Coulomb excitation 2023Mo04

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

2023Mo04: ^{206}Hg beam produced at the HIE-ISOLDE facility at CERN using a molten lead target bombarded with 1.4 GeV protons, with an intensity of ~ 0.6 μA. The produced mercury isotopes were laser ionized, mass separated using the General Purpose Separator (GPS), and charge bred in an electron-beam ion source (REX-EBIS). $^{206}Hg^{46+}$ ions were post-accelerated using the HIE-ISOLDE linear accelerator, to an energy of 4.195 MeV/u, with a beam repetition rate of 300 ms. The typical beam intensity was ~ 7.8×10^5 pps. The ^{206}Hg beam impinged on a 2 mg/cm^2-thick target, made either of ^{94}Mo or ^{104}Pd. Following Coulomb excitation, γ rays depopulating states in both the projectile and target nuclei were detected by the 23 HPGe detectors comprising the Miniball array, in coincidence with recoiling particles detected in an annular Double-Sided Silicon Strip Detector (DSSSD). Both sides of the DSSSD array consisted of 4 quadrants, with the front of each divided into 16 annular rings (strips), and the back into a further 24 sectors, coupled into 12 pairs when read out. This covered a scattering angle range from 20° to 59°in the laboratory reference frame. Measured: Eγ, Iγ, recoil-γ coin.

^{206}Hg Levels

E(level)†	J$^\pi$‡	T$_{1/2}$‡	Comments
0.0	0^+	8.32 min *13*	
1068.20 *20*	2^+	1.27 ps *17*	Q=0.0 *6* (2023Mo04) T$_{1/2}$: From B(E2,exp)=4.4 W.u. *6* in 2023Mo04.
2705.2 *20*	(3^-)	0.51 ns *+39−13*	J$^\pi$: From 2023Mo04. T$_{1/2}$: From B(E3,exp)=30 W.u. *+10−13* in 2023Mo04.

† From Eγ.
‡ From Adopted Levels, unless otherwise stated.

$\gamma(^{206}Hg)$

E$_\gamma$†	I$_\gamma$†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	α‡	Comments
1068.2 *2*	100	1068.20	2^+	0.0	0^+	E2	0.00531 *7*	α(K)=0.00429 *6*; α(L)=0.000782 *11*; α(M)=0.0001840 *26* α(N)=4.60×10^{-5} *6*; α(O)=8.54×10^{-6} *12*; α(P)=5.62×10^{-7} *8* B(E2,exp)=4.4 W.u. *6* in 2023Mo04.
1637 *2*	100	2705.2	(3^-)	1068.20	2^+	[E3]	0.00483 *7*	α(K)=0.00382 *5*; α(L)=0.000726 *10*; α(M)=0.0001716 *25* α(N)=4.30×10^{-5} *6*; α(O)=8.01×10^{-6} *11*; α(P)=5.35×10^{-7} *8*; α(IPF)=5.59×10^{-5} *9* E$_\gamma$,I$_\gamma$: From 2023Mo04. B(E3,exp)=30 W.u. *+10−13* in 2023Mo04.

† From adopted gammas, unless otherwise stated.
‡ Additional information 1.

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Level Scheme

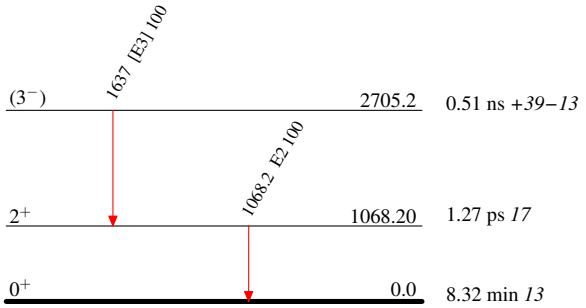
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{206}_{80}Hg_{126}$