²⁵³Lr α decay (1.61 s) 2022Hu21,2009He20,2008Ga25

		History	
Туре	Author	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 195,718 (2024)	12-Oct-2023

Parent: ²⁵³Lr: E=0.0+x; $J^{\pi}=(1/2^{-})$; $T_{1/2}=1.61 \text{ s } 22$; $Q(\alpha)=8918 \ 20$; $\%\alpha \text{ decay}=92.0 \ 5^{253}\text{Lr-Q}(\alpha)$: From 2021Wa16.

²⁵³Lr-T_{1/2}: From unweighted average of 2.46 s 5 (2022Hu21), 1.2 s +7-4 (2010He11), 1.32 s 14 (2009He20), 1.60 s +24-18 (2008Ga25) and 1.49 s +30-21 (2001He35). T_{1/2} for ²⁵³Lr prior to 2022Hu21 is 0.57 s +7-6 (2013Br09).

 253 Lr-J^{π}: From Adopted Levels of 253 Lr in ENSDF database (2013Br09).

²⁵³Lr-%α decay: From %SF=8.0 5 (2017He08). %α for ²⁵³Lr prior to 2017He08 is \approx 98.7 (2013Br09).

2022Hu21: ²⁵³Lr produced in the ²⁰⁵Tl(⁵⁰Ti,2n) at the ATLAS linear accelerator at Argonne National Laboratory. The ²⁵³Lr was separated in the Argonne Gas-Filled Analyzer (AGFA) and then passed through a parallel grid avalanche counter (PGAC). It was then implanted into doublesided Si strip detector (DSSD). Alphas escaping the DSSD were deposited into an array of single-sided Si strip detectors (SSSD). Measured $E\alpha$, $t_{1/2}$ and α branching ratio.

2010He11: α decay from the ²⁵³Lr which was produced from the α decay of ²⁵⁷Db was measured at the UNILAC accelerator at GSI, Darmstadt. ²⁵⁷Db, the evaporated residue was separated by the velocity filter SHIP and implanted into a 16-strip Si PIPS detector. Six Si detectors were used to measure escaping α -particles from the decay of the ²⁵³Lr.

2009He20: ²⁵³Lr produced in the ²⁰⁹Bi(⁴⁸Ti,4n) reaction and from the α decay of ²⁵⁷Db at the UNILAC accelerator at GSI Darmstadt. Evaporation residues were separated by the velocity filter SHIP and implanted into a 16-strip Si PIPS detector. A box of six Si wafers was used to measure escaping α particles. A Ge clover detector consisting of four crystals was used to measure gammas in coincidence with particles. Measured E α and half-life.

2008Ga25: The ²⁵⁷Db isotope produced in ²⁰⁹Bi(⁵⁰Ti,2n) and ²⁰⁸Pb(⁵¹V,2n) reactions at 4.7-5.1 MeV/nucleon beams of ⁵¹V and ⁵⁰Ti provided by 88-Inch Cyclotron at LBNL. Detected α particles using silicon implantation detectors.

2001He35: α decay from the ²⁵³Lr which was produced from the α decay of ²⁵⁷Db was measured at the UNILAC accelerator at GSI, Darmstadt. ²⁵⁷Db. The evaporated residue was separated by the velocity filter SHIP and implanted into a 16-strip Si PIPS detector. Six Si detectors were used to measure escaping α -particles from the decay of the ²⁵³Lr. The observed α -spectra revealed the existence of an isomeric state.

1986He28,1985He22: ²⁵³Lr was produced from heavy-ion fusion reaction of ⁵⁰Ti and ²⁰⁹Bi. It was separated from the projectile beam by the velocity filter SHIP and identified after implantation into an array of position-sensitive surface-barrier detectors by analyzing the α -decay chains. Measured E α , t_{1/2} and α branching ratio. Other: 1999He11.

²⁴⁹Md Levels

E(level)	$J^{\pi \dagger}$	T _{1/2} †		Comments
0.0 0.0+x	(7/2 ⁻) (1/2 ⁻)	24.8 s <i>10</i> 1.5 s + <i>12</i> -5	Configuration=7/2 ⁻ [514] (2022Hu21).	

[†] From Adopted Levels.

 α radiations

Eα	E(level)	$I\alpha^{\ddagger\#}$	HF [†]	Comments
8715 20	0.0 + x	100	2.2.17	$E\alpha$: From 2022Hu21

[†] The nuclear radius parameter $r_0(^{249}Md)=1.478\ 29$ is deduced from interpolation of radius parameters of the adjacent even-even nuclides in 2020Si16.

^{\ddagger} I(8715 α)=27 *13* (2022Hu21) has been normalized to 100.

[#] For absolute intensity per 100 decays, multiply by 0.920 5.