## $^{106}$Ag ε decay (23.96 min) 1976SaYX,1967Ra11,1974HeYW

History

| Type | Author | Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | D. De Frenne and A. Negret | NDS 109, 943 (2008) | 1-May-2007 |

Parent: $^{106}$Ag: E=0.0; $J^\pi=1^+$; $T_{1/2}$=23.96 min *4*; Q(ε)=2965 *3*; %ε+%$β^+$ decay=100.0
$^{106}$Ag-%ε+%$β^+$ decay: %ε+%$β^+$>99; %$β^-$<1 (1953Be42).
1976SaYX: measured: Eγ, Iγ. Deduced: $^{106}$Pd levels, log *ft*.
Others: 1953Be42, 1961Sa07, 1967St10, 1971Bb07.

### $^{106}$Pd Levels

| E(level) | $J^\pi$† | E(level) | $J^\pi$† | E(level) | $J^\pi$† | E(level) | $J^\pi$† |
|---|---|---|---|---|---|---|---|
| 0.0 | $0^+$ | 1562.26 *7* | $2^+$ | 2277.86 *8* | $0^+$ | 2705.21 *10* | $(1)^+$ |
| 511.85 *5* | $2^+$ | 1706.39 *9* | $0^+$ | 2308.86 *8* | $2^+$ | 2828.5 *3* | $0^+$ |
| 1128.03 *5* | $2^+$ | 1909.47 *10* | $2^+$ | 2439.22 *19* | $2^+$ | 2877.8 *4* | $0^+$ |
| 1133.77 *6* | $0^+$ | 2001.49 *9* | $0^+$ | 2500.5 *6* | $2^-$ | | |
| 1228.95 *12* | $4^+$ | 2242.53 *8* | $2^+$ | 2626.73 *20* | $(2,3)^+$ | | |

† From Adopted Levels.

### ε,$β^+$ radiations

| E(decay) | E(level) | I$β^+$ † | Iε† | Log *ft* | I(ε+$β^+$)† | Comments |
|---|---|---|---|---|---|---|
| (87 *3*) | 2877.8 | | 0.00034 | 6.6 | 0.00034 | εK= 0.785 *5*; εL= 0.171 *4*; εM+= 0.0443 *10* |
| (137 *3*) | 2828.5 | | 0.00025 | 7.2 | 0.00025 | εK= 0.8221 *13*; εL= 0.1420 *10*; εM+= 0.0359 *3* |
| (260 *3*) | 2705.21 | | 0.0042 | 6.6 | 0.0042 | εK= 0.8462; εL= 0.12331 *22*; εM+= 0.03051 *7* |
| (338 *3*) | 2626.73 | | 0.0011 | 7.4 | 0.0011 | εK= 0.8516; εL= 0.11913 *12*; εM+= 0.02932 *4* |
| (465 *3*) | 2500.5 | | 0.0003 | 8.3 | 0.0003 | εK= 0.8562; εL= 0.11554; εM+= 0.02830 |
| (526 *3*) | 2439.22 | | 0.0013 | 7.8 | 0.0013 | εK= 0.8575; εL= 0.11446; εM+= 0.02799 |
| (656 *3*) | 2308.86 | | 0.017 | 6.8 | 0.017 | εK= 0.8596; εL= 0.11286; εM+= 0.02754 |
| (687 *3*) | 2277.86 | | 0.0033 | 7.6 | 0.0033 | εK= 0.8600; εL= 0.11258; εM+= 0.02746 |
| (722 *3*) | 2242.53 | | 0.018 | 6.9 | 0.018 | εK= 0.8603; εL= 0.11228; εM+= 0.02738 |
| (964 *3*) | 2001.49 | | 0.20 | 6.1 | 0.20 | εK= 0.8622; εL= 0.11086; εM+= 0.02697 |
| (1056 *3*) | 1909.47 | | 0.0041 | 7.9 | 0.0041 | εK= 0.8626; εL= 0.11049; εM+= 0.02687 |
| (1259 *3*) | 1706.39 | | 0.046 | 7.0 | 0.046 | εK= 0.8627; εL= 0.10978; εM+= 0.02667 |
| (1403 *3*) | 1562.26 | | 0.18 | 6.5 | 0.18 | av Eβ= 175.5 *13*; εK= 0.8588; εL= 0.10891; εM+= 0.02645 |
| (1831 *3*) | 1133.77 | | 0.30 | 6.5 | 0.30 | av Eβ= 361.0 *13*; εK= 0.7883 *9*; εL= 0.09926 *12*; εM+= 0.02408 *3* |
| (2453 *3*) | 511.85 | 6.5 *7* | 9.8 *14* | 5.24 | 16.3 *16* | av Eβ= 636.1 *14*; εK= 0.5218 *14*; εL= 0.06533 *18*; εM+= 0.01584 *5*<br>E($β^+$)=1450 (1953Be42) s; other: 1500 *100* (1951Be69) s.<br>K-capture/Iγ(512γ+$γ^±$)=0.28 *8* scin (1953Be42) corresponds with value derived from normalized intensity data and εK/ε theory. |
| (2965 *3*) | 0.0 | 52.6 *13* | 30.3 *8* | 4.92 | 82.9 *15* | av Eβ= 868.0 *14*; εK= 0.3162 *10*; εL= 0.03947 *13*; εM+= 0.00956 *3*<br>E($β^+$)=1960 *20* (1953Be42) s; other: 1945 *15* (1951Be69) s.<br>I($β^+$)(g.s.)=52.6 *13* is deduced from Iβ(1960β)/Iβ(1450β)=89/11 (evaluators assume 10% uncertainty on this ratio) (1953Be42). I(ε+$β^+$) (g.s.)=82.9 *15* using theoretical ε/$β^+$. |

† Absolute intensity per 100 decays.

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### γ($^{106}$Pd)

Iγ normalization: for I(γ+ce)=17.1 *15* + I(ε+β$^+$)=82.9 *15* to g.s.
γγ from 1967Ra11 semi-scin spectra.

| $E_\gamma$ † | $I_\gamma$ †@ | $E_i$(level) | $J_i^\pi$ | $E_f$ | $J_f^\pi$ | Comments |
|---|---|---|---|---|---|---|
| 428.6 *1* | 0.31 *3* | 1562.26 | 2$^+$ | 1133.77 | 0$^+$ | |
| 434.28‡ | 0.090 *9* | 1562.26 | 2$^+$ | 1128.03 | 2$^+$ | Iγ: from Iγ(434.2)/Iγ(428.6)=0.29 *1* (1982Ka10, $^{106}$Rh β$^-$ decay); $T_{1/2}$=30.07 s. |
| 439.23‡ | 0.23 *3* | 2001.49 | 0$^+$ | 1562.26 | 2$^+$ | Iγ: from Iγ(439.5)/Iγ(873.46)=0.029 *5* (1982Ka10, $^{106}$Rh decay); $T_{1/2}$=30.07 s). |
| 511.9 *1* | 684 *15* | 511.85 | 2$^+$ | 0.0 | 0$^+$ | Iγ: deduced from (K x ray)(512γ)/(K x ray)(616+622γ) (1967Ra11) and theoretical ε/β$^+$, εL/εK, yielding Iγ(616+622γ)/Iγ(512γ)=0.0269. Other: 809 (1967Ra11) normalized to Iγ(622γ)=12.7. Doublet Iγ(511.9γ+γ$^\pm$)=1000 (1976SaYX). |
| 578.4 *1* | 0.26 *3* | 1706.39 | 0$^+$ | 1128.03 | 2$^+$ | |
| 616.19# *5* | 5.7 *2* | 1128.03 | 2$^+$ | 511.85 | 2$^+$ | Eγ: other: 616.2 *1* (1976SaYX). Iγ: others: 6.0 *4* (1974HeYW), 9.1 *8* (1967Ra11). |
| 621.95# *4* | 12.7 *3* | 1133.77 | 0$^+$ | 511.85 | 2$^+$ | Eγ: other: 622.0 *1* (1976SaYX). |
| 680.2 *1* | 0.13 *2* | 2242.53 | 2$^+$ | 1562.26 | 2$^+$ | |
| 715.60‡ | 0.029 *3* | 2277.86 | 0$^+$ | 1562.26 | 2$^+$ | Iγ: from Iγ(716γ)/Iγ(1766γ)=0.29 *1* (1982Ka10, $^{106}$Rh decay ($T_{1/2}$=30.07 s). |
| 717.1 *1* | 0.047 *6* | 1228.95 | 4$^+$ | 511.85 | 2$^+$ | |
| 873.46# *7* | 8.0 *2* | 2001.49 | 0$^+$ | 1128.03 | 2$^+$ | Eγ: other: 873.4 *1* (1976SaYX). Iγ: others: 7.8 *5* (1974HeYW), 8.2 *5* (1967Ra11). |
| 1050.31# *10* | 6.7 *2* | 1562.26 | 2$^+$ | 511.85 | 2$^+$ | Eγ: other: 1050.3 *1* (1976SaYX). Iγ: others: 6.0 *4* (1974HeYW), 7.8 *5* (1967Ra11). |
| 1109.0 *2* | 0.17 *2* | 2242.53 | 2$^+$ | 1133.77 | 0$^+$ | |
| 1114.5 *1* | 0.25 *2* | 2242.53 | 2$^+$ | 1128.03 | 2$^+$ | |
| 1127.98# *7* | 2.9 *1* | 1128.03 | 2$^+$ | 0.0 | 0$^+$ | Eγ: other: 1127.9 *1* (1976SaYX). Iγ: others: 2.9 *3* (1974HeYW), 4.8 *3* (1967Ra11). |
| (1133.7) | | 1133.77 | 0$^+$ | 0.0 | 0$^+$ | |
| 1180.7 *1* | 0.22 *2* | 2308.86 | 2$^+$ | 1128.03 | 2$^+$ | |
| 1194.5 *1* | 1.6 *1* | 1706.39 | 0$^+$ | 511.85 | 2$^+$ | Eγ: other: 1194.4 *2* (1974HeYW). Iγ: others: 1.4 *1* (1974HeYW), 1.1 *1* (1967Ra11). |
| 1397.6 *1* | 0.12 *1* | 1909.47 | 2$^+$ | 511.85 | 2$^+$ | |
| 1489.6 *2* | 0.06 *1* | 2001.49 | 0$^+$ | 511.85 | 2$^+$ | |
| 1498.8 *2* | 0.028 *6* | 2626.73 | (2,3)$^+$ | 1128.03 | 2$^+$ | |
| 1562.2 *1* | 0.69 *2* | 1562.26 | 2$^+$ | 0.0 | 0$^+$ | |
| (1572.3) | 0.0038 *10* | 2705.21 | (1)$^+$ | 1133.77 | 0$^+$ | Iγ: from Iγ(1572.3)/Iγ(2193.4)=0.038 *5* (from 1982Ka10, $^{106}$Rh decay ($T_{1/2}$=30.07 s). |
| 1730.0 *3* | 0.050 *8* | 2242.53 | 2$^+$ | 511.85 | 2$^+$ | |
| 1766.0 *1* | 0.10 *1* | 2277.86 | 0$^+$ | 511.85 | 2$^+$ | |
| 1797.0 *1* | 0.33 *2* | 2308.86 | 2$^+$ | 511.85 | 2$^+$ | |
| 1909.5 *2* | 0.048 *6* | 1909.47 | 2$^+$ | 0.0 | 0$^+$ | |
| 1927.5 *2* | 0.034 *4* | 2439.22 | 2$^+$ | 511.85 | 2$^+$ | |
| 1988.6 *6* | 0.012 *4* | 2500.5 | 2$^-$ | 511.85 | 2$^+$ | |
| 2113.8 *6* | 0.018 *8* | 2626.73 | (2,3)$^+$ | 511.85 | 2$^+$ | |
| 2193.4 *1* | 0.10 *2* | 2705.21 | (1)$^+$ | 511.85 | 2$^+$ | |
| 2242.7 *2* | 0.032 *4* | 2242.53 | 2$^+$ | 0.0 | 0$^+$ | |
| 2309.3 *2* | 0.028 *4* | 2308.86 | 2$^+$ | 0.0 | 0$^+$ | |
| 2316.6 *3* | 0.010 *3* | 2828.5 | 0$^+$ | 511.85 | 2$^+$ | |
| 2365.9 *4* | 0.014 *4* | 2877.8 | 0$^+$ | 511.85 | 2$^+$ | |
| 2438.6 *4* | 0.019 *5* | 2439.22 | 2$^+$ | 0.0 | 0$^+$ | |

Continued on next page (footnotes at end of table)

## $^{106}$Ag ε decay (23.96 min) 1976SaYX,1967Ra11,1974HeYW (continued)

### γ($^{106}$Pd) (continued)

| $E_\gamma$ † | $I_\gamma$ †@ | $E_i$(level) | $J_i^\pi$ | $E_f$ | $J_f^\pi$ |
|---|---|---|---|---|---|
| (2626.9) | | 2626.73 | $(2,3)^+$ | 0.0 | $0^+$ |
| 2704.9 *2* | 0.034 *4* | 2705.21 | $(1)^+$ | 0.0 | $0^+$ |

† From semi γ-singles analysis (1976SaYX), unless otherwise noted.
‡ From level energy differences.
# From 1974HeYW (semi).
@ For absolute intensity per 100 decays, multiply by 0.0249 *21*.

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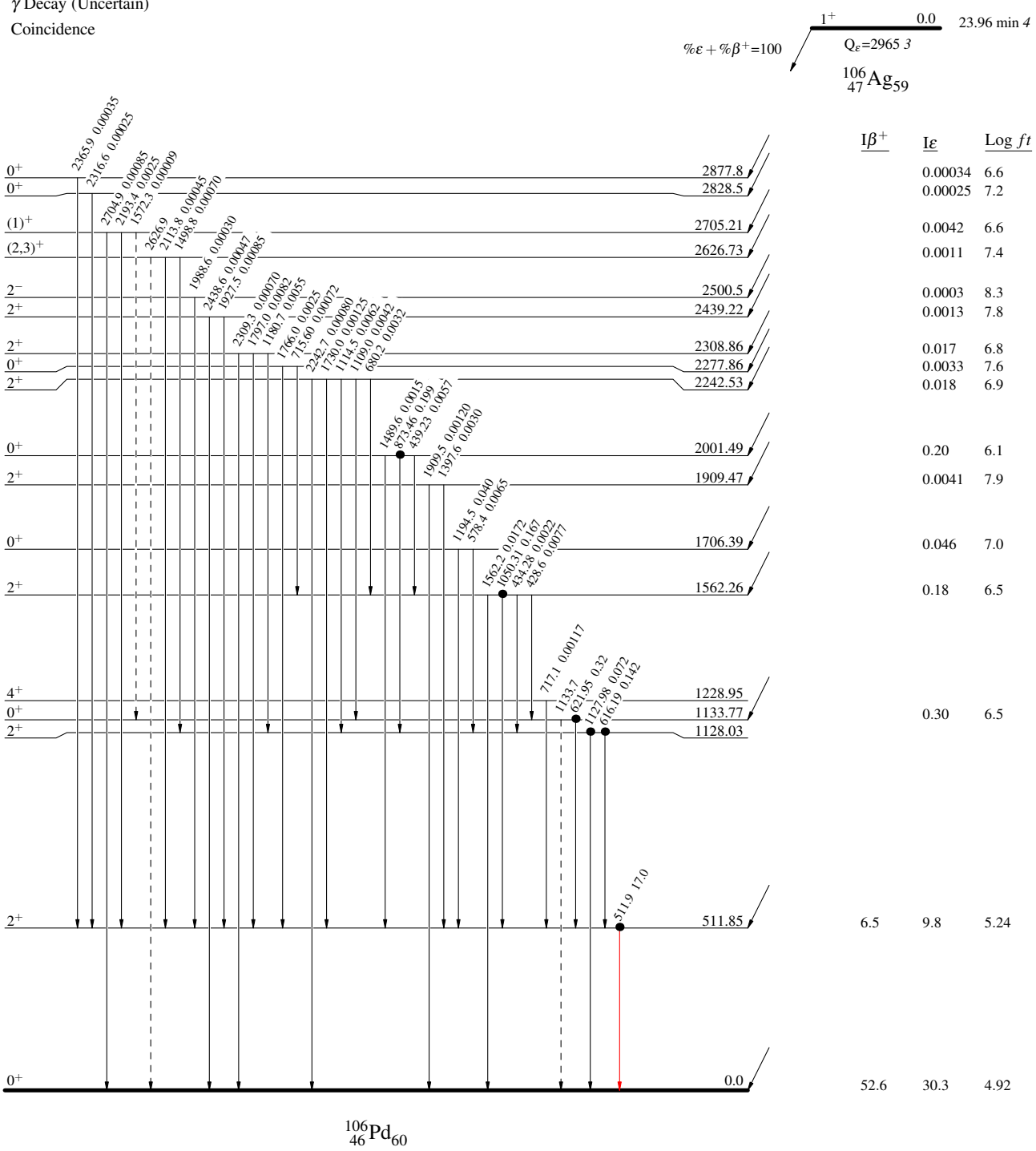
Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence

### Decay Scheme

Intensities: $I_\gamma$ per 100 parent decays




$^{106}_{46}Pd_{60}$