^{34}Si β^- decay (2.77 s) 1977Na05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ninel Nica, Balraj Singh	NDS 113, 1563 (2012)	28-May-2012

Parent: ^{34}Si: E=0; $J^\pi=0^+$; $T_{1/2}$=2.77 s *20*; Q(β^-)=4592 *14*; %β^- decay=100.0

^{34}Si-Q(β^-): From 2011AuZZ; other: 4601 *5* (2003Au03).

^{34}Si-$T_{1/2}$: From γ timing (1977Na05).

1977Na05: measured Eγ, Iγ, $\beta\gamma$ coin, half-life.

Energy balance: total decay energy of 3166 keV *1069* deduced (using RADLIST code) from proposed decay scheme is in disagreement with the expected value of 4592 keV *14*, indicating that decay scheme is incomplete.

^{34}P Levels

E(level)	J^π
0	1^+
429.07 *13*	2^+
1607.61 *21*	1^+

β^- radiations

E(decay)	E(level)	Iβ^-[†][‡]	Log *ft*	Comments
(2984 *14*)	1607.61	≤100	≥3.3	av Eβ=1298.3 *68*
(4163[#] *14*)	429.07	<4	>5.3	av Eβ=1869.4 *69*
(4592[#] *14*)	0			Iβ^-: shell-model prediction=52% from separate calculations: one by Millner (ORNL) and the other by Chung and Wildenthal (both quoted as private communications in 1977Na05); another shell-model calculation based on a limited space by 1973La03 predicts no feeding. Calculations of Chung and Wildenthal also predict half-life of 2.62 s in agreement with measured value.

[†] Only limits given with assumed no β feeding to ^{34}P g.s. From shell-model considerations β feeding to g.s. can vary from zero to 52%.

[‡] Absolute intensity per 100 decays.

[#] Existence of this branch is questionable.

$\gamma(^{34}P)$

Eγ	Iγ	E$_i$(level)	J_i^π	E$_f$	J_f^π
429.07 *13*	60 *2*	429.07	2^+	0	1^+
1178.52 *16*	64 *3*	1607.61	1^+	429.07	2^+
1607.6 *5*	36 *5*	1607.61	1^+	0	1^+

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Decay Scheme

Intensities: Relative I_γ