Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 149, 1 (2018)	1-Jan-2018

Q(β^-)=1.039×10^4 *12*; S(n)=6.22×10^3 *13*; S(p)=1.589×10^4 *15*; Q(α)=−1.498×10^4 *11* 2017Wa10
Q(β^-n)=6020 *110*, S(2n)=9920 *120*, S(2p)=37160 *210* (2017Wa10).
First identification of ^{39}P nuclide by 1977Bu11 via U(p,X) reaction.
Mass measurement: 2000Sa21, 2001Sa72, 1991Zh24.
1988Mu08: ^{39}P produced In fragmentation of ^{86}Kr beam In ^{181}Ta(^{86}Kr,X) At 45 MeV/nucleon. Measured $T_{1/2}$ and %β^-n.
1998WiZV: ^{39}P produced by fragmentation of ^{48}Ca beam In ^{9}Be(^{48}Ca,X) At 70 MeV/nucleon. Measured $T_{1/2}$.
1999Ai02: ^{39}P beam produced by fragmentation of ^{55}Mn beam At 50, 90 MeV/nucleon with a ^{9}Be target. Measured energy-integrated cross sections; deduced strong absorption radii.
2004Gr20 (also 2003Gr22): ^{39}P produced In fragmentation of ^{48}Ca beam In ^{9}Be(^{48}Ca,X) E=60 MeV/nucleon; GANIL. Measured β, γ, $T_{1/2}$ using Si and Ge detectors.
2000Sa21 (also 2001Sa72): measured mass; reaction: ^{181}Ta(^{48}Ca,X) at E=60 MeV/nucleon.
1991Zh24: measured mass; reaction: Th(p,X) E=800 MeV.
Nuclear structure calculations: 2014Wa34, 2011Ka03, 2009Be10, 2009Co21, 2009No01.

^{39}P Levels

Cross Reference (XREF) Flags

- A ^{40}Si β^-n decay:27.6 ms
- B ^{9}Be(^{48}Ca,Xγ)
- C Coulomb excitation

E(level)†	J$^\pi$‡	$T_{1/2}$	XREF	Comments
0	(1/2$^+$)	0.28 s *4*	ABC	%β^-=100; %β^-n=26 *8* J$^\pi$: from shell-model prediction (1997Mo25) and systematics of neighboring nuclei (2017Au03). $T_{1/2}$: weighted average of 0.25 s *8* (2004Gr20), 0.32 s *3* (1998WiZV), and 0.19 s *5* (quoted by 2017Au03 from Reeder et al., P-Arles conference, p587 (1995) and priv. comm. from authors of this conference report). Other: 0.16 s *+30−10* (1988Mu08). %β^-n: from 2015Bi05 evaluation (adopts value from Reeder et al., P-Arles conference, p587 (1995) and priv. comm. from authors of this conference report). Other: 41 *+32−16* (1988Mu08). Calculated %β^-n=6.4 (2003Mo09).
355 *1*	(3/2$^+$)		AB	
973 *1*	(5/2$^+$)	≈12.6 ps	ABC	B(E2)↑=0.0097 *30* $T_{1/2}$: from B(E2) and adopted branching ratios. B(E2) from Coulomb excitation.
2167? *11*			B	

† From Eγ.
‡ From (^{48}Ca,Xγ), based on $\gamma(\theta)$ and assumption of 1/2$^+$ for g.s.

Adopted Levels, Gammas (continued)

$\gamma(^{39}P)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	Comments
355	$(3/2^+)$	355[‡] *1*	100	0	$(1/2^+)$		E_γ: other: 355 *6* from (^{48}Ca,Xγ). Mult.: $\Delta J=1$ transition from $\gamma(\theta)$.
973	$(5/2^+)$	619 *7*	67	355	$(3/2^+)$		
		973 *1*	100	0	$(1/2^+)$	[E2]	B(E2)(W.u.)≈3.9 E_γ: other: 963 *6* from (^{48}Ca,Xγ), 976 *17* from Coulomb excitation. Mult.: $\Delta J=0$ or 2 transition from $\gamma(\theta)$ in (^{48}Ca,Xγ).
2167?		1201[#] *9*	100	973	$(5/2^+)$		

[†] From (^{48}Ca,Xγ), unless otherwise noted.
[‡] From ^{40}Si β^-n decay.
[#] Placement of transition in the level scheme is uncertain.

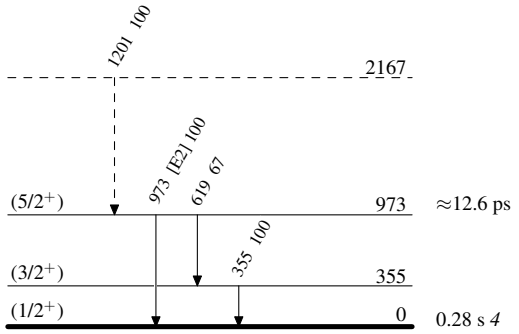
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{39}_{15}P_{24}$