(HI,xnγ)   2012Dr02

		History	
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 195,368 (2024)	1-Dec-2023

Adapted/Edited XUNDL data set compiled by W.Murrey (ANL/DePaul U) and F.G. Kondev (ANL), March 9, 2012.

Beam=^{136}Xe, targets=^{186}W, ^{187}Re, ^{192}Os.

6.0 MeV/u ^{136}Xe pulsed beams, provided by the ATLAS facility at ANL, bombarded three different targets: enriched, metallic ^{186}W and ^{187}Re foils, ≈6 mg/cm^2 thick with 25 mg/cm^2 gold foil directly behind them and a pressed 44 mg/cm^2 enriched ^{192}Os target with a 10 mg/cm^2 gold foil behind it. Gamma rays detected by Gammasphere array (100 HpGe Compton-suppressed Ge detectors). Measured Eγ, Iγ, γγγ coin, γγ(t), γγ(θ). Deduced level scheme, J^π, $T_{1/2}$, total conversion coefficients and multipolarity.

A list of numerical values of the total electron conversion coefficients corresponding to those presented in figure 3 of 2012Dr02 was received from the first author (G.D. Dracoulis) on Feb. 28, 2012. These values are listed under comments.

^{191}Ir Levels

E(level)[†]	J^{π}[‡]	$T_{1/2}$	Comments
0.0	$3/2^+$		J^π: from Adopted Levels. configuration: $\pi(3/2^+[402])$.
171.268[#] *11*	$11/2^-$	4.899 s *23*	%IT=100 Additional information 1. E(level),J^π,$T_{1/2}$: from Adopted Levels. configuration: $\pi(11/2^-[505])$.
556.9[@] *5*	$13/2^-$		E(level): reported as 566.8 keV in fig. 2 of 2012Dr02, which is likely a typo.
591.1[#] *5*	$15/2^-$		
1036.5[@] *5*	$17/2^-$		
1127.2[#] *6*	$19/2^-$		
1503.3 *7*	$(19/2)$		
1599.3[@] *6*	$21/2^-$		
1645.9 *7*	$21/2^{(+)}$		
1651.6 *7*	$23/2^-$	2.22 ns *35*	$T_{1/2}$: from τ=3.2 ns *5* in text (2012Dr02) − γγ(t).
1792.5 *8*	$25/2^{(+)}$		
2047.0 *8*	$25/2^-$		E(level): observed to be fed in both in-beam and out-of-beam time periods, consistent with the non-isomeric nature.
2101.0 *9*	$31/2^{(+)}$	5.75 s *55*	$T_{1/2}$: From τ=8.3 s *8*: weighted average of mean lifetimes 8.4 s *9* (using 395γ(t), when gating on 420γ-536γ pair) and 7.9 s *21* (using 308γ(t), when gating on 420γ-519γ pair) (2012Dr02). In text 2012Dr02 also mention $T_{1/2}$=5.5 s *7* and corresponding τ=7.9 s *10*. Also τ=8.2 s *7* in Table I. configuration: possible $\nu(9/2^-[505],11/2^+[615])\otimes\pi(11/2^-[505])$.

[†] From a least-squares fit to Eγ.

[‡] From 2012Dr02, unless otherwise stated.

[#] Band(A): Member of the $\pi h_{11/2}$ band, α=−1/2.

[@] Band(B): Member of the $\pi h_{11/2}$ band, α=+1/2.

(HI,xnγ)   2012Dr02 (continued)

γ(^{191}Ir)

$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	δ	$\alpha^@$	Comments
(34$^{\#}$ 1)		591.1	15/2$^-$	556.9	13/2$^-$				E_γ: [25] keV listed in fig. 2 of 2012Dr02 seems a misprint.
(52$^{\#}$ 1)		1651.6	23/2$^-$	1599.3	21/2$^-$				
(54.0$^{\#}$ 10)	2.20 2	2101.0	31/2$^{(+)}$	2047.0	25/2$^-$	[E3]		3.8×10^3 4	α(L)=2.76×10^3 32; α(M)=8.1×10^2 10 α(N)=200 24; α(O)=29.7 35; α(P)=0.037 4 I_γ: inferred from total intensity balance and total electron conversion coefficient. It seems that uncertainty in total conversion coefficient from BrIcc code was not included in the assigned uncertainty of 0.02.
90.6 5		1127.2	19/2$^-$	1036.5	17/2$^-$				
95.8 5		1599.3	21/2$^-$	1503.3	(19/2)				
146.6 5		1792.5	25/2$^{(+)}$	1645.9	21/2$^{(+)}$	E2		1.039 20	α(K)=0.366 6; α(L)=0.507 11; α(M)=0.1298 27 α(N)=0.0314 7; α(O)=0.00484 10; α(P)=3.63×10^{-5} 6 Mult.: from α(exp)=1.14 13, numerical value (fig. 3) was received from the first author of 2012Dr02.
308.5 5	380 18	2101.0	31/2$^{(+)}$	1792.5	25/2$^{(+)}$	M3		3.34 5	α(K)=2.259 34; α(L)=0.810 13; α(M)=0.2063 33 α(N)=0.0513 8; α(O)=0.00873 14; α(P)=0.000501 8 E_γ: no prompt component observed in 308.5γ(t), consistent with the the proposition that this γ ray directly depopulates an isomer. Mult.: from α(exp)=4.1 6, numerical value (fig. 3) was received from the first author of 2012Dr02.
375.9 5		1503.3	(19/2)	1127.2	19/2$^-$				
385.5 5		556.9	13/2$^-$	171.268	11/2$^-$				
395.4 5		2047.0	25/2$^-$	1651.6	23/2$^-$	M1(+E2)	0.6 4	0.110 21	α(K)=0.089 19; α(L)=0.0156 19; α(M)=0.0036 4 α(N)=0.00089 10; α(O)=0.000156 19; α(P)=1.08×10^{-5} 24 Mult.: From α(exp)=0.11 2 (in the text). δ(E2/M1)=0.6 4 based on α(exp).
419.9 5		591.1	15/2$^-$	171.268	11/2$^-$				
445.6 5		1036.5	17/2$^-$	591.1	15/2$^-$	M1+E2		0.065 33	α(K)=0.052 29; α(L)=0.0098 31; α(M)=0.0023 7 α(N)=5.6×10^{-4} 17; α(O)=9.7×10^{-5} 32; α(P)=6.E−6 4
472.2 5		1599.3	21/2$^-$	1127.2	19/2$^-$	M1+E2		0.055 28	α(K)=0.045 25; α(L)=0.0083 28; α(M)=0.0019 6 α(N)=4.7×10^{-4} 15; α(O)=8.2×10^{-5} 28; α(P)=5.3×10^{-6} 31
479.6 5		1036.5	17/2$^-$	556.9	13/2$^-$				
518.7 5		1645.9	21/2$^{(+)}$	1127.2	19/2$^-$	D			Mult.: pure stretched dipole transition (δ<0.05) from $\gamma\gamma(\theta)$. The level scheme requires E1.
524.4 5		1651.6	23/2$^-$	1127.2	19/2$^-$				
536.1 5		1127.2	19/2$^-$	591.1	15/2$^-$				
562.9 5		1599.3	21/2$^-$	1036.5	17/2$^-$				

(HI,xnγ)   **2012Dr02 (continued)**

$\gamma(^{191}\text{Ir})$ (continued)

† From 2012Dr02. ΔEγ are estimated value.

‡ From $\gamma\gamma(\theta)$ in 2012Dr02, unless otherwise stated. DCO values are not listed by authors. α(exp) was deduced by 2012Dr02 from γ-ray intensity balance.

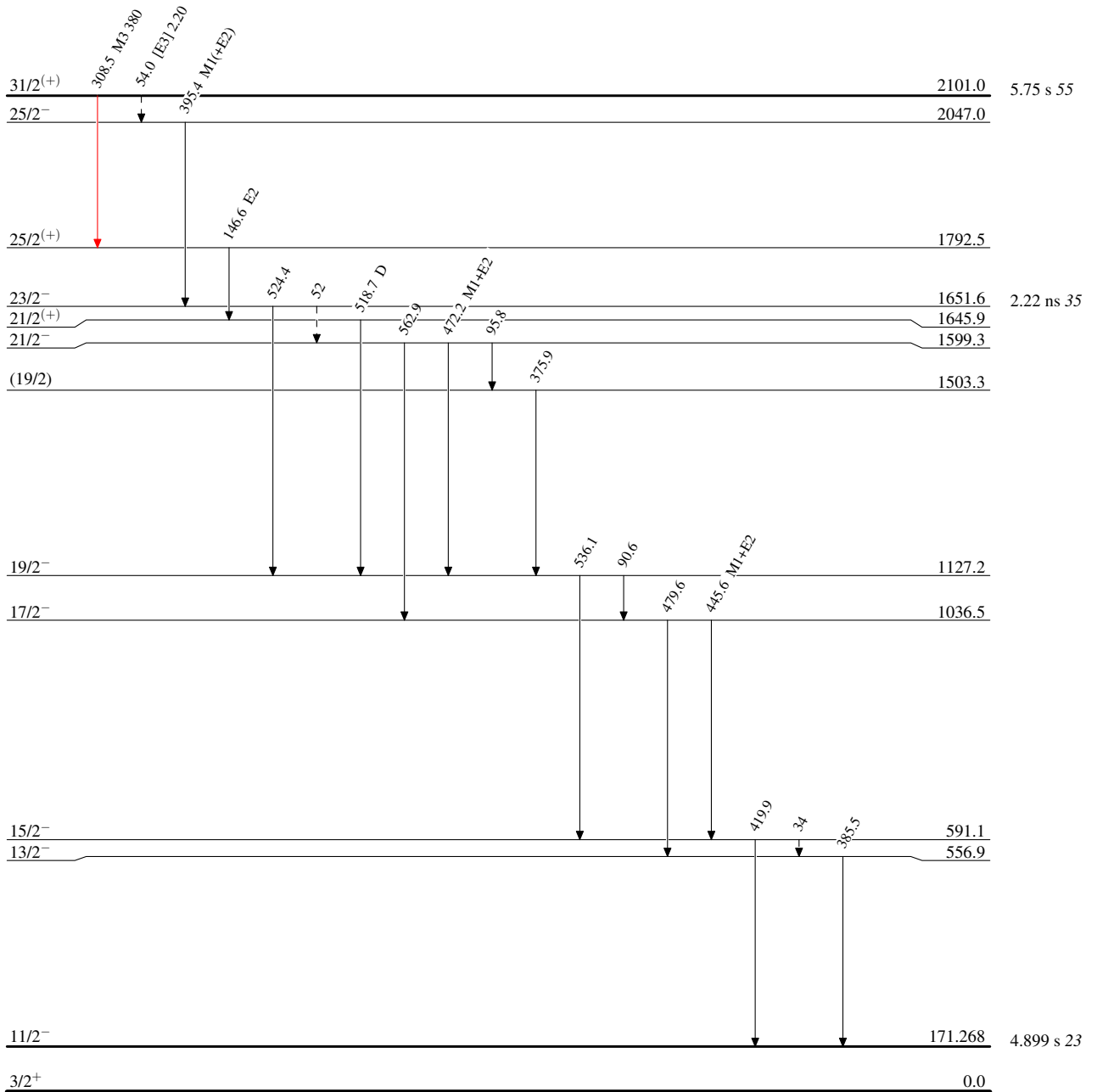$^{\#}$ Implied by $\gamma\gamma$ coincidences, but not observed directly.
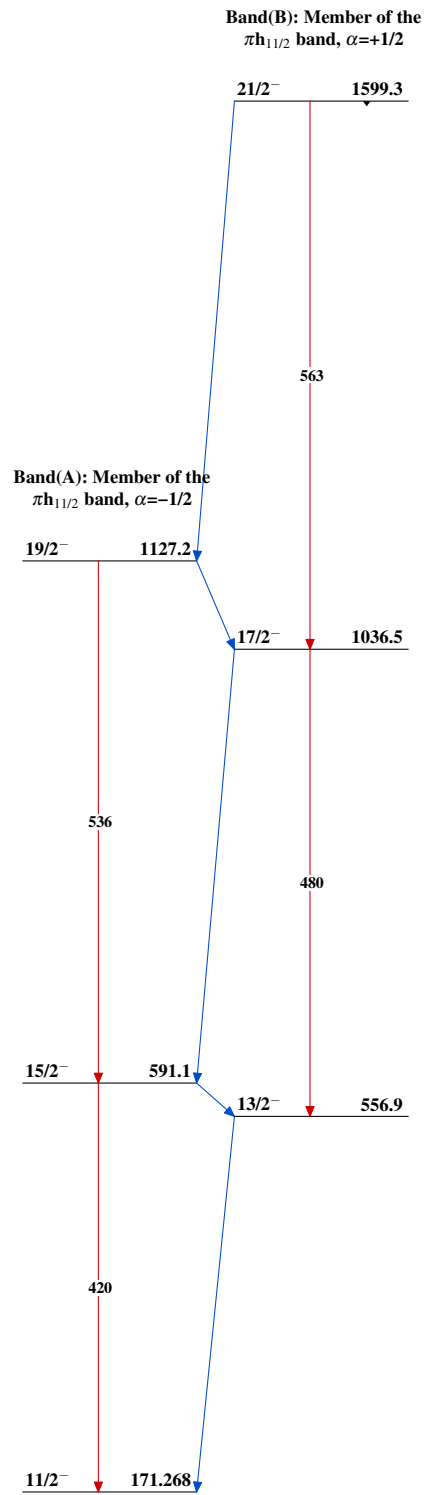
$^{@}$ Additional information 2.

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<u>Level Scheme</u>

Intensities: Relative I$_\gamma$

Legend

→	I$_\gamma$ < 2%×I$_\gamma^{max}$
→ (blue)	I$_\gamma$ < 10%×I$_\gamma^{max}$
→ (red)	I$_\gamma$ > 10%×I$_\gamma^{max}$
- - - →	γ Decay (Uncertain)

$^{191}_{77}$Ir$_{114}$

(HI,xnγ)   **2012Dr02**

Band(B): Member of the
πh$_{11/2}$ band, α=+1/2

21/2⁻   1599.3

563

Band(A): Member of the
πh$_{11/2}$ band, α=−1/2

19/2⁻   1127.2

17/2⁻   1036.5

536

480

15/2⁻   591.1

13/2⁻   556.9

420

11/2⁻   171.268

$^{191}_{77}$Ir$_{114}$