Coulomb excitation 2014Br05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. C. Batchelder and A. M. Hurst, M. S. Basunia	NDS 183, 1 (2022)	1-Mar-2022

Fragmentation experiment performed at REX-ISOLDE-CERN.
Beam=^{186}Hg at 2.85 MeV/nucleon Target= 2 mg/cm^2 thick ^{112,114}Cd. Measured Eγ, Iγ, $\gamma\gamma$-coin, (projectile particle)γ-coin, (target particle)γ-coin, K x-ray intensities using MINIBALL array for γ rays and double-sided silicon strip detectors (DSSSDs) for particle detection. Deduced γ-ray yields, E2 matrix elements, quadrupole invariants <Q^2> and <cos(3δ)> by GOSIA analysis. Comparison with calculations using mean field and interacting-boson based models.

^{186}Hg Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	Comments
0.0	0$^+$		Based on deduced quadrupole invariant <Q^2>, ground state is weakly deformed with $\beta\approx$0.15 and consistent with oblate-like deformation.
405	2$^+$	16 ps *2*	B(E2)↑=1.6 *2* E2 matrix element (0,0$^+$ to 405,2$^+$)=+1.25 *+10−7*.
523	0$^+$		
621	2$^+$	≈38 ps	E2 matrix element (0,0$^+$ to 621,2$^+$)=+/−0.05 *1* (2014Br05), B(E2)(from 0,0$^+$)=0.0025 *+11−9*. E2 matrix element (523,0$^+$ to 621,2$^+$)≥+3.7 *8* (2014Br05). B(E2)(from 523,0$^+$)≥14 *6*.
809	4$^+$	3.7 ps *5*	B(E2)↑=2.3 *3* (From 405,2$^+$). T$_{1/2}$: B(E2), lifetime taken from 402.7 keV transition. E2 matrix element (405,2$^+$ to 809,4$^+$)=+3.4 *2*. E2 matrix element (621,2$^+$ to 809,4$^+$)=−5.3 *+13−5*, corresponding B(E2)= 5.6 *+1.2−2.4*, lifetime=2.7 ps *+21−5*.
1080	4$^+$		
1165	6$^+$		

[†] From figure 1 in 2014Br05.
[‡] From Adopted Levels.
[#] Deduced by the evaluators from B(E2) value (obtained from measured transition matrix elements) and adopted γ-ray properties.

γ(^{186}Hg)

E$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[†]	α[#]	Comments
98.2[‡] *7*	621	2$^+$	523	0$^+$	[E2]	5.99	
186.4[‡] *4*	809	4$^+$	621	2$^+$	[E2]	0.499	
215.53[‡] *17*	621	2$^+$	405	2$^+$	E0+M1+E2	3.5 *5*	α: From adopted dataset.
402.60 *13*	809	4$^+$	405	2$^+$	E2	0.0466	
405	405	2$^+$	0.0	0$^+$	E2	0.0458	
459	1080	4$^+$	621	2$^+$	E2		
621.3[‡] *3*	621	2$^+$	0.0	0$^+$		0.0163	
675	1080	4$^+$	405	2$^+$	E2		

[†] From Adopted Gammas.
[‡] From ^{186}Hg Adopted Gammas.
[#] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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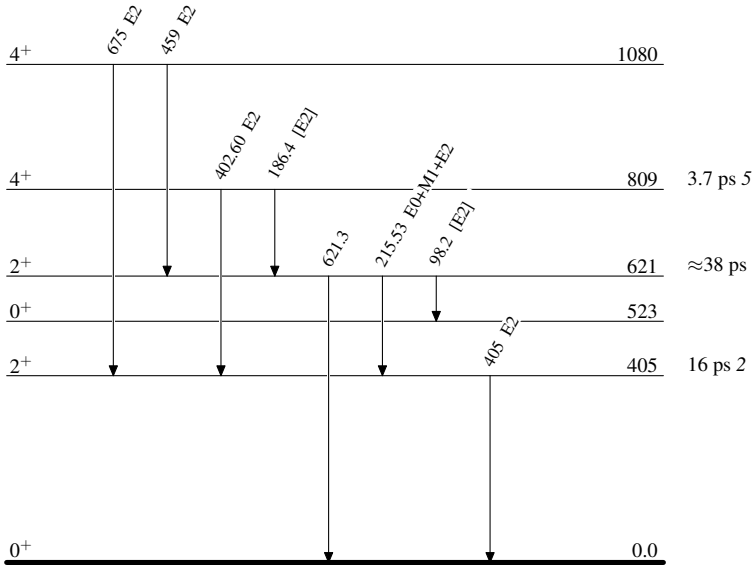
Level Scheme



$^{186}_{80}Hg_{106}$