

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh		NDS 157, 1 (2019)	15-Apr-2019

$Q(\beta^-)=12400$  SY;  $S(n)=4210$  SY;  $S(p)=21560$  SY;  $Q(\alpha)=16100$  SY 2017Wa10

Estimated uncertainties (2017Wa10):  $\Delta Q(\beta^-)=500$ ,  $\Delta S(n)=640$ ,  $\Delta S(p)=780$ ,  $\Delta Q(\alpha)=710$ .

$Q(\beta^-n)=8210$  500,  $S(2n)=7190$  590,  $S(2p)=40670$  780 (syst, 2017Wa10).

1988GuZV:  $^{181}\text{Ta}(^{48}\text{Ca},X)$ ,  $E=2.64$  GeV. Observed projectile-like fragments ( $29 \leq A \leq 51$ ) at  $0^\circ$ ; magnetic spectrograph,  $\Delta E$ -E telescope (Si,Si(Li)), time-of-flight. Atomic number Z identified by telescope, and mass number A by total energy, time-of-flight and magnetic rigidity.

2012We08, 2003We09: U(p,X)  $E=1.4$  GeV. Ionized neutron-rich noble-gas isotopes were extracted and mass separated at ISOLDE-CERN facility using FEBIAD plasma ion source. Measured  $\beta^-$  and neutron spectra,  $n\beta^-$  coincidences. Deduced  $T_{1/2}$ ,  $\% \beta^-n$ . In 2012We08,  $\beta^-$  decay of  $^{50}\text{Ar}$  to  $^{50}\text{K}$  was investigated.

Theory references: consult the NSR database (www.nndc.bnl.gov/nsr/) for 14 references for structure calculations.

Additional information 1.

 $^{50}\text{Ar}$  LevelsCross Reference (XREF) Flags

A  $^9\text{Be}(\text{HI},^{50}\text{Ar}_\gamma)$

E(level) <sup>†</sup>	$J^\pi$ <sup>‡</sup>	$T_{1/2}$	XREF	Comments
0.0	$0^+$	106 ms 6	A	$\% \beta^- = 100$ ; $\% \beta^-n = 37$ 7 (2012We08); $\% \beta^-2n = ?$ $T_{1/2}$ : from decay curves for six $\gamma$ rays from the decay of $^{50}\text{Ar}$ (2012We08). Earlier value was 86 ms 30 from the $\beta^-$ - and delayed-neutron time-spectra (2003We09). Theoretical $T_{1/2} = 41.8$ ms, $\% \beta^-n = 28$ (2019Mo01). Theoretical $T_{1/2} = 55.2$ ms, $\% \beta^-n = 4.0$ , $\% \beta^-2n = 0.5$ (2016Ma12). $\% \beta^-n$ : earlier value from the same group was 35 10 (2003We09).
1178 18	$(2^+)$		A	
2760? 42	$(4^+)$		A	$J^\pi$ : from shell-model predictions, but a $2^+$ state is also predicted near this energy (2015St10), thus $2^+$ is also possible.

<sup>†</sup> From  $E_\gamma$  values.

<sup>‡</sup> From systematics of even-even nuclei and shell-model predictions in (2015St10).

 $\gamma(^{50}\text{Ar})$ 

$E_i(\text{level})$	$J_i^\pi$	$E_\gamma$	$E_f$	$J_f^\pi$
1178	$(2^+)$	1178 18	0.0	$0^+$
2760?	$(4^+)$	1582 <sup>†</sup> 38	1178	$(2^+)$

<sup>†</sup> Placement of transition in the level scheme is uncertain.

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Legend

Level Scheme-----►  $\gamma$  Decay (Uncertain)