

Adopted Levels

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen <sup>#</sup> and Balraj Singh		NDS 135, 1 (2016)	31-May-2016

$Q(\beta^-)=24280$  SY;  $S(n)=1120$  SY;  $S(p)=24360$  CA;  $Q(\alpha)=-22760$  CA [2012Wa38,1997Mo25](#)

Estimated uncertainties (syst,[2012Wa38](#)):  $\Delta Q(\beta^-)=780$ ,  $\Delta S(p)=1034$ ,  $\Delta S(n)=840$ .

$S(p)$  and  $Q(\alpha)$  from [1997Mo25](#);  $Q(\beta^-)$  and  $S(n)$  from [2012Wa38](#). Theoretical  $S(n)=-2610$  ([1997Mo25](#)) differs much from 1120 840 (syst,[2012Wa38](#)).

$S(2n)=3280$  780,  $Q(\beta^-n)=20650$  700 (syst,[2012Wa38](#)). Theoretical  $S(2p)=53610$  ([1997Mo25](#)).

[2007Ba71](#):  $W(^{48}\text{Ca},X\gamma)$   $E=141$  MeV/nucleon beam from the National Superconducting Cyclotron Laboratory (NSCL). The fragments were separated with the A1900 fragment separator. Isotopic identification by multiple  $\Delta E$  signals, magnetic rigidity, total energy and time of flight analysis. Detectors: plastic scintillators, parallel-plate avalanche counters (PPACs) and silicon PIN diodes. In [2007Ba71](#), a total of 23 events were assigned to  $^{42}\text{Al}$ , establishing particle stability of this nuclide.

 $^{42}\text{Al}$  Levels

E(level)	$T_{1/2}$	Comments
0	>170 ns	$\% \beta^- = ?$ ; $\% \beta^- n = ?$ ; $\% \beta^- 2n = ?$ Theoretical $T_{1/2}=1.4$ ms, $\% \beta^- n=30.9$ , $\% \beta^- 2n=33.0$ ( <a href="#">2003Mo09</a> ). Theoretical $T_{1/2}=8.3$ ms, $\% \beta^- n=26.4$ , $\% \beta^- 2n=47.1$ ( <a href="#">2016Ma12</a> ). E(level): the observed fragments are assumed to be in the g.s. of $^{42}\text{Al}$ . $T_{1/2}$ : limiting value estimated from time-of-flight of $\approx 170$ ns (figure 3 in <a href="#">2007Ba71</a> ) at NSCL facility. Actual half-life is expected to be much longer as suggested by 1 ms from systematics ( <a href="#">2012Au07</a> ) and 1.8 ms from calculations by <a href="#">1997Mo25</a> .