

Adopted Levels

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 152, 1 (2018)	30-Sep-2017

$Q(\beta^-)=20.38\times 10^3$ 39; $S(n)=1.67\times 10^3$ 42; $S(p)=19.3\times 10^3$ 8; $Q(\alpha)=-17.9\times 10^3$ 7 [2017Wa10](#)

$S(2n)=5880$ 400, $S(2p)=44670$ 770 (syst), $Q(\beta^-n)=14710$ 390 ([2017Wa10](#)).

^{38}Al first produced and identified by [1989Gu03](#) in $^{181}\text{Ta}(^{48}\text{Ca},X)$ $E=55$ MeV/nucleon, time-of-flight method.

Other measurements:

[1999YoZW](#): $^{181}\text{Ta}(^{48}\text{Ca},X)$ $E=70$ MeV/nucleon. Measured $T_{1/2}$, $\% \beta^- n$ (tentative results).

Mass measurements: [2007Ju03](#), [2001Sa72](#) (also [2000Sa21](#)).

[2006Kh08](#): Cross section measurement in $\text{Si}(^{38}\text{Al},X)$ $E=30-65$ MeV/nucleon, deduced reduced strong absorption radius= 1.21 fm²

11. The ^{38}Al beam obtained from fragmentation of ^{48}Ca beam with ^{181}Ta target at GANIL facility.

Structure calculations: [2016Sa46](#), [2013Sh05](#), [2009Co21](#).

Theoretical calculations of $T_{1/2}$ and P_n : [2016Ma12](#), [2013Li39](#), [2003Mo09](#).

 ^{38}Al LevelsCross Reference (XREF) Flags

A $^9\text{Be}(^{48}\text{Ca},^{38}\text{Al}\gamma)$

E(level) [†]	J^π [†]	$T_{1/2}$ [‡]	XREF	Comments
0	(0 ⁻)	9.0 ms 7	A	$\% \beta^- = ?$; $\% \beta^- n = ?$; $\% \beta^- 2n = ?$ $T_{1/2}$: Others: 7.6 ms 6 from timing of $\beta(^{38}\text{Al}$ implants) coin (2004Gr20), assuming that the 7.6 ms activity corresponds to the g.s.; ≈ 8 ms (1999YoZW , tentative result). Calculated $T_{1/2}$: 4.7 ms (2003Mo09), 14.6 ms (2013Li39), 7.7 ms (2009Co21), 27.6 ms (2016Ma12). $\% \beta^- n = 84$ 19 (1999YoZW , tentative result). β^- decay mode is expected to be 100%. Calculated $\% \beta^- n = 6.7$ and $\% \beta^- 2n = 13.2$ (2003Mo09), $\% \beta^- n = 76$ (2013Li39), $\% \beta^- n = 73.5$ and $\% \beta^- 2n = 6.7$ (2016Ma12). Additional information 1.
0+x?	(5 ⁻)	9.0 ms 7	A	$\% \beta^- = ?$; $\% \beta^- n = ?$; $\% \beta^- 2n = ?$ β^- decay mode is expected to be 100%. Calculated $\% \beta^- n = 82$, $T_{1/2} = 15.9$ ms (2013Li39).

[†] From shell-model prediction ([2015St14](#)) in $(^{48}\text{Ca},^{38}\text{Al}\gamma)$.

[‡] From β -delayed $418\gamma(t)$, $1074\gamma(t)$, $1159\gamma(t)$ and $1470\gamma(t)$ in ^{38}Al β^- decay ([2015St14](#)). These γ -ray transitions could be from β -decay of ^{38}Al (0⁻) ground state or (5⁻) isomer or both and thus the evaluator assigned the measured value of $T_{1/2}$ to both states. Other: 7.6 ms 6 for g.s. in [2004Gr20](#).