

$^{204}\text{Pb}(^{16}\text{O}, ^{14}\text{C}\gamma)$ 2023Ka31

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 201,346 (2025)	21-Jan-2025

2023Ka31,2024Ko23: ^{206}Po was produced in the $^{204}\text{Pb}(^{16}\text{O}, ^{14}\text{C})$ reaction with $E(^{16}\text{O})=84$ MeV; Target: 0.6 mg/cm² ^{204}Pb evaporated on a 0.3 mg/cm² natural V foil. Level lifetimes were measured by the Cologne plunger and the Recoil-Distance-Doppler-Shift (RDDS) technique. γ rays were detected by eleven HPGe detectors placed in two rings at 45° and 142°. Recoiling beam-like ions were detected by six photovoltaic pin diodes placed at backward angles and covering angles between 120° and 165°.

 ^{206}Po Levels

E(level) [†]	$J^{\pi\ddagger}$	$T_{1/2}$	Comments
0	0 ⁺		
701.70 20	2 ⁺	4.3 ps 7	$T_{1/2}$: From $\tau=6.2$ ps 0.5 (stat) 0.9 (syst) using RDDS and by taking into account the feedings from the high-lying 2 ₂ ⁺ , 4 ₁ ⁺ and 4 ₂ ⁺ states in 2024Ko23. Other: 4.8 ps +13-11 in 2023Ka31 using RDDS and by taking into account the feeding from the high-lying 4 ₁ ⁺ and 4 ₂ ⁺ states.
1163.2 8	2 ⁺		
1178.85 23	4 ⁺	58.6 ps +54-50	$T_{1/2}$: From 2023Ka31 by taking into account the feeding from the high-lying 4 ₂ ⁺ and 6 ₁ ⁺ states (2023Ka31).
1435.35 24	4 ⁺	<3.5 ps	$T_{1/2}$: From 2023Ka31.
1574.45 25	6 ⁺	1.5 ns 4	$T_{1/2}$: From 2023Ka31. Value corresponds to the effective level half-life, since the side-feeding components were not taken into account.
1585.96 9	8 ⁺		Additional information 1.
2200.36 5	8 ⁺		E(level): From Adopted Levels.
2418.96 10	10 ⁺		

[†] From a least-squares fit to E_{γ} unless otherwise stated.

[‡] From Adopted Levels.

 $\gamma(^{206}\text{Po})$

E_{γ} [†]	I_{γ} [†]	$E_i(\text{level})$	J_i^{π}	E_f	J_f^{π}
256.53 [‡] 8	<2	1435.35	4 ⁺	1178.85	4 ⁺
395.6 1	23.8 3	1574.45	6 ⁺	1178.85	4 ⁺
461.5 [‡] 7		1163.2	2 ⁺	701.70	2 ⁺
477.2 1	58.2 4	1178.85	4 ⁺	701.70	2 ⁺
614.40 [‡] 5	2.8 5	2200.36	8 ⁺	1585.96	8 ⁺
701.7 2	100.0 8	701.70	2 ⁺	0	0 ⁺
733.2 3	11.1 3	1435.35	4 ⁺	701.70	2 ⁺
833.0 [‡] 1	1.8 4	2418.96	10 ⁺	1585.96	8 ⁺

[†] From 2023Ka31, unless otherwise stated. Accurate energies and their uncertainties were provided to the evaluator by the first author (V. Karayonchev/April 7, 2024).

[‡] From adopted gammas.

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Level Scheme

Intensities: Relative I_γ

Legend

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

