Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. K. Tuli, E. Browne	NDS 157,260 (2019)	1-Mar-2019

Q(β^-)=10617 *4*; S(n)=4186 *6*; S(p)=18183 *syst*; Q(α)=−10849 *syst* 2017Wa10
Estimated uncertainties: ΔS(p)=500 (2017Wa10), ΔQ(α)=600 (2017Wa10).
Q(β^-n)=7243 *5* (2017Wa10).
2017Sh42 (^{1}H(^{83}Ga,2pγ)), 2016Al10 (^{9}Be(HI,xnγ)), 2014Xu07 have been compiled in xundl, by β. Singh (McMaster).
2014Xu07: ^{82}Zn produced in ^{9}Be(^{238}U,F) reaction with a $^{238}U^{86+}$ beam of 345 MeV/nucleon produced by the RIKEN accelerator complex. Identification of ^{82}Zn nuclei was made on the basis of magnetic rigidity, time-of-flight and energy loss of the fragments (ΔE-Bρ-tof method) using BigRIPS fragment separator and ZeroDegree Spectrometer (ZDS) at RIBF-RIKEN facility. Based on A/Q spectrum and Z versus A/Q plot. Measured heavy fragment, β and γ spectra using wide-range active silicon strip stopper array (WAS3ABi) for beta and ion detection, and EUROBALL-RIKEN Cluster array for γ detection. Decay curves were obtained from time differences between implantation and correlated β decays.
Theoretical calculations of S(n) and S(2n): 2000Is13.
2005Bo19: Calculated β-decay half-life and delayed neutron decay probability. Other calculations: 1997Mo25, 2002Pf04, 2007Ma09, 2005Ni02.

^{82}Zn Levels

Cross Reference (XREF) Flags

A ^{9}Be(HI,xnγ)
B ^{1}H(^{83}Ga,2pγ)

E(level)	J^π	$T_{1/2}$	XREF	Comments
0	0^+	166 ms *11*	AB	%β^-=100; %β^-n=69 *7* (2016Al10) %β^-n: value obtained by 2016Al10 from $\beta\gamma$ study of ^{82}Zn to ^{81}Ga by β^-n decay and ^{81}Ga β^- decay to ^{81}Ge, using literature value of absolute intensity for an 828-keV γ ray from β^- decay of ^{81}Ga. See more details in 2016Al10. Theoretical values of %β^-n: ≈90 (2005Bo19). 41 (1997Mo25), 17 from KHF systematics, 35 and 100 from two QRPA models (2002Pf04). Theoretical %β^-2n=0 (1997Mo25). Production cross section=13 nb (1997Be70) in ^{238}U on Be, E=750 MeV/a. $T_{1/2}$: average of 155 ms *26* (2016Al10), from gate on 351-keV γ ray from β^-n decay of ^{82}Zn to ^{81}Ga, by fitting the growth and decay curve with Bateman equations and 177.9 ms *25* (2014Xu07) from $\beta\gamma$-coin decay curve. 2016Al10 give $T_{1/2}$ uncertainties as 17 ms statistical and 20 ms systematics which have been added in quadrature. Other: 228 ms *10* (2012Ma37), Theoretical calculations of β decay half-life: 0.6 s (2005Bo19), 22.2 ms (1997Mo25), 52 ms from KHF systematics, 211 ms or 734 ms from two QRPA models (2002Pf04).
618† *15*	(2^+)		AB	
987? *23*	(0^+)		B	E(level): tentative level assignment, based on Ni78-II and A3DA-m shell-model calculations (2017Sh42). Configuration=$(\pi p_{3/2})^2(0^+)$ (2017Sh42).
1310† *19*	(4^+)		B	

† Configuration=$\pi f^2_{5/2}$ (2017Sh42).

Adopted Levels, Gammas (continued)

$\gamma(^{82}Zn)$

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π
618	(2^+)	618 *15*	100	0	0^+
987?	(0^+)	369† *17*	100	618	(2^+)
1310	(4^+)	692 *12*	100	618	(2^+)

† Placement of transition in the level scheme is uncertain.

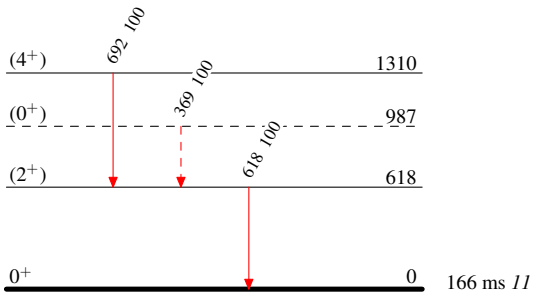
Adopted Levels, Gammas

Level Scheme

Intensities: Type not specified

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



$^{82}_{30}Zn_{52}$