## Adopted Levels

| Type | Author | History Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | Jun Chen | NDS 140, 1 (2017) | 30-Sep-2015 |

Q($\beta^-$)=14.76×10$^3$ *11*; S(n)=3.32×10$^3$ *14*; S(p)=17.68×10$^3$ *14*; Q($\alpha$)=−16.45×10$^3$ *15* 2012Wa38
S(2n)=9550 *140*, S(2p)=38860 *270*, Q($\beta^-$n)=7020 *120* (2012Wa38).
First identification of $^{40}$P nuclide by 1979Au03.
Mass measurement: 2007Ju03, 2001Sa21 (also 2001Sa72), 1991Zh24.
2003Gr22: $^{40}$P produced by fragmentation of $^{48}$Ca beam at 60 MeV/ nucleon with a $^{9}$Be target followed by separation of fragments by LISE3 spectrometer; measured $\beta$, $\gamma$, $T_{1/2}$. See also 2004Gr28, 2004Gr20.
2001Wi21: $^{40}$P was produced in the fragmentation of $^{48}$Ca beam at E=70 MeV/nucleon with a Be target followed by analysis using using A1200 fragment separator.
Others:
1989Le16: $^{40}$P formed and identified in $^{181}$Ta($^{48}$Ca,X). Measured $T_{1/2}$ and %$\beta^-$n.
1979We10: $^{40}$P produced in $^{9}$Be($^{48}$Ca,X) at 212 MeV/nucleon.
1979Au03: $^{40}$P produced in $^{238}$U(Ar,X) at 263 MeV. Measured fractional-charge parameter versus A. Deduced evidence for $^{37}$Si, $^{40}$P, $^{41,42}$S.
1999YoZW, in a preliminary result, suggested that $^{41}$Si decays dominantly (>50%) by $\beta^-$n decay to $^{40}$P, but final details of this study are not yet available.

### $^{40}$P Levels

| E(level) | J$^\pi$ | $T_{1/2}$ | Comments |
|---|---|---|---|
| 0 | (2$^-$,3$^-$) | 150 ms *8* | %$\beta^-$=100; %$\beta^-$n=15.8 *21* (2001Wi21); %$\beta^-$2n=?<br>Theoretical $T_{1/2}$=210 ms, %$\beta^-$n=10.8, %$\beta^-$2n=0.26 (2003Mo09).<br>J$^\pi$: probable feeding (log *ft*=6.1) of 2$^+$ state. Possible coupling of $\pi$1/2[211] and $\nu$5/2[312] (see discussion in 2001Wi21).<br>$T_{1/2}$: weighted average of 153 ms *8* (2001Wi21) and 125 ms *25* (2003Gr22). Other: 260 ms *+100−60* (1989Le16).<br>%$\beta^-$n from 2001Wi21. Other: 30 *10* (1989Le16). |