^{258}Db ε decay (1.9 s) 2016He15

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

Parent: ^{258}Db: E=0+x; $J^{\pi}=(1^-)$; $T_{1/2}$=1.9 s *5*; Q(ε)=5460 *SY*; %ε+%$β^+$ decay=36 *10*

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

^{258}Db-Q(ε): 5460 *310* (syst, 2017Wa10).

^{258}Db-%ε+%$β^+$ decay: From 2009He20, %α-decay=64 *10*.

The decay scheme is tentative according to 2016He15.

2016He15: ^{258}Db source was produced in ^{209}Bi(^{50}Ti,n) reaction at E(^{50}Ti)=236 MeV. The beam from the ECR source of the UNILAC at GSI bombarded a ≈460 μg/cm^2 target of $^{209}Bi_2O_3$ evaporated on carbon foils of ≈40 μg/cm^2 (upstream) and covered by an ≈10 μg/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, ^{258}Rf 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-ray in delayed-coin with fission

	Energy	I(x-ray)(exp)	I(x-ray)(theory)
$K_{\alpha 2}$	126.9 *7*	0.95 *24*	0.671
$K_{\alpha 1}$	133.9 *9*	1	1
$K_{\beta 1}$	149.8 *16*	0.50 *24*	0.378
$K_{\beta' 2}$	155.3 *11*	0.21 *14*	0.139

^{258}Rf Levels

E(level)	J^{π}	$T_{1/2}$	Comments
0	0^+	12.0 ms *12*	$T_{1/2}$: from Adopted Levels. Eα=9054 MeV *14*, mean energy of 11 α-decay events (2016He15).
0+x?	(2^+)		E(level),J^{π}: tentatively proposed by 2016He15.