(HI,xnγ) 1999Fe10,2009Dr08

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

1999Fe10: produced in ^{197}Au(^{12}C,3nγ); E(^{12}C)=60-80 MeV; Target: ^{197}Au, 1 mg/cm^2 thick; Detectors: 7 HPGe with BGO shields and 1 planar Ge (LEPS) detector; Measured: Eγ, γγ and Xγ coin (E(^{12}C)=63 MeV), excitation functions, γγ(t), and γ(θ). The assignment of γ-rays to ^{206}At is based on the excitation function data and coincidences of the main γ-rays with the At Kα x rays. No γ(θ) results were presented in 1999Fe10 .

2009Dr08: produced in ^{197}Au(^{16}O,α3nγ) E=95 MeV ^{16}O beam provided by the 14UD Pelletron accelerator at Australian National University. The γ′s detected by CAESAR array, consisting of six Compton-suppressed hyperpure germanium detectors, three larger volume Compton-suppressed detectors, and two LEPS detectors. Measured isomer half-life.

Other: 2010Ka29.

^{206}At Levels

E(level)†	Jπ‡	$T_{1/2}$	Comments
0+x	(7$^+$)		Additional information 1. Configuration=$\pi(h^{+1}_{9/2})\otimes\nu(f^{-1}_{5/2})$. The assignment is tentative.
686.0+x *10*	(9$^+$)		
806.7+x *14*	(10$^-$)	813 ns *21*	$T_{1/2}$: From [122γ(t)+686γ(t)] in 2009Dr08. Others: 410 ns *80* (1999Fe10) from γγ(t) data by gating on gamma-rays above and below the isomer and 377 ns *44* (2010Ka29) from 121γ(t). It should be noted, however, that the reported time-measurements windows are 300 ns in 1999Fe10 and 400 ns in 2010Ka29, which are shorter than the reported $T_{1/2}$. Configuration=$\pi(h^{+1}_{9/2})\otimes\nu(i^{-1}_{13/2})$. The assignment is tentative.
1276.3+x *14*	(11$^+$)		
1347.7+x *17*			
1393.3+x *17*			
1422.4+x *16*	(12$^-$)		
1622.5+x *15*			
1740.7+x *20*			
1797.4+x *19*	(13$^-$)		
1814.3+x *17*	(14$^-$)		
1961.8+x *17*			
2002.3+x *17*	(14$^-$)		
2010.4+x *16*			
2103.3+x *19*			
2133.3+x *20*			
2251.1+x *17*			
2291.3+x *19*			
2552.1+x *20*			
2645.3+x *20*			
2796.3+x *19*			
2902.3+x *22*			

† From a least-squares fit to Eγ.

‡ From 1999Fe10.

γ(^{206}At)

E_γ†	E_i(level)	J^π_i	E_f	J^π_f
117 *1*	1393.3+x		1276.3+x	(11$^+$)
121 *1*	806.7+x	(10$^-$)	686.0+x	(9$^+$)
188 *1*	2002.3+x	(14$^-$)	1814.3+x	(14$^-$)
249 *1*	2251.1+x		2002.3+x	(14$^-$)
257 *1*	2902.3+x		2645.3+x	

Continued on next page (footnotes at end of table)

(HI,xnγ) 1999Fe10,2009Dr08 (continued)

γ(^{206}At) (continued)

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
289‡ *I*	2103.3+x		1814.3+x	(14^-)	437 *I*	2251.1+x		1814.3+x	(14^-)
289‡ *I*	2251.1+x		1961.8+x		505 *I*	2796.3+x		2291.3+x	
289‡ *I*	2291.3+x		2002.3+x	(14^-)	541 *I*	1347.7+x		806.7+x	(10^-)
301 *I*	2552.1+x		2251.1+x		580 *I*	2002.3+x	(14^-)	1422.4+x	(12^-)
319 *I*	2133.3+x		1814.3+x	(14^-)	590 *I*	1276.3+x	(11^+)	686.0+x	(9^+)
339 *I*	1961.8+x		1622.5+x		616 *I*	1422.4+x	(12^-)	806.7+x	(10^-)
346 *I*	1622.5+x		1276.3+x	(11^+)	686 *I*	686.0+x	(9^+)	0+x	(7^+)
375 *I*	1797.4+x	(13^-)	1422.4+x	(12^-)	693 *I*	2796.3+x		2103.3+x	
388 *I*	2010.4+x		1622.5+x		734 *I*	2010.4+x		1276.3+x	(11^+)
392 *I*	1814.3+x	(14^-)	1422.4+x	(12^-)	831 *I*	2645.3+x		1814.3+x	(14^-)
393 *I*	1740.7+x		1347.7+x						

† From 1999Fe10. The uncertainties were estimated by the evaluator.
‡ Multiply placed.

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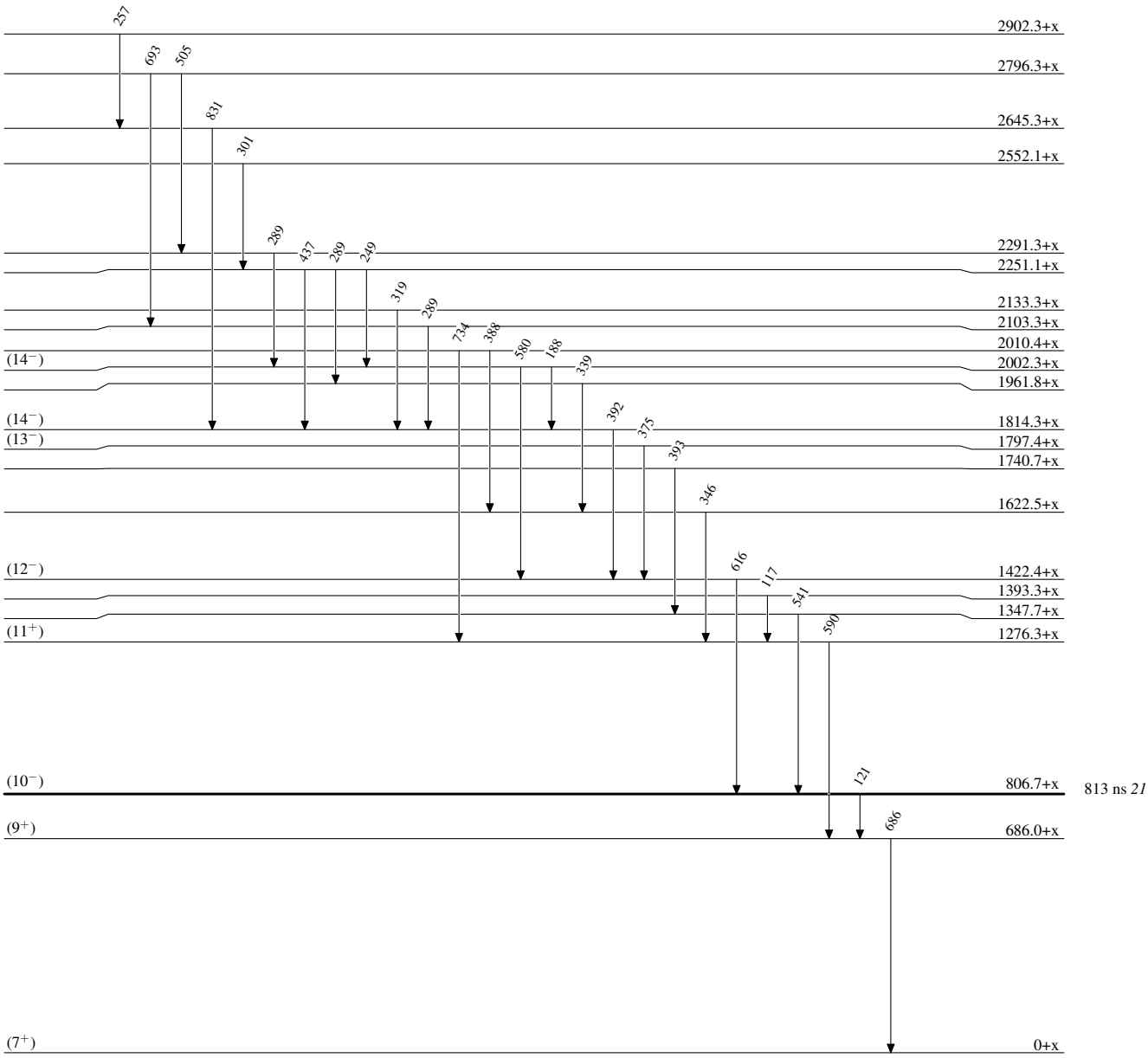
Level Scheme



$^{206}_{85}At_{121}$