^{22}F β^- decay 1974Da02,1973Gu05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 127, 69(2015)	1-Apr-2015

Parent: ^{22}F: E=0.0; $J^\pi=(4^+)$; $T_{1/2}$=4.23 s *4*; Q(β^-)=10818 *12*; %β^- decay=100.0

Other: 2005We06.

Decay scheme from 1974Da02. Excess apparent feeding to the 1275- and 3357-keV levels indicated by the intensity balance is probably due to missing beta feeding to higher levels that deexcite by weak gamma rays. About 10% of the decay intensity was not observed.

1973Gu05: Source produced by ^{181}Ta(^{22}Ne,^{22}F) E=174 MeV. Mass separated recoils collected on a foil. E-ΔE scintillation beta spectrometer, Ge(Li) gamma detector.

1974Da02: Source produced by ^{18}O(^{6}Li,2p) E=26 MeV. Pneumatic target shuttle system. Measured γ, $\gamma\gamma$- and $\gamma\beta$- coincidence with Ge(Li) gamma detector and NE102 plastic scintillator beta detector.

^{22}Ne Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0	0^+	stable	
1274.577 *7*	2^+		
3357.2 *5*	4^+		
4456.2 *9*	2^+		E(level): From Adopted Levels.
5523.3 *6*	$(4)^+$		
5641.2 *7*	3^+		
5910.1 *9*	3^-		E(level): From Adopted Levels.
6345.1 *10*	4^+		
7341.1 *11*	$(4)^+$		
7423.4 *9*	(5^+)		

[†] From least-squares fit to γ-ray energies, except otherwise noted.
[‡] From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[‡]	Log *ft*	Comments
3.48×10^3 *17*	7423.4	8.7 *4*	4.70 *2*	av Eβ= 1521 *15*
(3477 *12*)	7341.1	2.45 *22*	5.30 *4*	av Eβ= 1560 *15*
4.67×10^3 *17*	6345.1	7.0 *3*	5.34 *2*	av Eβ= 2046 *15*
(5177 *12*)	5641.2	16.4 *7*	5.26 *2*	av Eβ= 2391 *15*
5.50×10^3 *15*	5523.3	53.9 *6*	4.79 *1*	av Eβ= 2449 *15*
(7461 *12*)	3357.2	3.1[†] *6*	6.7 *1*	av Eβ= 3517 *15* Iβ^-: From $\beta\gamma$ coincidence (1974Da02), 7.0% *21* from intensity balance.
(9543 *12*)	1274.577	<1.7[†]	>7.5	Iβ^-: From $\beta\gamma$ coincidence (1974Da02), 5.5% *21* from intensity balance.

[†] Value adopted from 1974Da02, so ΣI$\beta\neq$100.
[‡] Absolute intensity per 100 decays.

^{22}F β^- decay 1974Da02,1973Gu05 (continued)

$\gamma(^{22}Ne)$

E_γ[†]	I_γ[†#]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1274.537 *7*	100	1274.577	2^+	0.0	0^+	E_γ: From Adopted Gammas. Other value: 1274.6 *3* (1974Da02). I_γ: Relative intensity 99 *10* has been reported with respect to 100 of 72γ in ^{22}F from ^{22}O β^- decay (2005We06).
(1431.1)	1.25 *7*	7341.1	$(4)^+$	5910.1	3^-	I_γ: Intensity from γ-ray branching in Adopted Gammas by evaluator.
(1453.1)	≥0.04[‡]	5910.1	3^-	4456.2	2^+	
1900.0 *6*	8.7 *4*	7423.4	(5^+)	5523.3	$(4)^+$	I_γ: Other value: 15 *2* (1973Gu05).
2082.6 *5*	81.9 *20*	3357.2	4^+	1274.577	2^+	I_γ: Other values: 73 *3* (1973Gu05). Relative intensity 78 *8* has been reported with respect to 100 of 72γ in ^{22}F from ^{22}O β^- decay (2005We06).
2166.1 *5*	61.6 *4*	5523.3	$(4)^+$	3357.2	4^+	I_γ: Other value: 62 *4* (1973Gu05). Relative intensity 63 *8* has been reported with respect to 100 of 72γ in ^{22}F from ^{22}O β^- decay (2005We06).
2283.9 *7*	5.1 *3*	5641.2	3^+	3357.2	4^+	I_γ: Other value: 6 *2* (1973Gu05).
(2552.5)	≥0.02[‡]	5910.1	3^-	3357.2	4^+	
2987.7 *9*	7.0 *3*	6345.1	4^+	3357.2	4^+	I_γ: Other value: 7 *2* (1973Gu05).
(3179.4)	≥0.04	4456.2	2^+	1274.577	2^+	
3983.5 *10*	1.2 *2*	7341.1	$(4)^+$	3357.2	4^+	
4247.9 *10*	1.0 *2*	5523.3	$(4)^+$	1274.577	2^+	
4366.1 *10*	11.3 *6*	5641.2	3^+	1274.577	2^+	I_γ: Other value: 12 *2* (1973Gu05).
(4456)	≥0.0012	4456.2	2^+	0.0	0^+	
(4634.8)	≥0.3[‡]	5910.1	3^-	1274.577	2^+	

[†] From 1974Da02, except as noted.
[‡] Intensity limit assuming no net feeding to the 5910.1 level.
[#] Absolute intensity per 100 decays.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays