

$^{175}\text{Lu}(^{19}\text{F},5n\gamma)$  1981Bo08

| Type            | Author                      | History | Citation          | Literature Cutoff Date |
|-----------------|-----------------------------|---------|-------------------|------------------------|
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1981Bo08:  $^{175}\text{Lu}(^{19}\text{F},5n\gamma)$ ,  $E(^{19}\text{F})=100$  MeV. Measured  $E\gamma$ ,  $I\gamma$ ,  $\gamma\gamma$ ,  $\gamma(\theta)$ ,  $\gamma(\text{lin pol})$  using two Ge(Li) detectors. A total of 14  $\gamma$  rays reported.

 $^{189}\text{Hg}$  Levels

| E(level) <sup>†</sup>     | $J^{\pi\ddagger}$    | Comments                                                                |
|---------------------------|----------------------|-------------------------------------------------------------------------|
| 0.0+x <sup>#</sup>        | 13/2 <sup>+</sup>    | Additional information 1.<br>E(level): x=80 keV 30 (2001Sc41,2017Au03). |
| 403.0+x <sup>#</sup> 2    | 17/2 <sup>+</sup>    |                                                                         |
| 473.89+x <sup>#</sup> 18  | 15/2 <sup>+</sup>    |                                                                         |
| 1029.87+x <sup>#</sup> 23 | 21/2 <sup>+</sup>    |                                                                         |
| 1110.18+x <sup>#</sup> 20 | 19/2 <sup>+</sup>    |                                                                         |
| 1690.92+x <sup>@</sup> 24 | 21/2 <sup>-</sup>    |                                                                         |
| 1763.0+x <sup>#</sup> 3   | 25/2 <sup>+</sup>    |                                                                         |
| 1916.6+x <sup>@</sup> 3   | 25/2 <sup>-</sup>    |                                                                         |
| 2252.5+x <sup>@</sup> 4   | 29/2 <sup>-</sup>    |                                                                         |
| 2477.1+x <sup>#</sup> 4   | 29/2 <sup>+</sup>    |                                                                         |
| 2674.3+x <sup>#</sup> 5   | (33/2 <sup>+</sup> ) |                                                                         |
| 2818.0+x <sup>@</sup> 5   | (33/2 <sup>-</sup> ) |                                                                         |
| 3153.5+x <sup>#</sup> 5   | (37/2 <sup>+</sup> ) |                                                                         |

<sup>†</sup> From least-squares fit to  $E\gamma$  values.

<sup>‡</sup> As proposed by 1981Bo08 based on  $\gamma(\theta)$ ,  $\gamma(\text{lin pol})$  and band assignments.

<sup>#</sup> Band(A): Band based on 13/2<sup>+</sup>.

<sup>@</sup> Band(B): Band based on 21/2<sup>-</sup>.

 $\gamma(^{189}\text{Hg})$ 

| $E\gamma$ | $I\gamma$ | $E_i(\text{level})$ | $J_i^{\pi}$          | $E_f$     | $J_f^{\pi}$       | Mult. | $\alpha^{\dagger}$ | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------|-----------|---------------------|----------------------|-----------|-------------------|-------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 197.2 2   |           | 2674.3+x            | (33/2 <sup>+</sup> ) | 2477.1+x  | 29/2 <sup>+</sup> | [E2]  | 0.410              | $\alpha(\text{K})=0.1753$ 25; $\alpha(\text{L})=0.176$ 3; $\alpha(\text{M})=0.0455$ 7<br>$\alpha(\text{N})=0.01131$ 17; $\alpha(\text{O})=0.00191$ 3;<br>$\alpha(\text{P})=2.19\times 10^{-5}$ 4<br>$E\gamma$ : mixed with line from $^{19}\text{F}$ .<br>$A_2=+0.26$ 2; $A_4=-0.14$ 2<br>$\alpha(\text{K})=0.1263$ 18; $\alpha(\text{L})=0.1004$ 15; $\alpha(\text{M})=0.0258$ 4<br>$\alpha(\text{N})=0.00642$ 10; $\alpha(\text{O})=0.001090$ 16;<br>$\alpha(\text{P})=1.587\times 10^{-5}$ 23<br>$\text{Pol}=+0.35$ 8.<br>$E\gamma$ : from level-scheme Fig. 3 in 1981Bo08.<br>$E\gamma=255.7$ in authors' Table 1 seems a misprint.<br>$A_2=+0.27$ 4; $A_4=-0.12$ 4<br>$\alpha(\text{K})=0.0481$ 7; $\alpha(\text{L})=0.0215$ 3; $\alpha(\text{M})=0.00542$ 8<br>$\alpha(\text{N})=0.001349$ 20; $\alpha(\text{O})=0.000234$ 4;<br>$\alpha(\text{P})=6.25\times 10^{-6}$ 9<br>$\text{Pol}=+0.44$ 9.<br>$A_2=+0.20$ 2; $A_4=-0.08$ 2<br>$\alpha(\text{K})=0.0315$ 5; $\alpha(\text{L})=0.01135$ 16; $\alpha(\text{M})=0.00283$ 4 |
| 225.7 2   | 27 3      | 1916.6+x            | 25/2 <sup>-</sup>    | 1690.92+x | 21/2 <sup>-</sup> | E2    | 0.260              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 335.9 2   | 15 2      | 2252.5+x            | 29/2 <sup>-</sup>    | 1916.6+x  | 25/2 <sup>-</sup> | E2    | 0.0766             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 403.0 2   | 100       | 403.0+x             | 17/2 <sup>+</sup>    | 0.0+x     | 13/2 <sup>+</sup> | E2    | 0.0465             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

Continued on next page (footnotes at end of table)

$^{175}\text{Lu}(^{19}\text{F}, 5\text{n}\gamma)$  **1981Bo08** (continued) $\gamma(^{189}\text{Hg})$  (continued)

| $E_\gamma$ | $I_\gamma$ | $E_i(\text{level})$ | $J_i^\pi$            | $E_f$     | $J_f^\pi$            | Mult. | $\delta$ | $\alpha^\dagger$ | Comments                                                                                                                                                                                                                                                                                                                                                                                       |
|------------|------------|---------------------|----------------------|-----------|----------------------|-------|----------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 473.9 2    | 15 2       | 473.89+x            | 15/2 <sup>+</sup>    | 0.0+x     | 13/2 <sup>+</sup>    | M1+E2 | -0.11 7  | 0.1048 21        | $\alpha(\text{N})=0.000705$ 10;<br>$\alpha(\text{O})=0.0001239$ 18;<br>$\alpha(\text{P})=4.14\times 10^{-6}$ 6<br>Pol=+0.25 8.<br>$A_2=-0.79$ 3; $A_4=+0.06$ 3<br>$\alpha(\text{K})=0.0862$ 18; $\alpha(\text{L})=0.01425$ 25; $\alpha(\text{M})=0.00331$ 6<br>$\alpha(\text{N})=0.000830$ 15;<br>$\alpha(\text{O})=0.000157$ 3;<br>$\alpha(\text{P})=1.206\times 10^{-5}$ 25<br>Pol=-0.07 10. |
| 479.2 2    | 8 1        | 3153.5+x            | (37/2 <sup>+</sup> ) | 2674.3+x  | (33/2 <sup>+</sup> ) |       |          |                  |                                                                                                                                                                                                                                                                                                                                                                                                |
| 565.5 2    | 7 1        | 2818.0+x?           | (33/2 <sup>-</sup> ) | 2252.5+x  | 29/2 <sup>-</sup>    | [E2]  |          | 0.0201           | $A_2=+0.02$ 10; $A_4=-0.05$ 10<br>$E_\gamma$ : 568.2 in Adopted dataset.<br>Pol=-0.12 19.                                                                                                                                                                                                                                                                                                      |
| 580.8 2    | 27 3       | 1690.92+x           | 21/2 <sup>-</sup>    | 1110.18+x | 19/2 <sup>+</sup>    | E1    |          | 0.00652          | $A_2=-0.17$ 3; $A_4=-0.08$ 4<br>Pol=+0.18 13.                                                                                                                                                                                                                                                                                                                                                  |
| 626.8 2    | 73 7       | 1029.87+x           | 21/2 <sup>+</sup>    | 403.0+x   | 17/2 <sup>+</sup>    | E2    |          | 0.01594          | $A_2=+0.24$ 2; $A_4=-0.07$ 2<br>Pol=+0.22 7.                                                                                                                                                                                                                                                                                                                                                   |
| 636.3 2    | 14 2       | 1110.18+x           | 19/2 <sup>+</sup>    | 473.89+x  | 15/2 <sup>+</sup>    | E2    |          | 0.01542          | $A_2=+0.31$ 4; $A_4=-0.10$ 4<br>Pol=+0.43 12.                                                                                                                                                                                                                                                                                                                                                  |
| 661.0 2    | 13 1       | 1690.92+x           | 21/2 <sup>-</sup>    | 1029.87+x | 21/2 <sup>+</sup>    | E1    |          | 0.00504          | $A_2=+0.09$ 3; $A_4=-0.03$ 3<br>Pol=-0.65 17.                                                                                                                                                                                                                                                                                                                                                  |
| 707.2 2    | 12 1       | 1110.18+x           | 19/2 <sup>+</sup>    | 403.0+x   | 17/2 <sup>+</sup>    | M1+E2 | -0.52 15 | 0.0318 25        | $A_2=-0.37$ 4; $A_4=+0.03$ 5<br>Pol=-0.07 19.                                                                                                                                                                                                                                                                                                                                                  |
| 714.1 2    | 30 3       | 2477.1+x            | 29/2 <sup>+</sup>    | 1763.0+x  | 25/2 <sup>+</sup>    | E2    |          | 0.01200          | $A_2=+0.18$ 2; $A_4=-0.05$ 2<br>Pol=+0.30 10.                                                                                                                                                                                                                                                                                                                                                  |
| 733.1 2    | 43 4       | 1763.0+x            | 25/2 <sup>+</sup>    | 1029.87+x | 21/2 <sup>+</sup>    | E2    |          | 0.01135          | $A_2=+0.20$ 2; $A_4=-0.13$ 2<br>Pol=+0.43 10.                                                                                                                                                                                                                                                                                                                                                  |

<sup>†</sup> From BrIcc code (2008Ki07), “Frozen Orbitals” appr.

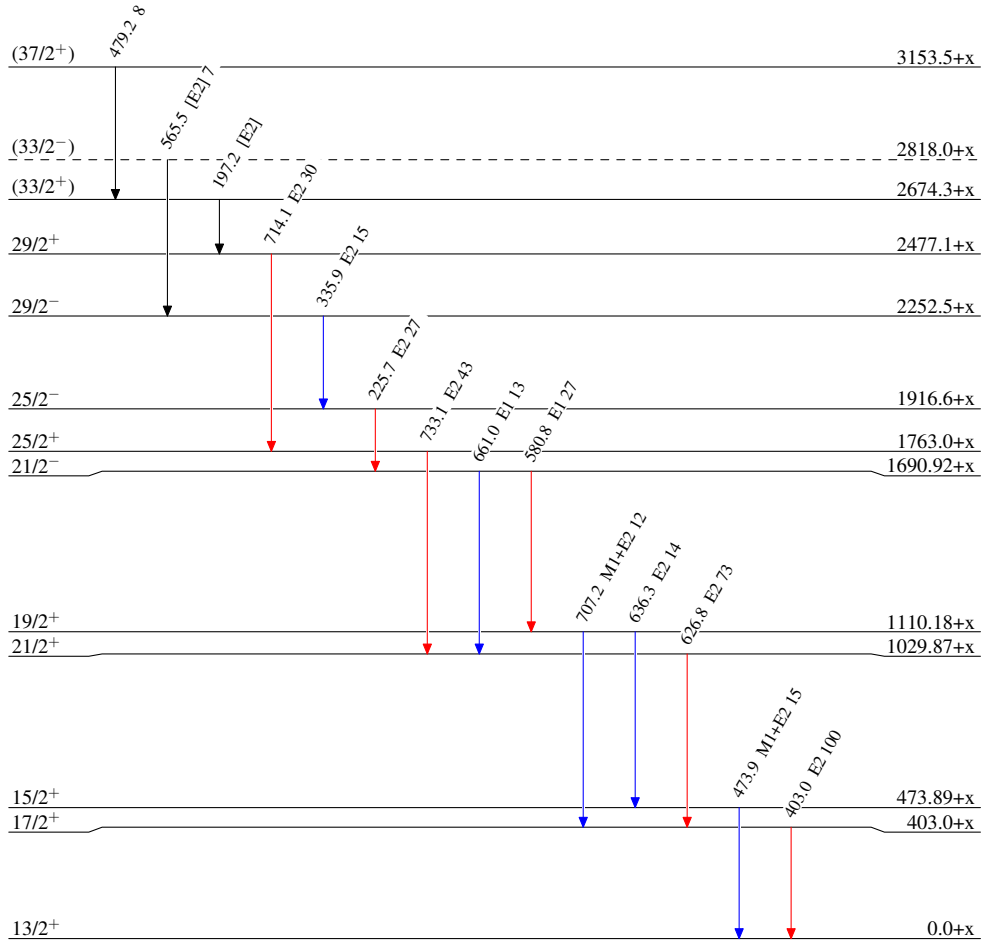
$^{175}\text{Lu}(^{19}\text{F},5\text{n}\gamma)$  1981Bo08

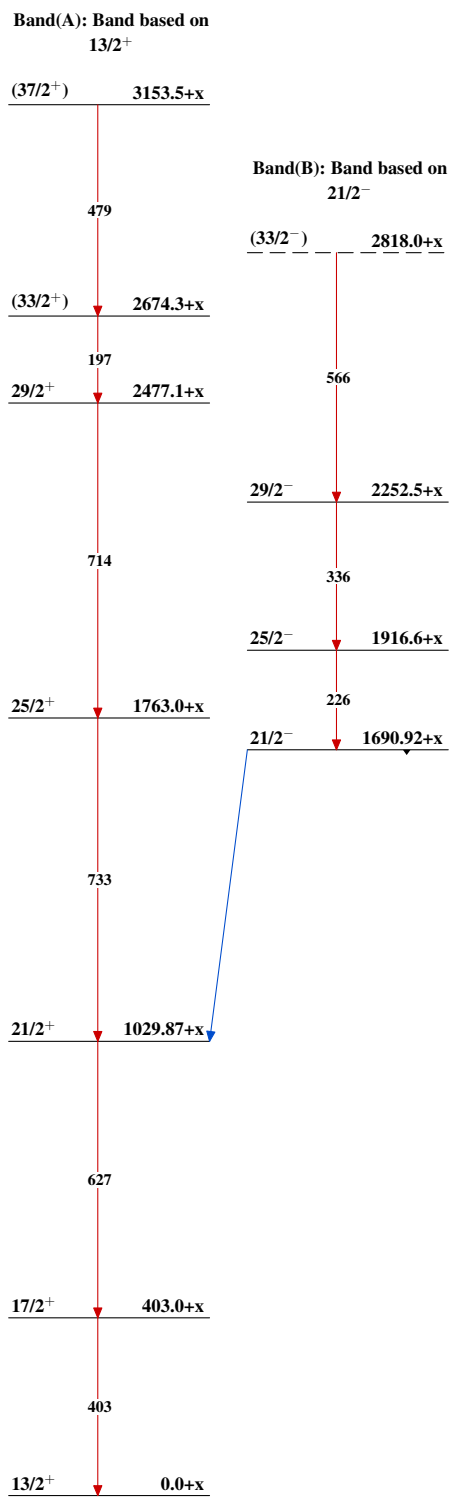
## Level Scheme

Intensities: Relative  $I_\gamma$ 

## Legend

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

 $^{189}_{80}\text{Hg}_{109}$

$^{175}\text{Lu}(^{19}\text{F},5\text{n}\gamma)$  1981Bo08 $^{189}_{80}\text{Hg}_{109}$