

Adopted Levels

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	15-Sep-2006

S(n)=8.3×10³ syst; S(p)=3.0×10³ syst; Q(α)=8.95×10³ syst [2012Wa38](#)

Note: Current evaluation has used the following Q record 8370 syst 3100 syst 8950 syst [2003Au03](#).

Uncertainties: ΔS(n)=400, ΔS(p)=300, ΔQ(α)=200 ([2003Au03](#)).

Theoretical studies:

Fission barriers: [2006St04](#), [1983Cw01](#), [1992Bh03](#).

Equilibrium deformations and static electric moment: [1983Bo15](#).

Collective properties: [2006De33](#), [2004Gm02](#), [2002Pr01](#), [2001Mu10](#).

[2006Pe17](#): ²⁰⁴Pb(⁴⁸Ca,2n) E=220 MeV, >99.7% enriched target. Fragment Mass Analyzer at Argonne was used to separate reaction products. The transmitted ions were implanted into a double-sided silicon detector (DSSD). Fission events detected and half-lives measured. Two activities were assigned to ²⁵⁰No.

[2003Be18](#): ²⁰⁴Pb(⁴⁸Ca,2n) E=218-236 MeV. Also ²⁰⁶Pb(⁴⁸Ca,4n) reaction at 234.5 MeV, VASSILISSA mass separator facility at JINR. Measured two activities: one assigned to ²⁵⁰No and the other to ²⁴⁹No, but with the possibility that both could belong to ²⁵⁰No. [2003Po08](#) and [2003Ye02](#) are from the same group.

[2001Og08](#): ²⁰⁴Pb(⁴⁸Ca,2n) E=213.5-219.4 MeV. Also ²⁰⁶Pb(⁴⁸Ca,4n) reaction at 213.7-242.5 MeV, gas-filled recoil mass separator facility at JINR. An activity with half-life of 36 μs¹¹⁻⁶ was assigned to ²⁵⁰No.

No evidence was found by [2006Pe17](#), [2003Be18](#) and [2001Og08](#) for the existence of a 0.25-s lifetime assigned to ²⁵⁰No by [1975Te01](#):

The 54-μs activity assigned to ²⁴⁹No by [2003Be18](#), and also adopted by [2003Au02](#) and in Nuclear Wallet Cards (2005) is reassigned to ²⁵⁰No by [2006Pe17](#).

[1975Te01](#): ²³³U(²²Ne,5n) E=120 MeV. A 0.25 ms 5 activity assigned to ²⁵⁰No by excluding other possible nobelium elements and the possible SF isomers based on calculated cross-sections and known half-lives. But later work by [2006Pe17](#) and [2003Be18](#) did not find any evidence for such an activity belonging to ²⁵⁰No.

²⁵⁰No Levels

E(level)	J ^π	T _{1/2} [†]	Comments
0	0 ⁺	4.2 μs +12-9	%SF≈100; %α<2 %α<1.8 or 2.1 (2006Pe17), %α<10 (2003Be18). T _{1/2} : average of 3.7 μs +11-8 (2006Pe17) and 5.6 μs +9-7 (2003Be18). Other: 6 μs l (2003Po08 , same group as 2003Be18). α decay branching is estimated by the evaluator to be 0.11% by requiring HF(α g.s. to g.s.)=1.0 and r ₀ (²⁴⁶ Fm)=1.483, extrapolated from the r ₀ systematics given in 1998Ak04 . Eα(g.s. to g.s.)=8807 (calculated from Q(α)=8850) and Iα(8807α)=80% 5 per 100 α decays are used in calculations. Theoretical calculations of 1997Mo25 gives T _{1/2} (α)=0.478 s, T _{1/2} (β ⁺)=21.12 s, corresponding to %α=0.052 and %ε+%β ⁺ =0.0012. Both these half-lives suggest negligible decays through α and ε modes in view of 4.2 μs measured isotopic half-life. Calculations of half-life for SF decay: 2005Xu01 , 1997Po18 , 1992Bh03 , 1989St20 , 1983Bo15 , 1978Po09 . Calculations of half-life for α decay: 2005Ro01 , 2005Zh24 1992Bh03 , 1989St20 , 1983Bo15 , 1978Po09 .
1050 calc	(6 ⁺)	46 μs +22-14	%SF≈100 %α<4.4 or 3.4 (2006Pe17), %α<20 (2003Be18). E(level),J ^π : calculated value (2006Pe17) from multi-quasiparticle blocking calculations, possible configuration=ν5/2[622]⊗ν7/2[624], K ^π =6 ⁺ . T _{1/2} : average of 43 μs +22-15 (2006Pe17) and 54 μs +14-9 (2003Be18). Others: 54 μs +15-10 (2003Po08 , same group as 2003Be18), 36 μs +11-6 (2001Og08). 2003Be18 and 2003Po08 assigned the longer-lived activity to ²⁴⁹ No, but 2006Pe17 assign this activity to ²⁵⁰ No isomer.

[†] From SF decay ([2006Pe17](#)) from a total of 158 fission events.