Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 156, 148 (2019)	31-Jan-2019

Q(β^-)=260 *SY*; S(n)=5080 *SY*; S(p)=3670 *SY*; Q(α)=8260 *SY* 2017Wa10
Estimated uncertainties (2017Wa10): ΔQ(β^-)=710, ΔS(n)=670, ΔS(p)=780, ΔQ(α)=300.
S(2n)=11820 *600*, S(2p)=9140 *790* (syst,2017Wa10).
The ^{268}Db nuclide is produced in about 100 (or 113) correlated decay chains observed at Dubna, GSI and Berkeley, starting from ^{288}Mc and ending in ^{268}Db, which decays by SF. Main references for production of ^{288}Mc: 2004Og03, 2005Og02, 2005Dm03, 2012Og02, 2013Ru11, 2015Ru11, 2013Og01, 2015Ga24, 2016Fo10. See ^{288}Mc Adopted Levels for details.

2005Dm03: ^{243}Am(^{48}Ca,3n),E=247 MeV by the FLNR-JINR-Dubna U-400 cyclotron. The beam bombarded a ^{243}Am target backed by Ti foils and including Cu as a catcher material. Reaction products, including products of the Cu(^{48}Ca,X) reaction were dissolved in concentrated HNO_3. Group V elements were separated from the solution by separating the reaction products from Cu via co-precipitation with lanthanum hydroxide and separating Group V elements from lanthanum and actinides via sorption from nitric acid. The α and spontaneous fission fragments were detected by a module with four identical chambers, each containing two semiconductor detectors. The four chambers were positioned inside a neutron detector containing 72 ^{3}He counters positioned in a polyethylene moderator. A similar experiment was also performed, involving the same reaction but the reaction products were not separated. The detectors were exposed for 72 days, during which they were changed at intervals and subjected to physico-chemical treatment to develop latent tracks of spontaneous fission fragments. Deduced that all spontaneous fission events detected in the ^{243}Am(^{48}Ca,X) reaction were attributable to the decay chain of the element 115.

2007St18: chemical identification of long-lived isotope of Db, a descendant of ^{288}Mc, produced in ^{243}Am(^{48}Ca,3n) with a beam energy of 247 MeV. The chemical experiments provided evidence that the element was a +5 element, thus supporting the assignment as ^{268}Db. Measured half-life of ^{268}Db from all the events.
For theoretical studies, consult Nuclear Science References (NSR) database at NNDC, BNL for 51 primary references dealing with the half-lives and other aspects of nuclear structure in this mass region.

^{268}Db Levels

Cross Reference (XREF) Flags

A ^{272}Bh α decay (10.5 s)

E(level)	$T_{1/2}$	XREF	Comments
0	28 h *3*	A	%SF≈100; %α=?; %ε+%β^+=? Only the SF decay mode has been observed, however, 2015Og05 (also 2015Og01) review article states that α or ε/β^+ decay mode is not excluded. E(level): the reported activity is assumed to belong to the g.s. of ^{268}Db. J^π: 6^-,7^- from Ω(proton)=1/2$^-$; Ω(neutron)=13/2$^+$ (1997Mo25, theory). $T_{1/2}$: from 2016Fo10, based on detailed statistical analysis of 96 observed correlated events, starting from ^{288}Mc, in three laboratories (FLNR-JINR-DUBNA, GSI and Berkeley). Others: 28.3 h *+33−26* (2017Og01 review; 26 h *+4−3* 2015Og05 review). Measurements: 16 h *+19−6* (2004Og03,2005Og02, from three correlated events); 32 h *+11−7* (2005Dm03, from 15 events); 28 h *+11−4* (2007St18, from 23 events); 27 h *+5−4* (2013Ru11, from all the known decay chains; 25 h *+4−3* in 2015Ru11); 25.9 h *+62−42* (2013Og01, update of 27.9 h *+78−50* in 2012Og02 and 29 h *+9−6* in 2011Og07 review).
≈140		A	

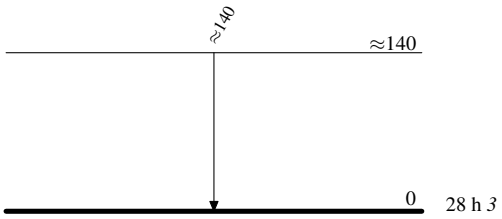
Adopted Levels, Gammas (continued)

$\gamma(^{268}Db)$

E_i(level)	E_γ	E_f	Comments
≈140	≈140	0	E_γ: from 2013Ru11, based on Eα values. Authors mention that the simulated γ-ray yield is marginal and consistent with an empty spectrum from the Ge detector. Mult.: M1 or E2 suggested by 2013Ru11, but no arguments are provided. It is that the γ-ray would have been seen clearly if it were E1.

Adopted Levels, Gammas

Level Scheme



$^{268}_{105}Db_{163}$