

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	31-Aug-2014

$Q(\beta^-)=7575$ 4; $S(n)=6288$ 3; $S(p)=17040$ SY; $Q(\alpha)=-12460$ SY [2012Wa38](#)

Estimated uncertainties ([2012Wa38](#)): 400 for S(p), 500 for Q(α).

$S(2n)=10308$ 3, $S(2p)=32100$ 800 (syst), $Q(\beta^-n)=2828$ 3 ([2012Wa38](#)).

[1981Ru07](#), [1986Ek01](#), [1986Gi07](#), [1987Wi13](#): ^{80}Zn produced and identified in $^{235}\text{U}(n,f)$ reaction and subsequent mass separation ([1987Wi13](#), [1986Gi07](#)) or chemical separation ([1986Ek01](#), [1981Ru07](#)). Thermo-chromatographic technique was also employed for isotopic identification ([1981Ru07](#)).

[2010Ho12](#): $^9\text{Be}(^{86}\text{Kr}, X)$ $E=140$ MeV/nucleon; fully-ionized ^{86}Kr beam, A1900 fragment separator at NSCL facility using $B\rho$ - ΔE - $B\rho$ method. After separation, the mixed beam was implanted into the NSCL β -counting system (BCS) consisting of stacks of Si PIN detectors, a double-sided Si strip detector (DSSD) for implantation of ions, and six single-sided Si strip detectors (SSSD) followed by two Si PIN diodes. The identification of each implanted event was made from energy loss, time-of-flight information and magnetic rigidity. The implantation detector measured time and position of ion implantations and β decays. Neutrons were detected with NERO detector. Measured β - and βn -correlated events with ion implants; half-life of ^{80}Zn and delayed-neutron emission probability.

[2014Xu07](#): ^{80}Zn nuclide produced in $^9\text{Be}(^{238}\text{U}, f)$ reaction with a $^{238}\text{U}^{86+}$ beam of 345 MeV/nucleon produced by the RIKEN accelerator complex. Identification of ^{80}Zn nuclei was made on the basis of magnetic rigidity, time-of-flight and energy loss of the fragments (ΔE - $B\rho$ -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.

[2013Le20](#): $^{238}\text{U}(^{70}\text{Zn}, X)$, $E=460$ MeV; measured E_γ , I_γ , $\gamma\gamma$ -coin using PRISMA magnetic spectrometer to select fragments, and AGATA array for γ detection; deduced excitation energies for Zn isotopes. Detailed results from this and a related [2007De37](#) work are not yet available.

[2008Ba54](#): measured mass using the ISOLTRAP mass spectrometer.

[2008Ha23](#): measured mass using the JYFLTRAP mass spectrometer.

[2002AoZZ](#): measured production cross section in $^9\text{Be}(^{86}\text{Kr}, X)$ $E=66$ MeV/nucleon.

Nuclear structure (theory) calculations: [2014Ka03](#), [2013Ri08](#), [2012Si08](#), [2012Sr02](#), [2011Ji08](#), [2004Li64](#).

[Additional information 1](#).

 ^{80}Zn LevelsCross Reference (XREF) Flags**A** Coulomb excitation

E(level)	J^π	$T_{1/2}$	XREF	Comments
0	0^+	561.9 ms 30	A	$\% \beta^- = 100$; $\% \beta^- n = 1.0$ 5 (1991Kr15) $\% \beta^- n$: other: <1.8 (2010Ho12). $T_{1/2}$: weighted average of 562.2 ms 30 (2014Xu07), 578 ms 21 (2010Ho12), 0.54 s 3 (1991Kr15), 0.55 s 2 (1986Gi07) and 0.53 s 5 (1986Ek01). Half-life in 2014Xu07 from $\beta\gamma$ -coin decay curve. Half-life in 2010Ho12 from measurement of time sequence of decay type events correlated with the implanted nuclei (of ^{80}Zn) in Si detectors using method of maximum likelihood analysis with input parameters of β -detection efficiency, background, half-lives of daughter and granddaughter nuclei and experimental or theoretical values of $\% \beta^- n$ of all nuclei involved. In 2010Ho12 , a total of 5043 implants were detected, and 45 correlated βn coincidences were observed.
1492 1	2^+	0.52 ps 11	A	$B(E2)^\dagger = 0.072$ 15 (2009Va01) Additional information 2 . $T_{1/2}$: from systematics of even-even nuclei, level is Coulomb excited from 0^+ . $T_{1/2}$: from 2009Va01 , deduced from $B(E2)(\downarrow)$.

Adopted Levels, Gammas (continued)

$\gamma(^{80}\text{Zn})$									
<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ</u>	<u>I_γ</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.</u>	<u>Comments</u>		
1492	2 ⁺	1492	1	0	0 ⁺	[E2]	B(E2)(W.u.)=7.2 16 B(E2)(↓)=0.0144 29 (2009Va01).		

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Level Scheme

Intensities: Relative photon branching from each level

