

²⁵⁸Db ϵ decay (4.3 s) 2016He15

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 144, 297 (2017)	25-Aug-2017

Parent: ²⁵⁸Db: E=0; J ^{π} =(5⁺,6⁺); T_{1/2}=4.3 s 5; Q(ϵ)=5460 SY; % ϵ +% β^+ decay=23 8

²⁵⁸Db-E,J ^{π} ,T_{1/2}: From ²⁵⁸Db Adopted Levels.

²⁵⁸Db-Q(ϵ): 5460 310 (syst, 2017Wa10).

²⁵⁸Db-% ϵ +% β^+ decay: From 2009He20, % α =77 8.

The decay scheme is tentative according to 2016He15.

2016He15: ²⁵⁸Db source was produced in ²⁰⁹Bi(⁵⁰Ti,n) reaction at E(⁵⁰Ti)=236 MeV. The beam from the ECR source of the UNILAC at GSI bombarded a $\approx 460 \mu\text{g}/\text{cm}^2$ target of ²⁰⁹Bi₂O₃ evaporated on carbon foils of $\approx 40 \mu\text{g}/\text{cm}^2$ (upstream) and covered by an $\approx 10 \mu\text{g}/\text{cm}^2$ carbon layer (downstream). Evaporation residues (ERs) were separated by the velocity filter SHIP and implanted into a position-sensitive 16-strip Si PIPS detector for detecting residues, conversion electrons (ce), and subsequent α -decays or spontaneous fission (SF) events. Escaped products into the backward hemisphere were detected by a box of six Si wafers; x-rays were detected by a Ge clover detector consisting of four crystals. Measured correlations among ERs, x-rays, ce, α -decay and SF events. Deduced isomeric states, half-lives, ²⁵⁸Rf g.s. decay modes. Comparisons with theoretical calculations. Tentative decay scheme is from Fig. 8 of 2016He15. Authors state that ϵ decay may also populate excited states other than the isomeric states and these high-lying states could feed the isomers.

Energies and relative intensities of K x-rays in
delayed-coin with fission

	Energy	I(x-ray)(exp)	I(x-ray)(theory)
K α_2	126.9 7	0.95 24	0.671
K α_1	133.9 9	1	1
K β_1	149.8 16	0.50 24	0.378
K $\beta'2$	155.3 11	0.21 14	0.139

²⁵⁸Rf Levels

E(level)	J ^{π}	T _{1/2} [†]	Comments
0	0 ⁺	12.0 ms 12	E α =9054 MeV 14, mean energy of 11 α -decay events (2016He15).
0+y		2.4 ms +24-8	
0+z		15 μ s 10	T _{1/2} : from the time distribution of correlations between two consecutive ce events (2016He15).

[†] From Adopted Levels.