^{36}Mg β^-n decay (6.9 ms)   2023Lu07

Parent: ^{36}Mg: E=0; J^π=0$^+$; $T_{1/2}$=6.9 ms +7−8; Q(β^-n)=1.253×10^4 69; %β^-n decay=?

^{36}Mg-J^π: From the Adopted Levels of ^{36}Mg (2012Ni01).

^{36}Mg-$T_{1/2}$: weighted average of 3.9 ms 13 (2004Gr20,2003Gr22, implant-β correlation), 7.6 ms +5−8 (2013StZY, implant-β
    correlation, original $T_{1/2}$=7.6 ms 1 (stat) +5−8 (syst)), 7.2 ms 12 (2022Cr03, implant-β correlation, original $T_{1/2}$=7.2 ms 1 (stat)
    12 (syst)), and 6.8 ms 10 (2023Lu07, implant-$\beta\gamma$ correlation). Other: ≈5 ms (1999YoZW, implant-β correlation, preliminary).

^{36}Mg-Q(β^-n): From 2021Wa16.

2023Lu07: Exp 1: ^{36}Mg and ^{36}Al were produced via the projectile fragmentation of a 140-MeV/nucleon, 80-pnA ^{48}Ca primary
    beam from the NSCL cyclotrons impinging on a 642-mg/cm^2-thick ^{9}Be target. The secondary cocktail beam centered around ^{33}Na
    was selected by the A1900 separator and implanted into a CeBr$_3$ scintillator sandwiched between two plastic scintillator veto
    detectors. Surrounding the implantation array were the SeGA array of 16 segmented Ge detectors and 15 LaBr$_3$ detectors. Exp 2:
    ^{36}Mg and ^{36}Al were produced via the projectile fragmentation of a 172.3-MeV/nucleon, 120-pnA ^{48}Ca primary beam from the
    FRIB linac impinging on an 8.89-mm-thick ^{9}Be target. The secondary cocktail beam centered around ^{42}Si was selected by the
    ARIS separator and implanted into a 5-mm-thick YSO segmented scintillator sandwiched between two plastic scintillator veto
    detectors. Surrounding the implantation array were 11 HPGe clover detectors and 15 fast-timing LaBr$_3$ detectors, and the VANDLE
    array of 88 neutron detectors.

Both NSCL and FRIB experiments measured Eγ, Iγ, $\beta\gamma$-coin, $\gamma\gamma$-coin, implant-$\beta\gamma$ correlation and deduced $T_{1/2}$ of ^{36}Mg g.s.,
    ^{36}Al g.s. and a ^{36}Al isomer. Comparisons with FSU shell-model calculations.

^{35}Al Levels

E(level)	J^π	Comments
0	(5/2)$^+$	J^π: From the Adopted Levels.
803		

γ(^{35}Al)

E$_\gamma$	E$_i$(level)	E$_f$	J^π_f
803	803	0	(5/2)$^+$

^{36}Mg β^-n decay (6.9 ms)   2023Lu07

Decay Scheme

0^+ _____ 0   6.9 ms +7−8

$\%\beta^-n=?$ $Q=1.253\times10^4$ *69*

$^{36}_{12}Mg_{24}$

803 _____ 803

$(5/2)^+$ _____ 0

$^{35}_{13}Al_{22}$