

¹²³Pd β⁻ decay 2019Ch24

| Type | Author | History Citation | Literature Cutoff Date |
|-----------------|----------|-------------------|------------------------|
| Full Evaluation | Jun Chen | NDS 174, 1 (2021) | 15-Apr-2021 |

Parent: ¹²³Pd: E=0; T_{1/2}=109 ms 2; Q(β⁻)=9.14×10³ 79; %β⁻ decay=100.0

Parent: ¹²³Pd: E=0+x; J^π=(11/2⁻); Q(β⁻)=9.14×10³ 79; %β⁻ decay=100.0

¹²³Pd(0)-J^π: (3/2⁺) from systematics (2021Ko07: NUBASE2020).

¹²³Pd(0)-T_{1/2}: From Adopted Levels of ¹²³Pd.

¹²³Pd(0)-Q(β⁻): From 2021Wa16.

¹²³Pd(0+x)-E,J^π: A level with J^π=(11/2⁻) is shown in the decay scheme in Fig.4 of 2019Ch24, with no further explanation and discussion. This level is proposed by 2019Ch24 probably as the parent level to feed the high-spin levels in ¹²³Ag from ¹²³Pd β⁻ decay. No observation of this level has been made in any studies.

2019Ch24: ¹²³Pd source ions were produced via fragmentation of a 345 MeV/nucleon ²³⁸U beam provided from the RIBF facility at RIKEN impinging on a 3-mm-thick Be target. Fragments were separated and identified event by event by the BigRIPS and ZeroDegree spectrometers. Selected ions were implanted into the WAS3ABi active stopper consisting of 8 compactly-stacked double-sided silicon-strip detectors (DSSSDs). γ rays were detected with the EURICA spectrometer consisting of 84 HPGe crystals in 12 clusters. Measured E_γ, I_γ, γγ-coin, βγ-coin. Deduced levels. Identified the 1/2⁻ isomer in ^{123,125}Ag. Systematics of neighboring Ag isotopes. Comparisons with shell-model calculations.

The level scheme is as proposed in 2019Ch24 based on γγ-coin. A complete level scheme from this measurement will be presented in a following full paper according to an email reply of the author (Z.H. Li) to the evaluator in June 21, 2019.

¹²³Ag Levels

| E(level) [†] | J ^π [‡] | E(level) [†] | J ^π [‡] | E(level) [†] | J ^π [‡] | E(level) [†] |
|-----------------------|---------------------------------------|-----------------------|---------------------------------------|-----------------------|--|-----------------------|
| 0.0 | (7/2 ⁺) | 442.4 6 | (3/2 ⁻ ,5/2 ⁻) | 1036.4 5 | | 1647.4 6 |
| 27.2 4 | (9/2 ⁺) | 656.7 5 | (11/2 ⁺) | 1077.0 3 | (9/2 ⁻ ,11/2 ⁺) | 1806.9 6 |
| 59.3 7 | (1/2 ⁻) | 740.9 5 | (13/2 ⁺) | 1426.3 4 | (13/2 ⁻) | 1852.6 6 |
| 384.5 7 | (3/2 ⁻ ,5/2 ⁻) | 968.4 7 | | 1426.5 6 | | 2217.2 7 |

[†] From a least-squares fit to γ-ray energies, assuming ΔE_γ=0.3 keV.

[‡] Proposed by 2019Ch24, based on γ-decay patterns and shell-model predictions. The evaluator has placed parity also in parenthesis if not by 2019Ch24.

γ(¹²³Ag)

| E _γ [†] | E _i (level) | J _i ^π | E _f | J _f ^π | E _γ [†] | E _i (level) | J _i ^π | E _f | J _f ^π |
|-----------------------------|------------------------|---------------------------------------|----------------|--|-----------------------------|------------------------|--|----------------|-----------------------------|
| 57.9 | 442.4 | (3/2 ⁻ ,5/2 ⁻) | 384.5 | (3/2 ⁻ ,5/2 ⁻) | 629.7 | 656.7 | (11/2 ⁺) | 27.2 | (9/2 ⁺) |
| 84.1 | 740.9 | (13/2 ⁺) | 656.7 | (11/2 ⁺) | 685.3 | 1426.3 | (13/2 ⁻) | 740.9 | (13/2 ⁺) |
| ^x 256.0 | | | | | ^x 699.8 | | | | |
| 325.1 | 384.5 | (3/2 ⁻ ,5/2 ⁻) | 59.3 | (1/2 ⁻) | 713.6 | 740.9 | (13/2 ⁺) | 27.2 | (9/2 ⁺) |
| 349.1 | 1426.3 | (13/2 ⁻) | 1077.0 | (9/2 ⁻ ,11/2 ⁺) | ^x 742.8 | | | | |
| 383.1 | 442.4 | (3/2 ⁻ ,5/2 ⁻) | 59.3 | (1/2 ⁻) | 770.0 [‡] | 1426.3 | (13/2 ⁻) | 656.7 | (11/2 ⁺) |
| 390.1 | 1426.5 | | 1036.4 | | 770.5 [‡] | 1806.9 | | 1036.4 | |
| ^x 471.9 | | | | | 816.2 | 1852.6 | | 1036.4 | |
| ^x 500.2 | | | | | ^x 956.1 | | | | |
| 526.0 | 968.4 | | 442.4 | (3/2 ⁻ ,5/2 ⁻) | 1009.2 | 1036.4 | | 27.2 | (9/2 ⁺) |
| 569.8 | 2217.2 | | 1647.4 | | 1049.6 | 1077.0 | (9/2 ⁻ ,11/2 ⁺) | 27.2 | (9/2 ⁺) |
| 594.0 | 1036.4 | | 442.4 | (3/2 ⁻ ,5/2 ⁻) | 1077.0 | 1077.0 | (9/2 ⁻ ,11/2 ⁺) | 0.0 | (7/2 ⁺) |
| 611.0 | 1647.4 | | 1036.4 | | | | | | |

[†] From 2019Ch24, with unplaced γ indicated in Fig.2 of 2019Ch24.

[‡] Doublet peak (2019Ch24).

^x γ ray not placed in level scheme.

$^{123}\text{Pd} \beta^-$ decay 2019Ch24

Decay Scheme

