

$^{238}\text{U}(\text{}^{82}\text{Se}, \text{}^{86}\text{Se}\gamma)$ **2015Li42**

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Balraj Singh	ENSDF	31-Jan-2016

States in ^{86}Se populated through 4n-transfer reaction.

$E(^{82}\text{Se})=577$ MeV provided by Tandem-XTU and ALPI superconducting LINAC at INFN-Legnaro. Target=2 mg/cm² thick evaporated on 1.2 mg/cm² thick Ta backing facing the beam. Measured $E\gamma$, $I\gamma$, (^{86}Se) γ -coin, level lifetimes by recoil-distance Doppler shift (RDDS) using Cologne Plunger device, in which a ^{93}Nb degrader foil of 4.1 mg/cm² thickness was mounted downstream for slowing down the projectile-like recoils. PRISMA magnetic spectrometer was used for mass separation using $B\rho$ - ΔE -TOF method, and position information of recoils measured by micro-channel plate (MCP) detector and multiwire parallel-plate avalanche counters (MWPPAC). The AGATA demonstrator array of five triple clusters of 36-fold segmented HPGe detectors was used for the detection of Doppler-corrected γ -rays. Level lifetimes were extracted from (^{86}Se) γ -coin spectra generated with a condition on total kinetic energy loss (TKEL) of recoils, the latter generated from event-by-event analysis using relativistic two-body kinematics. Comparison with large-scale shell model calculations using several different effective interactions.

 ^{86}Se Levels

See [2015Li42](#) for proposed configuration assignments.

E(level) [†]	$J^{\pi\ddagger}$	$T_{1/2}^{\#}$	Comments
0.0	0 ⁺		
704.30 5	2 ⁺	7.5 ps +48-26	
1398.96 7	(2 ⁺)		
1567.71 12	4 ⁺	≤9.2 ps	$T_{1/2}$: effective half-life=6.9 ps +23-15, upper limit is given by 2015Li42 since no information is available about feeding of this state from higher levels.

[†] From $E\gamma$ values.

[‡] From Adopted Levels.

[#] From RDDS, plunger method ([2015Li42](#)), unless otherwise stated.

 $\gamma(^{86}\text{Se})$

E_{γ}^{\dagger}	I_{γ}	$E_i(\text{level})$	J_i^{π}	E_f	J_f^{π}	Mult. [†]	Comments
694.65 5	<10	1398.96	(2 ⁺)	704.30	2 ⁺		
704.30 5	100	704.30	2 ⁺	0.0	0 ⁺	E2	$B(E2)_{\downarrow}=0.044$ +26-17 (2015Li42)
863.4 1	81 9	1567.71	4 ⁺	704.30	2 ⁺	E2	$B(E2)_{\downarrow}\geq 0.0140$ (2015Li42) $B(E2)(\text{W.u.})\geq 6.2$ Evaluator obtains $B(E2)\geq 0.0128$, $B(E2)(\text{W.u.})\geq 5.7$.

[†] From Adopted Gammas.

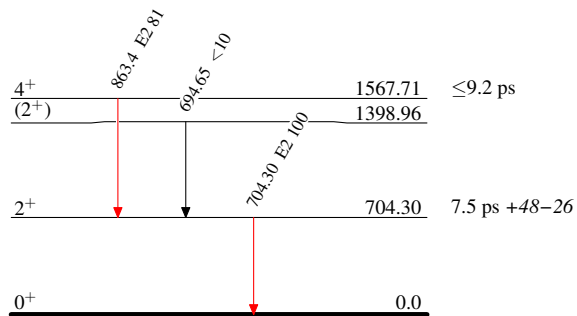
$^{238}\text{U}(^{82}\text{Se}, ^{86}\text{Se}\gamma)$ 2015Li42

Level Scheme

Intensities: Relative I_γ

Legend

- \longrightarrow $I_\gamma < 2\% \times I_\gamma^{\max}$
- \longrightarrow $I_\gamma < 10\% \times I_\gamma^{\max}$
- \longrightarrow $I_\gamma > 10\% \times I_\gamma^{\max}$

 $^{86}_{34}\text{Se}_{52}$