

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, E. A. Mccutchan		NDS 165, 1 (2020)	1-Mar-2020

$Q(\beta^-)=8.20\times 10^3$ 33; $S(n)=4.88\times 10^3$ 33; $S(p)=16290$ SY; $Q(\alpha)=-8.83\times 10^3$ 55 [2017Wa10](#)
 $\Delta S(p)=330$ ([2017Wa10](#)).

$S(2n)=8060$ 330; $S(2p)=30240$ syst 520; $Q(\beta^-n)=4400$ 330 ([2017Wa10](#)).

[1994Be24](#): $^{208}\text{Pb}(^{238}\text{U},X)$, $E=750$ MeV/nucleon. Fragment recoil separator (FRS) at GSI facility. Measured $\sigma=240$ μb with 409 counts assigned to ^{90}Se .

[1998Do08](#): $^{208}\text{Pb}(^{238}\text{U},X)$, $E=750$ MeV/nucleon. Fragment recoil separator (FRS) at GSI facility. Fragments separated by magnetic rigidity, mass and total kinetic energy distribution. Measured (fragment)(β and/or γ) coincidence. Tentative evidence for the formation of ^{90}Se .

[2012Qu01](#): $^9\text{Be}(^{136}\text{Xe},X)$, $E=120$ MeV/nucleon. A1900 fragment separator at the NSCL Coupled Cyclotron Facility. Fragments were separated using the $B\rho$ - ΔE - $B\rho$ technique. Beta decays measured in the NSCL Beta Counting System (BCS) consisting of four silicon PIN detectors, a double sided silicon strip detector (DSSD), and a single sided silicon strip detector (SSSD). Measured energy loss, total kinetic energy (TKE), time of flight, and $\beta(t)$.

 ^{90}Se LevelsCross Reference (XREF) Flags

A $^1\text{H}(^{91}\text{Br},2p\gamma)$

E(level) [†]	J^π	$T_{1/2}$	XREF	Comments
0	0^+	195 ms +95-65	A	$\% \beta^- = 100$; $\% \beta^- n = ?$ $T_{1/2}$: from β^- -decays correlated with implants (2012Qu01). Value given in 2012Qu01 is 195 ms 7 (syst) +95-65 (stat) using maximum likelihood method for analysis of $T_{1/2}$ data from 70 implants and 30 correlated decay sequences. Calculated $\% \beta^- n = 1$ (2019Mo01), 2.6 (2012Mc04).
547 8	(2^+)		A	J^π : 548 γ to 0^+ and systematics of 2^+ states in even-even Se nuclei.
964 9	(2^+)		A	J^π : 419 γ to 2^+ , 960 γ to 0^+ , systematics of even-even Se nuclei.
1238 11	(4^+)		A	J^π : 691 γ to 2^+ , systematics of even-even Se nuclei.
1627 9			A	J^π : (3,4 $^+$) is proposed in 2017Ch18 .

[†] From a least-squares fit to E_γ , by evaluators.

 $\gamma(^{90}\text{Se})$

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π
547	(2^+)	548 9	100	0	0^+
964	(2^+)	419 8	30	547	(2^+)
		960 15	100	0	0^+
1238	(4^+)	691 7	100	547	(2^+)
1627		663 [†]		964	(2^+)
		1075 24		547	(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)
- Coincidence

