

$^{254}\text{Cf}$  SF decay    **1981SeZW**

| Type            | Author                                   | History | Citation          | Literature Cutoff Date |
|-----------------|------------------------------------------|---------|-------------------|------------------------|
| Full Evaluation | S. Kumar(a), J. Chen(b) and F. G. Kondev |         | NDS 137, 1 (2016) | 31-May-2016            |

Parent:  $^{254}\text{Cf}$ :  $E=0.0$ ;  $J^\pi=0^+$ ;  $T_{1/2}=60.5$  d 2; %SF decay=99.69 2

**1981SeZW**:  $^{254}\text{Cf}$  spontaneous fission source experiment carried at the Weizmann Institute of Science in Rehovot, Israel. Detectors: 2 fission fragment detectors (SSD) and one Ge (Li) detector (2 cm<sup>3</sup>). Measured:  $E_\gamma$ ,  $I_\gamma$ ,  $\gamma\gamma$ -coin, coincident events between light and heavy fission products. Deduced level,  $T_{1/2}$ ,  $\gamma$ -ray branching ratios.

Level scheme proposed by **1981SeZW** differs than that from the Adopted Levels. Evaluators have re-arranged the placements of  $\gamma$ -ray transitions based on Adopted Levels.

 $^{109}\text{Ru}$  Levels

| $E(\text{level})^\dagger$ | $J^\pi^\ddagger$     | $T_{1/2}^\#$ |
|---------------------------|----------------------|--------------|
| 0.0 @                     | (5/2 <sup>+</sup> )  |              |
| 96.2 & 2                  | (5/2 <sup>-</sup> )  |              |
| 131.8 & 5                 | (7/2 <sup>-</sup> )  | 1.0 ns 2     |
| 230.0 & 7                 | (9/2 <sup>-</sup> )  | 0.95 ns 5    |
| 304.2 & 7                 | (11/2 <sup>-</sup> ) | 0.70 ns 5    |
| 678.4 & 9                 | (15/2 <sup>-</sup> ) | ≈0.15 ns     |

<sup>†</sup> From a least-squares fit to  $E_\gamma$ .

<sup>‡</sup> From Adopted Levels.

<sup>#</sup> From **1981SeZW**, using the time-of-flight method.

@ Band(A):  $K^\pi=5/2^+$ , a mixture between  $\nu 5/2^+[413]$  and  $\nu 5/2^+[402]$  Nilsson orbitals.

& Band(B):  $K^\pi=5/2^-$  band,  $\nu 5/2[532]$  Nilsson orbital.

 $\gamma(^{109}\text{Ru})$ 

| $E_\gamma^\dagger$ | $I_\gamma^\dagger$ | $E_i(\text{level})$ | $J_i^\pi$            | $E_f$ | $J_f^\pi$            |
|--------------------|--------------------|---------------------|----------------------|-------|----------------------|
| 74.2 5             | 53 5               | 304.2               | (11/2 <sup>-</sup> ) | 230.0 | (9/2 <sup>-</sup> )  |
| 98.3 5             | 100                | 230.0               | (9/2 <sup>-</sup> )  | 131.8 | (7/2 <sup>-</sup> )  |
| 131.8 5            | 34 7               | 131.8               | (7/2 <sup>-</sup> )  | 0.0   | (5/2 <sup>+</sup> )  |
| 172.3 5            | 14 5               | 304.2               | (11/2 <sup>-</sup> ) | 131.8 | (7/2 <sup>-</sup> )  |
| 374.2 5            | 13 4               | 678.4               | (15/2 <sup>-</sup> ) | 304.2 | (11/2 <sup>-</sup> ) |

<sup>†</sup> From **1981SeZW**.  $\Delta E_\gamma=0.5$  keV assumed by evaluators.

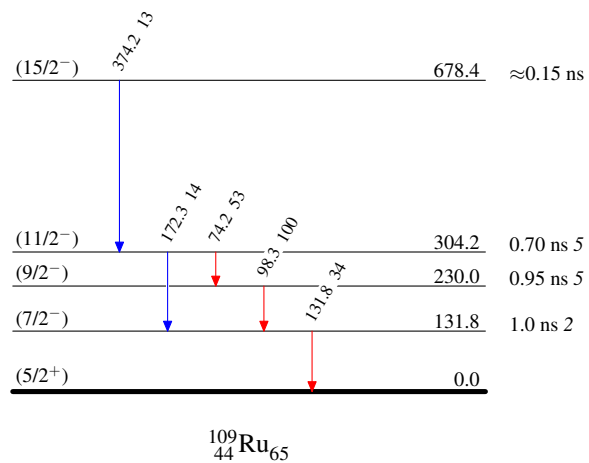
**$^{254}\text{Cf}$  SF decay     $^{1981}\text{SeZW}$**

**Level Scheme**

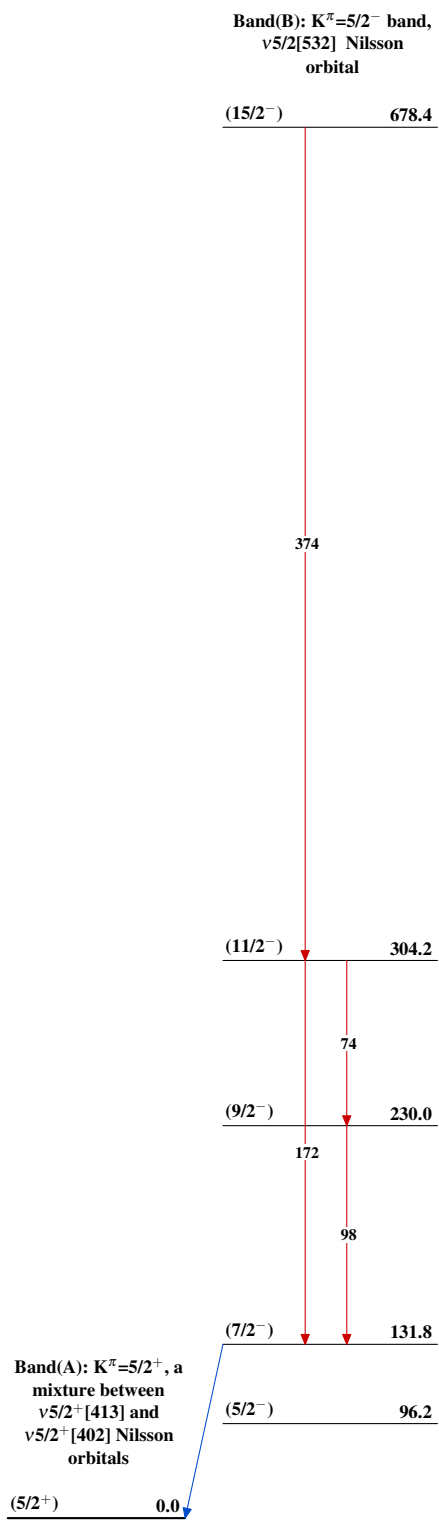
Intensities: Relative  $I_\gamma$

**Legend**

- $I_\gamma < 2\% \times I_\gamma^{\max}$
- $I_\gamma < 10\% \times I_\gamma^{\max}$
- $I_\gamma > 10\% \times I_\gamma^{\max}$



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 $^{109}_{44}\text{Ru}_{65}$