^{208}Pb(^{40}Ar,2nγ) 2012Pi05,2011Ve03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 198,449 (2024)	31-Jul-2022

2022Is05: Spontaneous fission of ^{246}Fm obtained from fusion-evaporation reaction was studied using the Separator for Heavy ELement Spectroscopy (SHELS) at the U-400 accelerator. E(^{40}Ar)=183 MeV impinged the ^{208}Pb target. Measurements were done using the SFiNx detection system which included 116 ^{3}He-neutron counters for prompt neutrons emitted in the spontaneous fission process and an assembly of double-sided Si detectors for fission-fragments and α-particles. Deduced spontaneous fission half-life and branching ratio.

2015Re01: The fusion-evaporation reaction was studied using the Separator for Heavy ELement Spectroscopy (SHELS) at the U-400 accelerator at FLNR, JINR in Dubna, Russia. Evaporation residuals (ER) of interest were selected by the Separator for Heavy ELement Spectroscopy (SHELS) which are then transported through the detection system GABRIELA (Gamma Alpha Beta Recoil Investigations) with the ELectromagnetic Analyzer. ER are implanted on the DSSD Measured excitation function and ^{246}Fm α decay.

2012Pi05: The fusion-evaporation experiment was performed with E(^{40}Ar)=186 MeV from K130 cyclotron at Jyvaskyla that impinged a 446 μg/cm^2 ^{208}Pb target. Prompt γ-rays were measured using the using JUROGAM II array of 24 clovers and 10 tapered Compton-suppressed HPGe detectors and the RITU separator. The recoil-decay tagging technique was used to discriminate the evaporation residues (ER) from scattered beam and other products. Measured Eγ, Iγ, Eα, $\gamma\gamma$ coin, α(recoils) correlations, $\alpha\gamma$ coin. Deduced ground-state rotational band.

Fm and Pb X rays observed in coincidence spectra: 74 keV *1* (K$_{\alpha1}$, Pb), 72 keV *1* (K$_{\alpha2}$, Pb), 85 keV *1* (K$_{\beta1}$, Pb), 121 keV *1* (K$_{\alpha1}$, Fm), 116 keV *1* (K$_{\alpha2}$, Fm).

2011Ve03: The fusion-evaporation reaction was studied using the SHIP separator at GSI, Darmstadt. E(^{40}Ar)=186.4 MeV from the UNILAC accelerator impinged the ^{208}PbS target. Evaporation residuals (ER) of interest were selected by the velocity filter SHIP. α particles spectra and conversion electrons were measured using silicon detectors. The γ rays and x-rays were detected using an HPGe Clover detector. Deduced half-life, %SF %α, upper limit β+/ε of ^{246}Fm decay.

No K-isomeric states observed with T$_{1/2}$>0.6 μs.

Others: 2010Sv01,1975Og02.

^{246}Fm Levels

E(level)	J$^\pi$	T$_{1/2}$	Comments
0.0	0$^+$	1.53 s *4*	%α=93.2 *6*; %SF=6.4 *5*; %ε+%β^+<1.3 T$_{1/2}$: From weighted average of 1.50 s +*8*−*7* (time distribution between implanted recoil nuclei and fission-fragments: 2022Is05), 1.6 s *2* (α(recoil) correlated decay curve: 2012Pi05), 1.54 s *4* (time distribution between implanted nuclei and α particles 2011Ve03). %α,%ε+%β^+: From 2011Ve03. %SF: From weighted average of 6.1 % *5*(2022Is05), 6.8 % *6* (2011Ve03), 5 % *3* (2010Sv01). Eα: 8244 keV *7* (2012Pi05), 8243 keV *5* (2011Ve03), 8240 keV *20* (2010An08).
47.0?[†][‡] *10*	(2$^+$)		
155.0?[†][‡] *15*	(4$^+$)		
322.0?[‡] *18*	(6$^+$)		
546.0?[‡] *20*	(8$^+$)		
824.0?[‡] *23*	(10$^+$)		
1151.0?[‡] *25*	(12$^+$)		
1523?[‡] *4*	(14$^+$)		
1937?[‡] *4*	(16$^+$)		

[†] Energy extrapolated from rotational band formula, gamma ray from this level is not seen due to large conversion coefficient expected for an E2 transition.

[‡] Band(A): g.s. band.

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$\gamma(^{246}Fm)$

E_γ †	I_γ	E_i(level)	J_i^π	E_f	J_f^π
(47)		47.0?	(2^+)	0.0	0^+
(108)		155.0?	(4^+)	47.0?	(2^+)
167 *1*	100 *16*	322.0?	(6^+)	155.0?	(4^+)
224 *1*	53 *30*	546.0?	(8^+)	322.0?	(6^+)
278 *1*	30 *33*	824.0?	(10^+)	546.0?	(8^+)
327 *1*	16 *37*	1151.0?	(12^+)	824.0?	(10^+)
372 *2*	17 *35*	1523?	(14^+)	1151.0?	(12^+)
414 *2*	10 *40*	1937?	(16^+)	1523?	(14^+)

† From 2012Pi05.

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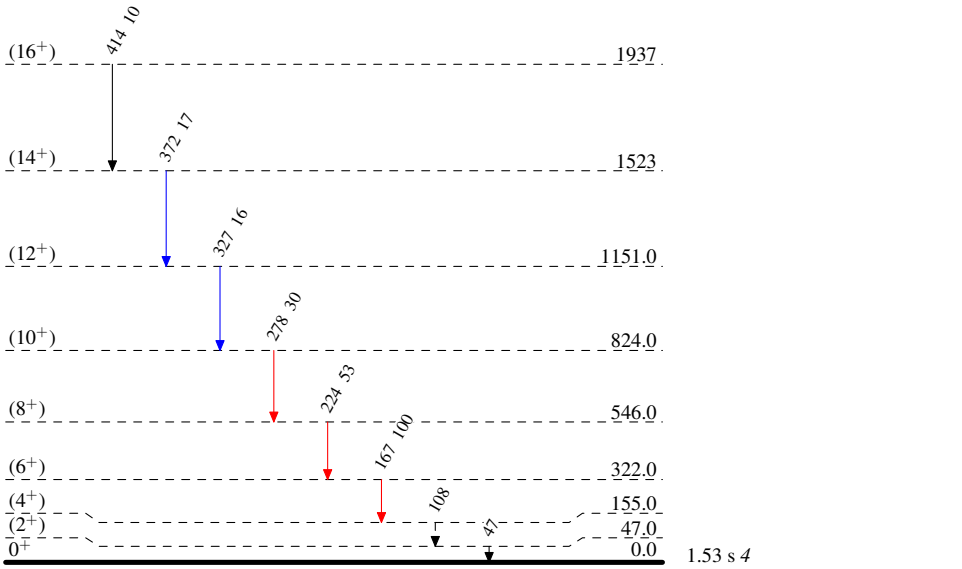
Level Scheme

Intensities: Relative I_γ



$^{246}_{100}Fm_{146}$

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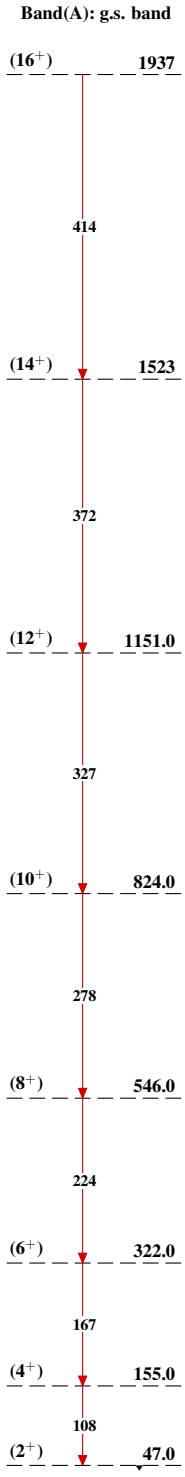

$^{246}_{100}Fm_{146}$