α(O)=7.53×10^{-8} *11*
1004.5 *3*	7.4 *9*	5913.7	12^-	4909.15	10^-	E2	5.73×10^{-4}	R(DCO)=1.00 *7* α(K)=0.000507 *8*; α(L)=5.52×10^{-5} *8*; α(M)=9.27×10^{-6} *13* α(N)=1.162×10^{-6} *17*; α(O)=7.51×10^{-8} *11*
1006.2 *3*	7.2 *5*	5479.0	(11^-)	4472.61	9^-			R(DCO)=0.88 *9*
1010.7 *2*	0.2 *1*	3006.56	4^-	1995.84	4^+			
1013.4 *1*	32 *3*	3242.45	8^+	2229.17	6^+	E2	5.61×10^{-4}	R(DCO)=1.00 *3* α(K)=0.000497 *7*; α(L)=5.41×10^{-5} *8*; α(M)=9.08×10^{-6} *13* α(N)=1.138×10^{-6} *16*; α(O)=7.36×10^{-8} *11*
1015.5 *3*	2.1 *4*	4491.6	9^+	3476.09	7^+			R(DCO)=0.89 *9*
1023 *1*	4.0 *15*	6449.3		5426.3	12^+			R(DCO)=0.41<
1045 *1*	4.2 *18*	5468.2		4423.23	10^+			R(DCO)=0.25<
1056.3 *1*	3.9 *9*	4142.49	8^-	3086.18	6^-	E2	5.10×10^{-4}	R(DCO)=0.89 *6* α(K)=0.000452 *7*; α(L)=4.91×10^{-5} *7*; α(M)=8.25×10^{-6} *12* α(N)=1.034×10^{-6} *15*; α(O)=6.69×10^{-8} *10*
1059.0 *2*	8.3 *5*	6366.4	13^-	5307.36	11^-	E2	5.07×10^{-4}	R(DCO)=1.09 *7* α(K)=0.000449 *7*; α(L)=4.88×10^{-5} *7*; α(M)=8.20×10^{-6} *12* α(N)=1.028×10^{-6} *15*; α(O)=6.66×10^{-8} *10*
1077.4 *2*	1.4 *3*	3073.06	(5^-)	1995.84	4^+			R(DCO)=0.20 *4*
1085.7 *3*	6.0 *7*	6564.7	(13^-)	5479.0	(11^-)			R(DCO)=1.55 *3*
1094.8 *3*	0.4 *1*	5237.3	10^-	4142.49	8^-			R(DCO)=0.99 *17*

Continued on next page (footnotes at end of table)

^{56}Fe(^{29}Si,2pnγ) 1994Ta01 (continued)

γ(^{82}Sr) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[‡]	Comments
1100.9 *4*	3.9 *5*	5737.9	(12$^+$)	4637.03	(10$^+$)			R(DCO)=0.63 *24*
1107.9 *1*	15.7 *17*	4350.28	10$^+$	3242.45	8$^+$			R(DCO)=1.11 *5*
1110.3 *2*	2.5 *4*	3339.36	6$^-$	2229.17	6$^+$			R(DCO)=0.77 *7*
1114.9 *1*	17.2 *25*	1688.39	3$^+$	573.54	2$^+$			R(DCO)=1.09 *3*
1116.5 *3*	17.2 *15*	6542.8	14$^+$	5426.3	12$^+$	E2	4.52×10^{-4}	R(DCO)=1.06 *13* α(K)=0.000399 *6*; α(L)=4.33×10^{-5} *6*; α(M)=7.27×10^{-6} *11* α(N)=9.11×10^{-7} *13*; α(O)=5.91×10^{-8} *9*; α(IPF)=1.133×10^{-6} *19*
1128.8 *3*	4.5 *3*	5479.0	(11$^-$)	4350.28	10$^+$			R(DCO)=0.99 *14*
1135.8 *1*	5.6 *7*	2824.15	4$^-$	1688.39	3$^+$			R(DCO)=0.45 *2*
1152.6 *3*	3.8 *4*	7066.3	14$^-$	5913.7	12$^-$	E2	4.23×10^{-4}	R(DCO)=1.09 *5* α(K)=0.000372 *6*; α(L)=4.03×10^{-5} *6*; α(M)=6.76×10^{-6} *10* α(N)=8.49×10^{-7} *12*; α(O)=5.52×10^{-8} *8*; α(IPF)=3.01×10^{-6} *5*
1175.7 *2*	5.9 *10*	1175.55	2$^+$	0.0	0$^+$			R(DCO)=0.84 *2*
1178.3 *3*	4.5 *10*	7544.7	15$^-$	6366.4	13$^-$	E2	4.06×10^{-4}	R(DCO)=0.96 *7* α(K)=0.000354 *5*; α(L)=3.84×10^{-5} *6*; α(M)=6.44×10^{-6} *9* α(N)=8.08×10^{-7} *12*; α(O)=5.26×10^{-8} *8*; α(IPF)=5.35×10^{-6} *9*
1180.8 *2*	3.0 *4*	4423.23	10$^+$	3242.45	8$^+$			R(DCO)=1.00 *4*
1197.1 *2*	1.4 *4*	2525.48	5$^+$	1328.44	4$^+$			R(DCO)=1.25 *19*
1218.7 *3*	4.8 *4*	5569.0	12$^+$	4350.28	10$^+$			R(DCO)=1.06 *11*
1223.4 *3*	2.8 *3*	7788.1	(15$^-$)	6564.7	(13$^-$)			R(DCO)=0.91 *12*
1230.3 *2*	5.2 *4*	4472.61	9$^-$	3242.45	8$^+$			R(DCO)=0.59 *13*
1268.4 *4*	7.1 *5*	7811.3	16$^+$	6542.8	14$^+$	E2	3.62×10^{-4}	R(DCO)=1.03 *8* α(K)=0.000303 *5*; α(L)=3.27×10^{-5} *5*; α(M)=5.48×10^{-6} *8* α(N)=6.89×10^{-7} *10*; α(O)=4.49×10^{-8} *7*; α(IPF)=2.04×10^{-5} *3*
1296.2 *2*	12.3 *15*	3525.25	7$^-$	2229.17	6$^+$			R(DCO)=0.42 *5*
1296.5 *5*	3.8 *10*	8841.2	17$^-$	7544.7	15$^-$	E2	3.53×10^{-4}	R(DCO)=1.01 *5* α(K)=0.000289 *4*; α(L)=3.12×10^{-5} *5*; α(M)=5.23×10^{-6} *8* α(N)=6.57×10^{-7} *10*; α(O)=4.29×10^{-8} *6*; α(IPF)=2.65×10^{-5} *4*
1311.1 *4*	2.7 *4*	8377.4	16$^-$	7066.3	14$^-$	E2	3.48×10^{-4}	R(DCO)=1.10 *7* α(K)=0.000282 *4*; α(L)=3.05×10^{-5} *5*; α(M)=5.11×10^{-6} *8* α(N)=6.42×10^{-7} *9*; α(O)=4.19×10^{-8} *6*; α(IPF)=2.98×10^{-5} *5*
1318.3 *3*	1.0 *2*	3006.56	4$^-$	1688.39	3$^+$			R(DCO)=0.61 *9*
1336.5 *2*	7.1 *9*	3565.58	7$^-$	2229.17	6$^+$			R(DCO)=0.50 *5*
1368.0 *3*	2.9 *2*	6937.0	(14$^+$)	5569.0	12$^+$			
1378.6 *2*	2.7 *7*	3607.74	7$^-$	2229.17	6$^+$			R(DCO)=0.51 *10*
1379.2 *4*	2.0 *10*	9167.3	(17$^-$)	7788.1	(15$^-$)			
1392.7 *2*	4.5 *6*	3622.18	8$^+$	2229.17	6$^+$			R(DCO)=0.87 *9*
1394.7 *3*	2.1 *3*	4637.03	(10$^+$)	3242.45	8$^+$			R(DCO)=1.10 *11*
1416.8 *5*	3.4 *9*	10258.0	(19$^-$)	8841.2	17$^-$			
1422.4 *3*	0.8 *3*	1995.84	4$^+$	573.54	2$^+$			
1425.7 *4*	5.0 *15*	9237.0	18$^+$	7811.3	16$^+$			R(DCO)=0.97 *6*
1456.2 *3*	1.0 *3*	3685.66	(8$^+$)	2229.17	6$^+$			R(DCO)=1.01 *23*

Continued on next page (footnotes at end of table)

^{56}Fe(^{29}Si,2pnγ) 1994Ta01 (continued)

γ(^{82}Sr) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[‡]	Comments
1465 *1*	1.7 *7*	9842.4	(18^-)	8377.4	16^-			
1488.8 *2*	23 *2*	2817.30	5^-	1328.44	4^+			R(DCO)=0.53 *2*
1494.9 *3*	0.3 *1*	2824.15	4^-	1328.44	4^+			R(DCO)=0.56 *7*
1497.6 *3*	2.0 *10*	8434.6	(16^+)	6937.0	(14^+)	E2	3.26×10^{-4}	R(DCO)=0.78 *11* α(K)=0.000215 *3*; α(L)=2.31×10^{-5} *4*; α(M)=3.88×10^{-6} *6* α(N)=4.87×10^{-7} *7*; α(O)=3.19×10^{-8} *5*; α(IPF)=8.35×10^{-5} *12*
1537 *1*	1.0 *6*	11379.4	(20^-)	9842.4	(18^-)			
1539.6 *5*	2.5 *9*	11797.6	(21^-)	10258.0	(19^-)			
1542 *1*	2.0 *10*	10709.3	(19^-)	9167.3	(17^-)			
1626 *1*	0.8 *4*	13005.4	(22^-)	11379.4	(20^-)			
1634.6 *5*	1.9 *9*	10871.6	(20^+)	9237.0	18^+			
1677.6 *4*	0.4 *1*	3006.56	4^-	1328.44	4^+			R(DCO)=0.66 *15*
1691 *1*	1.8 *8*	13488.6	(23^-)	11797.6	(21^-)			
1812.8 *4*	1.3 *3*	3142.12	(5^-)	1328.44	4^+			
1827.0 *3*	2.0 *7*	2401.42	3^-	573.54	2^+			R(DCO)=0.50 *7*

[†] From DCO ratios and RUL. Q multipolarities are assumed as E2 where RUL makes M2 unlikely.
[‡] Additional information 1.

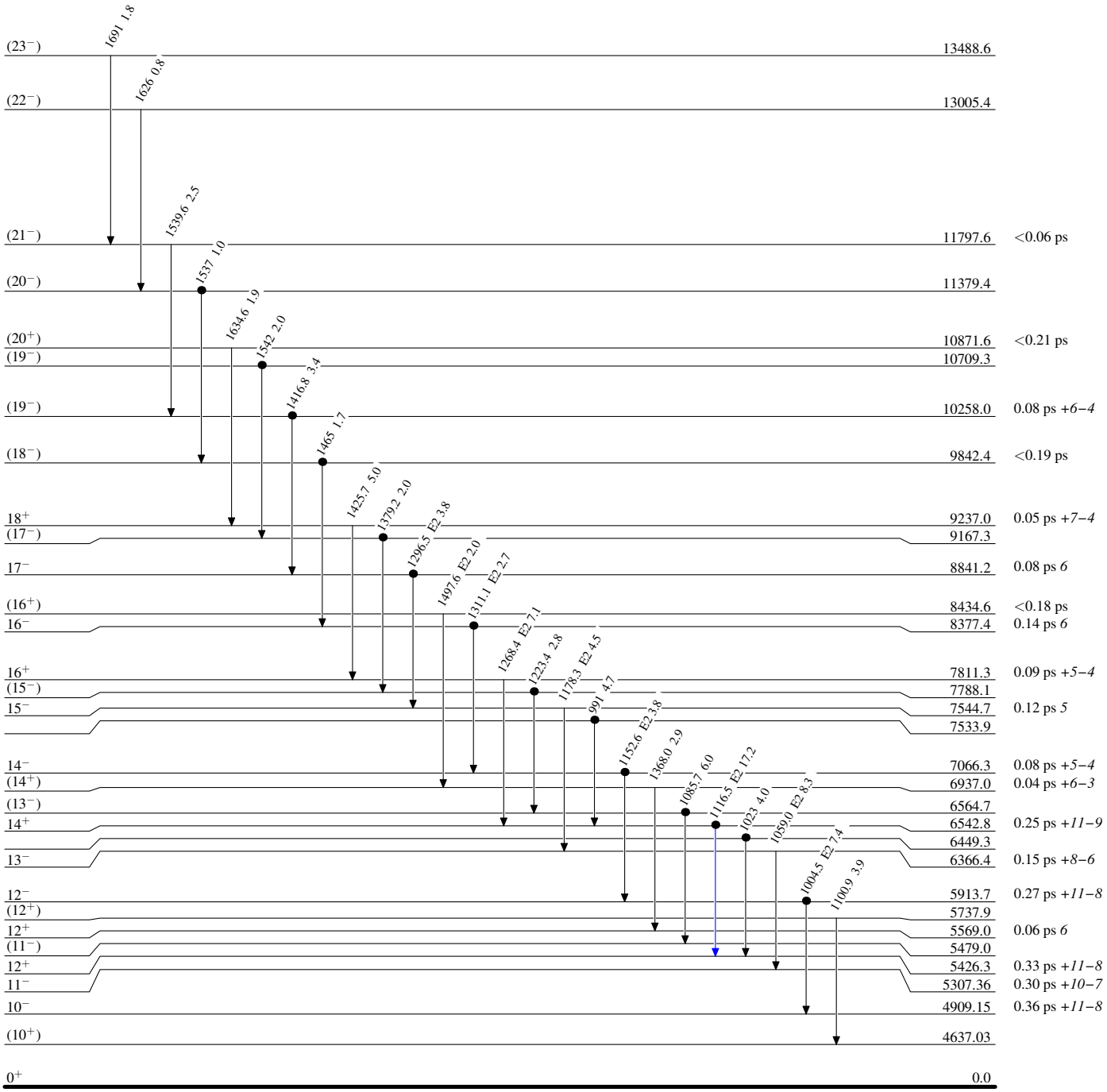
^{56}Fe(^{29}Si,2pnγ) 1994Ta01

Level Scheme

Intensities: Relative I_γ

Legend

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



$^{82}_{38}Sr_{44}$

^{56}Fe(^{29}Si,2pnγ) 1994Ta01

Level Scheme (continued)

Intensities: Relative I_γ

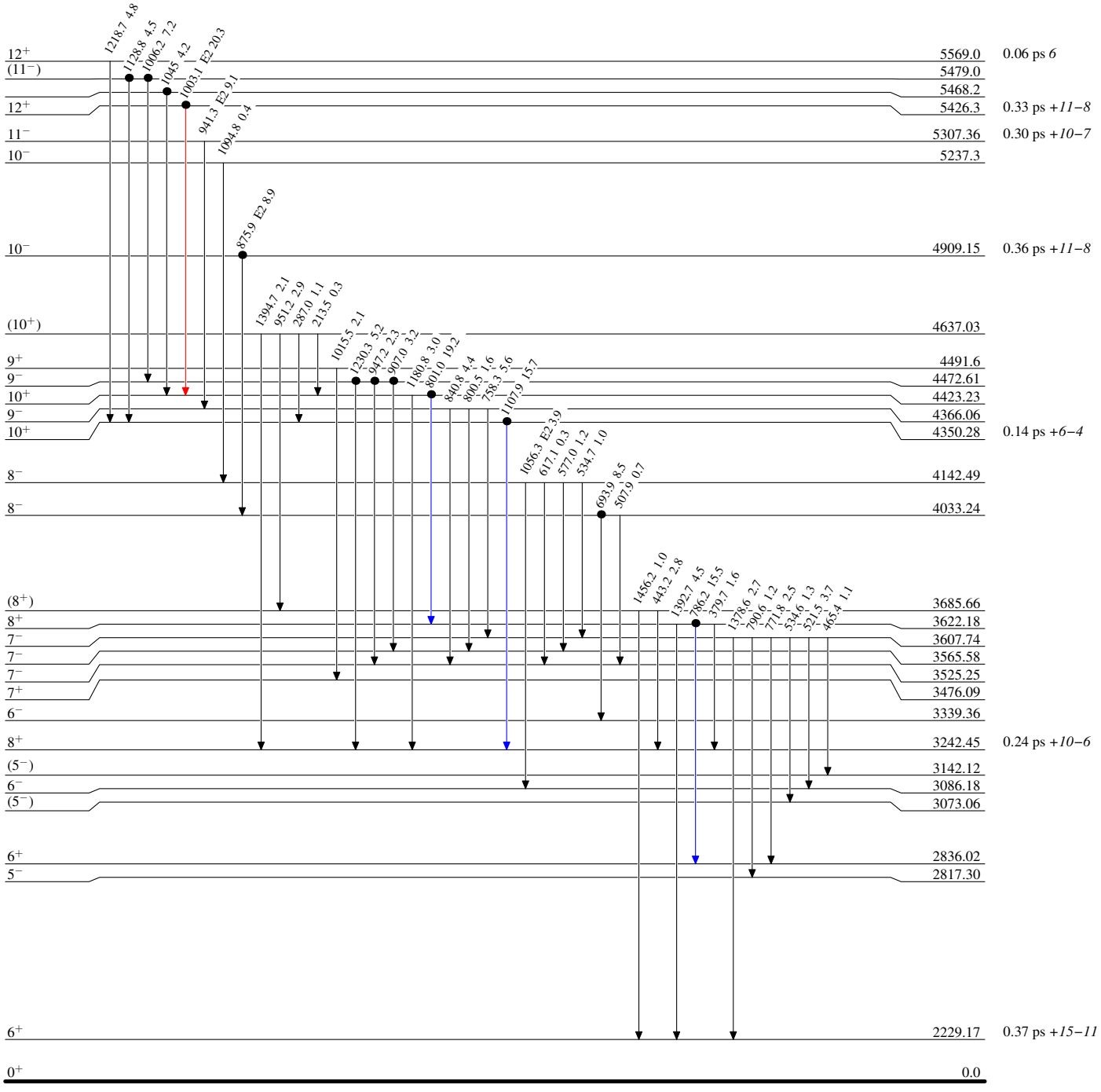
Legend

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

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

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

Coincidence



$^{82}_{38}Sr_{44}$

^{56}Fe(^{29}Si,2pnγ) 1994Ta01

Level Scheme (continued)

Intensities: Relative I_γ

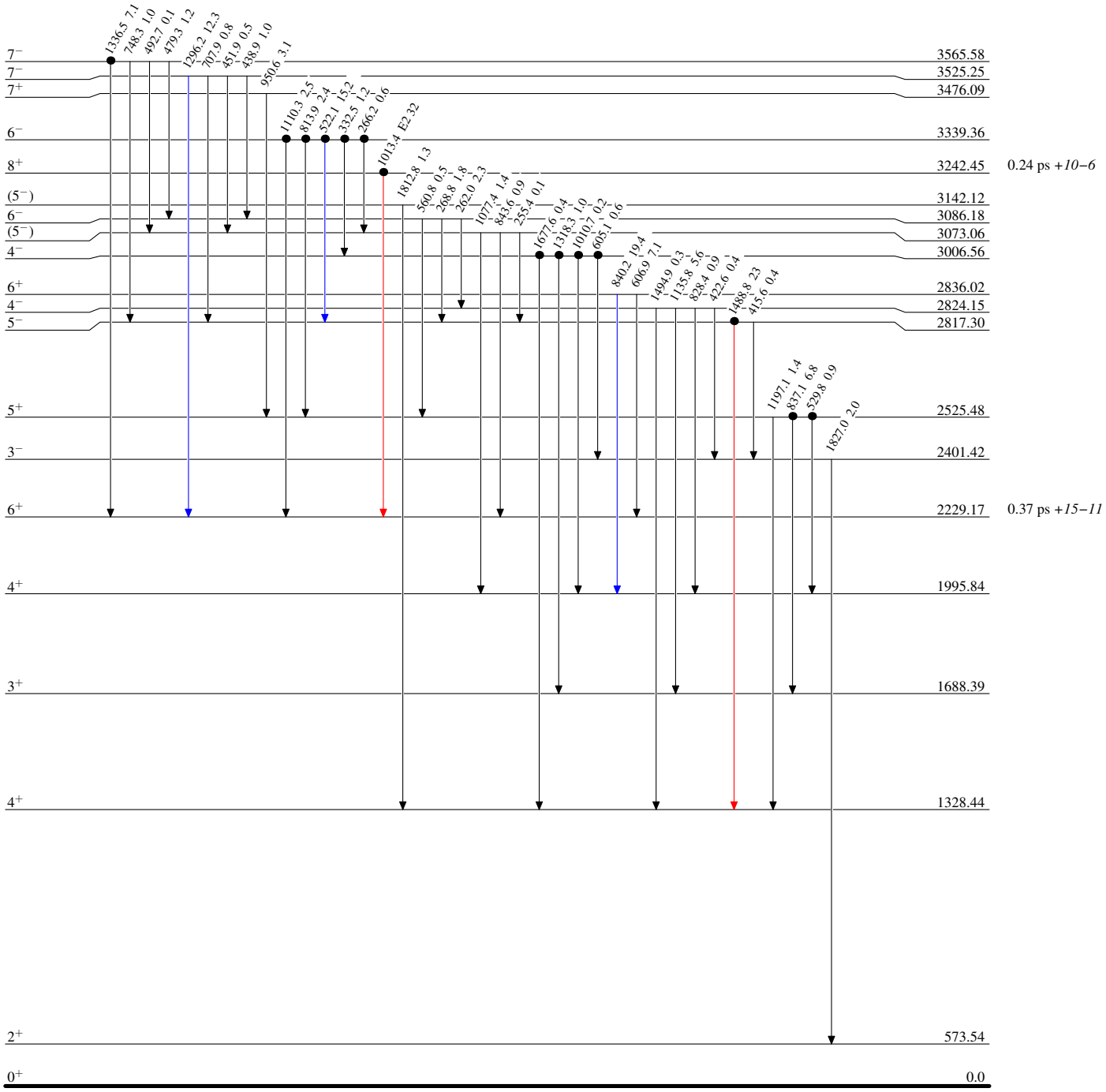
Legend

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

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

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

Coincidence



$^{82}_{38}Sr_{44}$

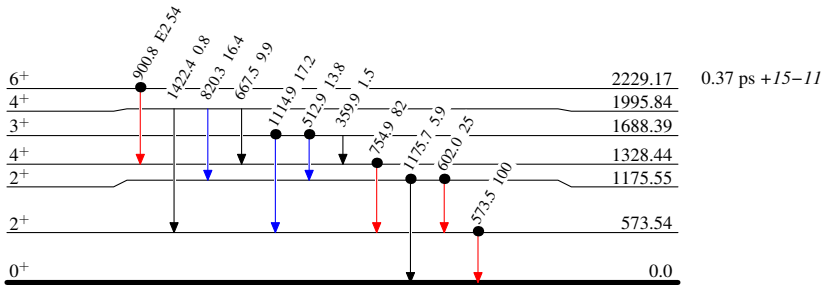
^{56}Fe(^{29}Si,2pnγ) 1994Ta01

Level Scheme (continued)

Intensities: Relative I_γ

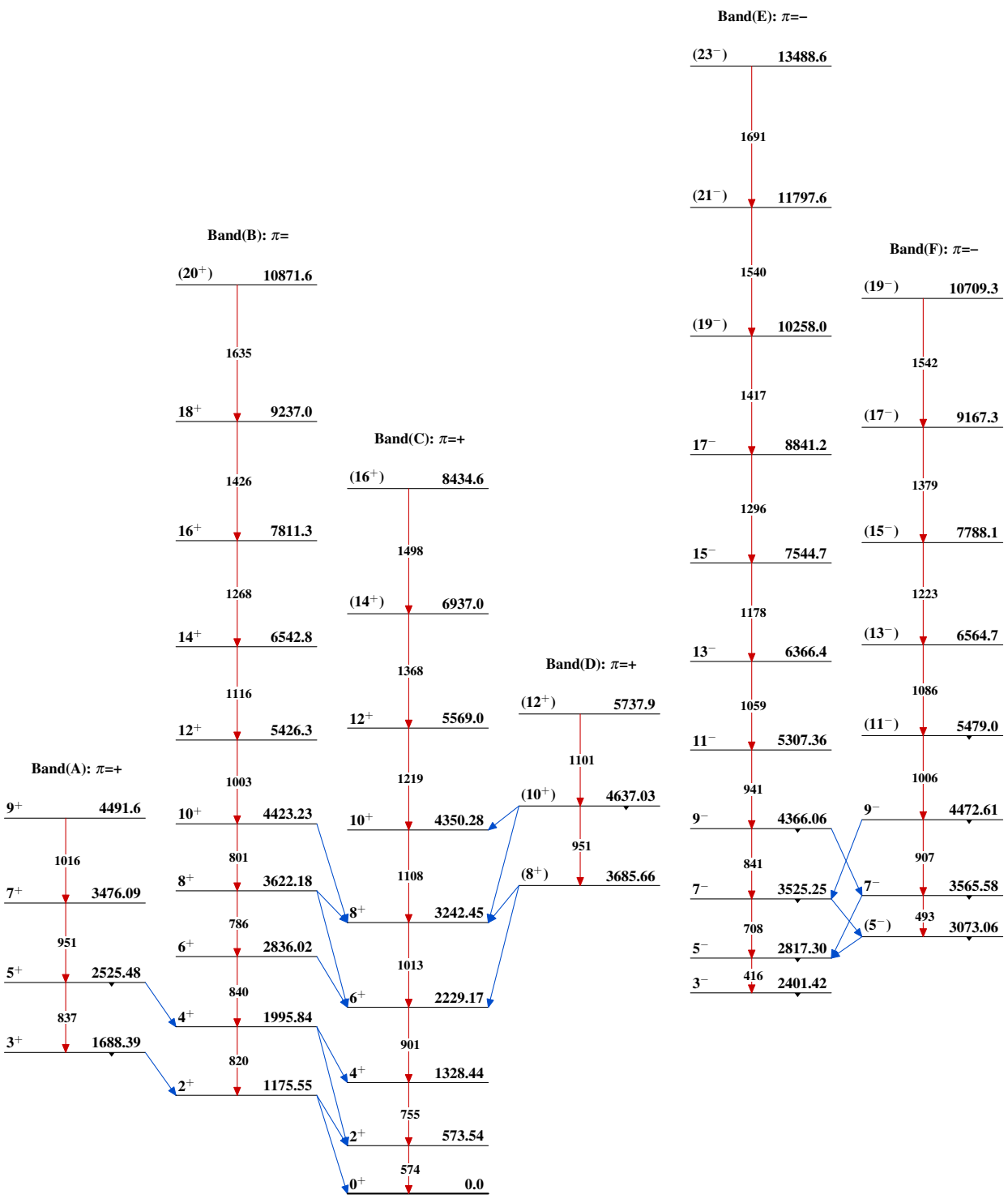
Legend

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



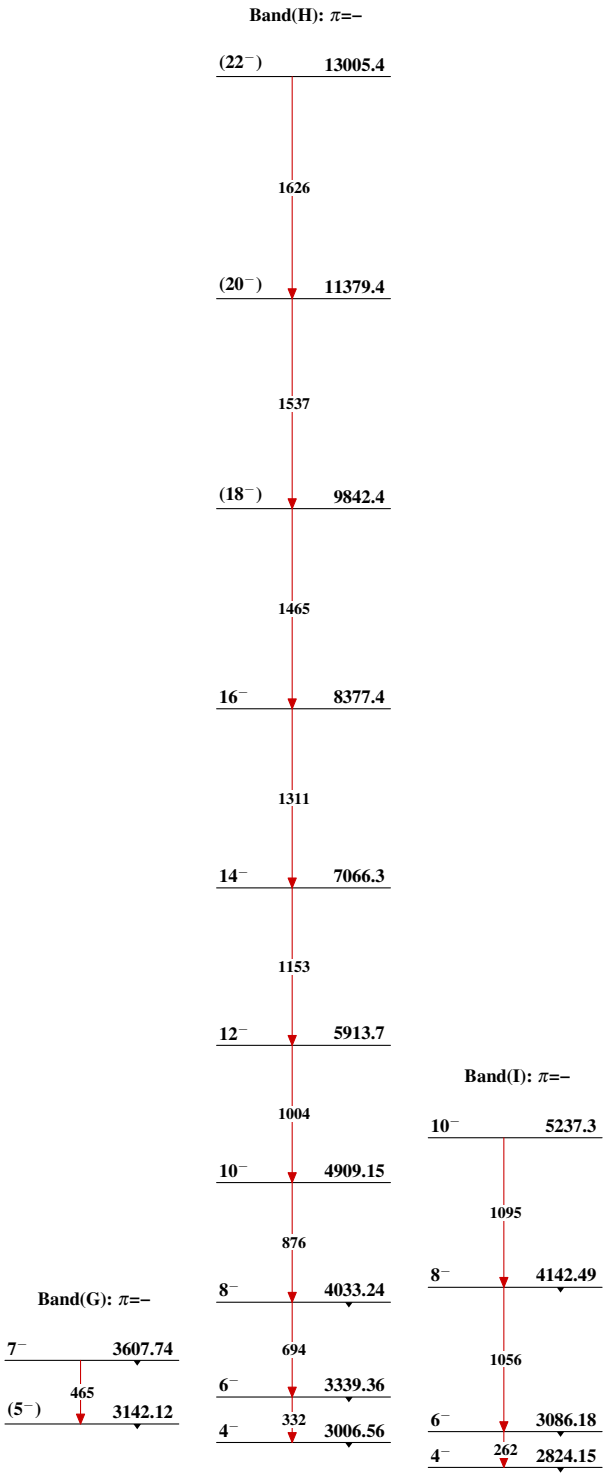
$^{82}_{38}Sr_{44}$

^{56}Fe(^{29}Si,2pnγ) 1994Ta01



$^{82}_{38}Sr_{44}$

^{56}Fe(^{29}Si,2pnγ) 1994Ta01 (continued)



$^{82}_{38}Sr_{44}$