^{252}Cf SF decay   2015Wa28

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 208,1 (2026)	17-Jan-2026

Parent: ^{252}Cf: E=0.0; $J^{\pi}=0^{+}$; $T_{1/2}$=2.647 y 3; %SF decay=?

^{252}Cf-$T_{1/2}$: 2021Ma19.

2015Wa28 compiled for XUNDL database by B. Singh (McMaster).

Includes prompt γ-ray study from ^{9}Be(^{238}U,Fγ) reaction.

Data from two experiments have been combined by 2015Wa28:

1. ^{252}Cf SF decay: measured Eγ and $\gamma\gamma$ using GAMMASPHERE array comprised of 101 Compton-suppressed Ge detectors at LBNL facility.
2. ^{9}Be(^{238}U,Fγ),E=6.2 MeV/nucleon, measured Eγ, Iγ, Z- and A- gated $\gamma\gamma$ coincidences with isotopically identified fission fragments using VAMOS++ and EXOGAM array at GANIL facility.

Deduced high-spin levels.

^{148}Pr Levels

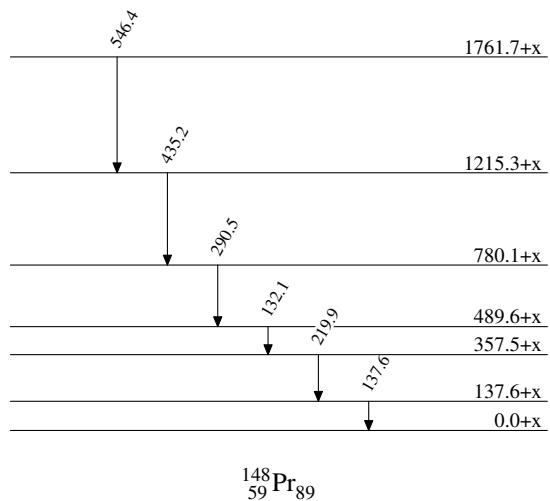| E(level)[†]	Comments
0.0+x	E(level): according to 2015Wa28, 0.0+x level can be the 2.01 min, 76.8 keV isomer.
137.6+x 5	
357.5+x[‡] 7	$T_{1/2}$: ≈100 ns isomeric halflife for this level is proposed by 2015Wa28 based on nonobservation of 219.9γ in prompt coin with 290.5γ.
489.6+x[‡] 9	
780.1+x[‡] 10	
1215.3+x[‡] 12	
1761.7+x[‡] 13	

[†] From Eγ data.
[‡] Seq.(A): Sequence based on 357.5+x level.

$\gamma(^{148}\mathrm{Pr})$

2015Wa28 state that relative γ intensities could not be extracted due to very strong 219.9-keV γ ray.

E$_{\gamma}$[†]	E$_i$(level)	E$_f$
132.1 5	489.6+x	357.5+x
137.6 5	137.6+x	0.0+x
219.9 5	357.5+x	137.6+x
290.5 5	780.1+x	489.6+x
435.2 5	1215.3+x	780.1+x
546.4 5	1761.7+x	1215.3+x

[†] Uncertainty is stated as 0.5 keV for strong transitions and as much as 1 keV in prompt γ-spectra, whereas from ^{252}Cf SF decay, uncertainty is stated as 0.1 keV for strong γ rays and 0.5 for weaker lines. Evaluator assigns 0.5 keV uncertainty for each γ ray since no intensity data are available in 2015Wa28 and all transitions are newly identified.

^{252}Cf SF decay   2015Wa28

Level Scheme

$^{148}_{59}$Pr$_{89}$

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**Seq.(A): Sequence based
on 357.5+x level**

1761.7+x

546

1215.3+x

435

780.1+x

290

489.6+x

132

357.5+x

$^{148}_{59}$Pr$_{89}$