Adopted Levels

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Y. A. Akovali	NDS 87,301 (1999)	1-Oct-1998

Q(β^-)=−4.52×10^3 *syst*; S(n)=7.29×10^3 *syst*; S(p)=3.99×10^3 *syst*; Q(α)=8.90×10^3 *syst* 2012Wa38
Note: Current evaluation has used the following Q record −4651 syst 7321 syst 4082 syst 8900 syst 1995Au04.
Fission-fragment mass and kinetic energy distributions were measured by 1989Hu09.
For a review of systematics of spontaneous fission half-lives, mass and kinetic energy distributions, see 1995Ho27.

Assignment: ^{249}Bk(80-MeV ^{15}N,4n), ^{248}Cm(92-MeV ^{16}O,4n),
^{249}Cf(96-MeV ^{18}O,α 3n) (1985So03).
^{249}Bk(^{15}N,4n) E(^{15}N)=75-93 MeV, excit (1977Dr10).

^{260}Rf Levels

E(level)	J$^\pi$	T$_{1/2}$	Comments
0.0	0$^+$	21 ms *1*	%SF≤100 T$_{1/2}$: measurement of 1985So03. Other measurements: 76 ms *8* (1977Dr10), 23 ms *2* (1981Ni01), 28 ms *+6−5* (1985TeZX). Earlier measurements: 0.3 s *1* (1964Fl04), 0.10 s *5* (1970Og05), 80 ms *20* (1976Dr06). No 80-ms SF activity was observed by 1981Ni08 in ^{249}Bk(^{15}N,xn) reaction; no SF activities with half-lives of 80 ms and 60-100 ms in ^{249}Bk(^{15}N,4n), ^{248}Cm(^{16}O,4n) and ^{249}Cf(^{18}O,α3n) reactions were observed by 1985So03. For theoretical calculations of SF half-lives, see, for example, 1976Ra02, 1985Lo17, 1987Mo16, 1989St20, 1992Bh03. Only SF decay has been observed. α decay to ^{256}No has not been observed (Eα=8760 *200* is expected from Q(α)=8900 *200* listed in 1995Au04). Branching for α decay can be estimated by various methods. The r$_0$ systematics presented in 1998Ak04 suggests that ^{260}Rf α decay should yield r$_0$(^{256}No)=1.478 *20*. By requiring the hindrance factor for a 8760-keV α to be 1.0, T$_{1/2}$(8760α)=1.5 s *+10−5* is calculated. This α half-life is consistent with the T$_{1/2}$(α) systematics for g.s. to g.s. α's (see, for example 1967Le24). If intensity of the unobserved 8.76-MeV α is 80±20 of the total α decays, then the r$_0$ systematics yields %α=1.6 *+9−6*. From semiempirical formulas, 1997Mo25, 1997Po18 and 1976Ra02 calculated T$_{1/2}$1(α)=0.89 s, 0.8 s and 0.14 s which yield %α=2.26, 2.5 and 15, respectively. An upper limit of %ε<2.5 was placed by 1977Be36 from nonobservation of delayed coincidences of SF events with Rf x-rays. Intensity of an ε branch to ^{260}Lr ground- or a low-lying state may be estimated as <0.001% by requiring log *ft* for this branch to be >5.0. The authors of 1997Mo25 calculated the β decay half-life of ^{260}Rf as >100 s, corresponding to %ε<0.02. %SF=98 *2*, %α=2 are recommended by the evaluator, for the reasons given above, although these have not been determined experimentally.