

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia and A. M. Hurst		NDS 134, 1 (2016)	1-Feb-2016

$Q(\beta^-) = -16110$ SY; $S(n) = 16840$ SY; $S(p) = 140$ SY; $Q(\alpha) = -9650$ SY [2012Wa38](#)

Estimated uncertainties ([2012Wa38](#)): 630 for $Q(\beta^-)$, 450 for $S(n)$ and $Q(\alpha)$, 200 for $S(p)$.

$S(2n) = 38490$ 540, $S(2p) = 3560$ 200, $Q(\epsilon p) = 12600$ 200 (syst, [2012Wa38](#)).

[2004Th09](#): ^{26}P isotope produced in fragmentation of $^{36}\text{Ar}^{18+}$ ions at $E = 95$ MeV/nucleon on a 357.1-mg/cm^2 ^{12}C production target at the GANIL facility. Fragment separation with LISE3 spectrometer; ions implanted in a stacked silicon detector and identified through their TOF. Measured E_γ , $E(p)$, J^π , $I(p)$, I_γ , $\gamma\gamma$, $\gamma\beta$ coin, $p\beta$ coin, $p\gamma\beta$ coin, half-life using one segmented Ge clover detector and five stacked Si detectors.

[1983Ca06](#) (also [1984Ca29](#), [1984CaZV](#) thesis): ^{26}P produced and identified in $^{28}\text{Si}(^3\text{He}, p4n)$ reaction at $E = 110\text{-}130$ MeV with intensities $3\text{-}7\ \mu\text{A}$ from the 88-Inch Cyclotron of the Lawrence Berkeley National Laboratory. Beta-delayed protons measured using a 3-element $\Delta E\text{-}\Delta E\text{-}E$ silicon telescope. Measured beta-delayed two-proton pp -coin, $E(p)$, half-life, $\% \epsilon p$, $\% \epsilon 2p$.

[1983Ho23](#): ^{26}P produced in $^{28}\text{Si}(^3\text{He}, p4n)$ using $E(^3\text{He}) = 110$ MeV with intensity of $3\text{-}7\ \mu\text{A}$ from the 88-Inch Cyclotron at the Lawrence Berkeley National Laboratory. Measured β delayed protons using three-element $\Delta E\text{-}\Delta E\text{-}E$ silicon telescope. A two-proton group at 4.914 MeV assigned to decay of ^{24}Mg ground state following superallowed beta decay of ^{26}P to analogue $T=2$ state in ^{26}Si . Deduced $2p/1p$ ratio.

[1998Na34](#): $^9\text{Be}(^{26}\text{P}, p^{25}\text{Si})$, $E \approx 65$ MeV/nucleon and projectile momentum spread of 0.5% . ^{26}P produced via fragmentation of a 100 MeV/nucleon primary ^{36}Ar beam on a 470-mg/cm^2 Be production target and selected using the A1200 fragment separator at the National Superconducting Cyclotron Laboratory (NSCL). Two x/y position-sensitive cathode-readout drift chambers recorded momentum and angle information of projectile-residue fragments produced in one-proton removal on a 14-mg/cm^2 Be breakup target at focal plane of S800 superconducting spectrograph. Coincident γ rays with breakup events measured using a 38-detector NaI(Tl) array surrounding the target chamber. Measured E_γ , (residue) γ -coin; reconstructed momentum distributions using ion-optics code COSY, deduced proton-halo structure in ^{26}P .

 ^{26}P LevelsCross Reference (XREF) Flags

A $\text{C}(^{28}\text{Si}, X)$

E(level)	J^π	$T_{1/2}$	XREF	Comments
0.0	$(3^+)^+$	43.7 ms 6	A	$\% \epsilon + \% \beta^+ = 100$; $\% \epsilon p = 36.8$ 20; $\% \epsilon 2p = 2.16$ 24 (2004Th09); $\% \epsilon \alpha = 0$ (2004Th09) $T=2$ J^π : $\log ft = 4.9$ to 2^+ ; ϵ to (3^+) and (4^+) levels in ^{26}Si ; isobaric analogue of $T=2$, 13015, (3^+) state in ^{26}Si . $T_{1/2}$: from 2004Th09 , time correlations of ^{26}P ions and β or $\beta\text{-}2p$ decay events). Other: $20\text{ ms} + 35\text{-}15$ (1984Ca29 , 1983Ca06 , 1983Ho23 , 1984CaZV thesis). Total branch for the proton-unbound levels is measured as 39% 2; and $\% \epsilon 2p$ is measured as 2.16 24 (2004Th09); from which $\% \epsilon p = 36.8$ 20. Other measurement: $\% \epsilon p$ branch to $T=2$ analogue state $\approx 1.9\%$ (1984Ca29 , 1983Ca06 , 1984CaZV thesis); who also estimated $2p/1p$ ratio for the decay of IAS as ≈ 1 to within 50% ($2p/1p \approx 1.5$ within a factor of two in 1983Ho23). Corresponding ϵp branch in 2004Th09 is 5.3% 4, and $2p/1p = 0.69$ 9. Delayed $\epsilon \alpha$ decay branch is energetically possible and was searched in experiments by 1984Ca29 and 2004Th09 , but no evidence was found. Theoretical calculation of ϵp and $\epsilon 2p$ probabilities: 1991De26 . $T_{1/2}$: Deduced by fitting $164\gamma(t)$ decay curve using maximum likelihood method.
164.4 I		120 ns 9	A	

Adopted Levels, Gammas (continued)

$\gamma(^{26}\text{P})$

<u>E_i(level)</u>	<u>E_γ</u>	<u>I_γ</u>	<u>E_f</u>	<u>J_f^π</u>
164.4	164.4	100	0.0	(3) ⁺

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Level Scheme

Intensities: Relative photon branching from each level

