

Adopted Levels, Gammas

| Type            | Author       | History Citation   | Literature Cutoff Date |
|-----------------|--------------|--------------------|------------------------|
| Full Evaluation | F. G. Kondev | NDS 177, 509, 2021 | 4-Jul-2021             |

$Q(\beta^-)=2126\text{ }3$ ;  $S(n)=6862\text{ }23$ ;  $S(p)=7740\text{ }25$ ;  $Q(\alpha)=-1170\text{ }40$     [2021Wa16](#)

 $^{203}\text{Au}$  LevelsCross Reference (XREF) Flags

- A**  $^{203}\text{Pt } \beta^-$  decay  
**B**  $^{204}\text{Hg}(\text{pol d}, ^3\text{He})$   
**C**  $^{204}\text{Hg}(\text{pol t}, \alpha)$   
**D**  $\text{Be}(^{208}\text{Pb}, X\gamma)$

| E(level) <sup>†</sup>                           | $J^\pi$ <sup>‡</sup> | $T_{1/2}$            | XREF                 | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------|----------------------|----------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0                                               | $3/2^+$              | 60 s 6               | <a href="#">ABCD</a> | $\% \beta^- = 100$<br>$T_{1/2}$ : From $\beta\gamma(\Delta t)$ in <a href="#">1994We02</a> . Others: 53 s 2 from $690\gamma(t)$ in <a href="#">1972Bu42</a> .<br>However, no such gamma ray has been identified in $\beta^-$ decay of $^{203}\text{Au}$ and, hence, this value has been excluded; $\approx 55$ s ( <a href="#">1952Bu80</a> ); 7 h 2 from $830\gamma(t)$ and $1041\gamma(t)$ in <a href="#">1979Na08</a> . However, no such gamma rays were identified in $\beta^-$ decay of $^{203}\text{Au}$ and, hence, this value has been excluded. |
| 39.0 9                                          | $1/2^+$              |                      | <a href="#">ABC</a>  | Dominant configuration= $\pi(d_{3/2}^{-1})$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 385.0 20                                        | $3/2^+$              |                      | <a href="#">ABC</a>  | Dominant configuration= $\pi(s_{1/2}^{-1})$ .<br>XREF: B(389)C(386).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 563.3 3                                         | $(7/2^+)$            |                      | <a href="#">A D</a>  | Configuration= $\pi(d_{3/2}^{-1}) \otimes 2^+$ and/or $\pi(s_{1/2}^{-1}) \otimes 2^+$ .<br>$J^\pi$ : 562.8 $\gamma$ to $3/2^+$ ; shell model predictions.                                                                                                                                                                                                                                                                                                                                                                                                |
| 641 <a href="#">&amp;</a> 3                     | $11/2^-$             | 140 $\mu\text{s}$ 44 | <a href="#">BCD</a>  | XREF: C(637).<br>$T_{1/2}$ : From 563.3 $\gamma(t)$ in <a href="#">2011St21</a> . Other: 0.04 ms +700–2 from 563.3 $\gamma(t)$ in <a href="#">2005Ca02</a> .                                                                                                                                                                                                                                                                                                                                                                                             |
| 774 <a href="#">&amp;</a> 3                     | $5/2^+$              |                      | <a href="#">BC</a>   | Dominant configuration= $\pi(h_{11/2}^{-1})$ .<br>XREF: C(760).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 851 <a href="#">&amp;</a> <a href="#">#</a> @ 5 |                      |                      | <a href="#">C</a>    | Configuration= $\pi(d_{3/2}^{-1}) \otimes 2^+$ and/or $\pi(s_{1/2}^{-1}) \otimes 2^+$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 874? 5                                          | $(3/2^+)$            |                      | <a href="#">A</a>    | $J^\pi$ : 311 $\gamma$ to $(7/2^+)$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 976.8 16                                        | $(1/2^+)$            |                      | <a href="#">Abc</a>  | XREF: b(987)c(985).<br>$J^\pi$ : Also: 976.8 $\gamma$ to $3/2^+$ ; direct feeding in $^{203}\text{Pt } \beta^-$ decay ( $J^\pi=1/2^-$ ); shell model predictions.                                                                                                                                                                                                                                                                                                                                                                                        |
| 982.6 15                                        | $(1/2^+)$            |                      | <a href="#">Abc</a>  | XREF: b(987)c(985).<br>$J^\pi$ : Also: 943.6 $\gamma$ to $1/2^+$ ; direct feeding in $^{203}\text{Pt } \beta^-$ decay ( $J^\pi=1/2^-$ ); shell model predictions.                                                                                                                                                                                                                                                                                                                                                                                        |
| 1087 <a href="#">&amp;</a> 3                    | $5/2^+$              |                      | <a href="#">BC</a>   | Dominant configuration= $\pi(d_{5/2}^{-1})$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 1161? 5                                         | $(1/2^+, 3/2^+)$     |                      | <a href="#">A</a>    | $J^\pi$ : 776 $\gamma$ to $3/2^+$ ; direct feeding in $^{203}\text{Pt } \beta^-$ decay ( $J^\pi=1/2^-$ ); shell model predictions.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1274.0 25                                       | $1/2^+$              |                      | <a href="#">ABC</a>  | XREF: B(1284)C(1278).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1457 <a href="#">&amp;</a> 3                    | $11/2^-$             |                      | <a href="#">BC</a>   | XREF: C(1460).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1505.8 13                                       | $(1/2^+, 3/2^+)$     |                      | <a href="#">A</a>    | $J^\pi$ : 1505.8 $\gamma$ to $3/2^+$ ; direct feeding in $^{203}\text{Pt } \beta^-$ decay ( $J^\pi=1/2^-$ ); shell model predictions.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1590 <a href="#">&amp;</a> 3                    |                      |                      | <a href="#">B</a>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 1755 <a href="#">&amp;</a> 3                    | $(5/2^+)$            |                      | <a href="#">BC</a>   | XREF: C(1759).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1839 <a href="#">&amp;</a> 3                    |                      |                      | <a href="#">B</a>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

Continued on next page (footnotes at end of table)

**Adopted Levels, Gammas (continued)** $^{203}\text{Au}$  Levels (continued)

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

<sup>‡</sup> From vector analyzing power in  $^{204}\text{Hg}(\text{pol d}, ^3\text{He})$  and  $^{204}\text{Hg}(\text{pol t}, \alpha)$ , unless otherwise stated.

# Possibly a doublet.

@ From  $^{204}\text{Hg}(\text{pol t}, \alpha)$ .

& From  $^{204}\text{Hg}(\text{pol d}, ^3\text{He})$ .

 $\gamma(^{203}\text{Au})$ 

| $E_i(\text{level})$ | $J_i^\pi$                              | $E_\gamma$         | $I_\gamma$ | $E_f$ | $J_f^\pi$           | Mult. | $\alpha^\dagger$ | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|----------------------------------------|--------------------|------------|-------|---------------------|-------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 39.0                | 1/2 <sup>+</sup>                       | 39.0 9             | 100        | 0     | 3/2 <sup>+</sup>    |       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 385.0               | 3/2 <sup>+</sup>                       | 385 2              | 100        | 0     | 3/2 <sup>+</sup>    |       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 563.3               | (7/2 <sup>+</sup> )                    | 563.3 3            | 100        | 0     | 3/2 <sup>+</sup>    |       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 641                 | 11/2 <sup>-</sup>                      | (78 3)             | 100        | 563.3 | (7/2 <sup>+</sup> ) | [M2]  | 61 11            | $E_\gamma, I_\gamma$ : From $\text{Be}(^{208}\text{Pb}, x\gamma)$ (2005Ca02).<br>$B(\text{M2})(\text{W.u.})=0.036 +23-11$<br>$\alpha(\text{L})=43\ 8$ ; $\alpha(\text{M})=11.2\ 21$<br>$\alpha(\text{N})=2.8\ 5$ ; $\alpha(\text{O})=0.50\ 9$ ; $\alpha(\text{P})=0.028\ 5$<br>$E_\gamma$ : From level energy differences (not observed directly). The authors in 2011St21 observed no K X-rays, thus suggesting that $E_\gamma$ is below the K-electron binding energy ( $B_{e^-}(\text{K})=80.725\ \text{keV}$ ). |
| 874?                | (3/2 <sup>+</sup> )                    | 311 <sup>‡</sup> 5 | 100        | 563.3 | (7/2 <sup>+</sup> ) |       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 976.8               | (1/2 <sup>+</sup> )                    | 976.8 16           | 100        | 0     | 3/2 <sup>+</sup>    |       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 982.6               | (1/2 <sup>+</sup> )                    | 943.6 12           | 100        | 39.0  | 1/2 <sup>+</sup>    |       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1161?               | (1/2 <sup>+</sup> , 3/2 <sup>+</sup> ) | 776 <sup>‡</sup> 4 | 100        | 385.0 | 3/2 <sup>+</sup>    |       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1274.0              | 1/2 <sup>+</sup>                       | 889.0 15           | 100        | 385.0 | 3/2 <sup>+</sup>    |       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1505.8              | (1/2 <sup>+</sup> , 3/2 <sup>+</sup> ) | 1505.8 13          | 100        | 0     | 3/2 <sup>+</sup>    |       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

<sup>†</sup> Additional information 1.

<sup>‡</sup> Placement of transition in the level scheme is uncertain.

**Adopted Levels, Gammas**

Legend

**Level Scheme**

Intensities: Relative photon branching from each level

-----►  $\gamma$  Decay (Uncertain)