muonic atom 1981Ho22,1974Ba77

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, [1] and Jun Chen[2]	NDS 169,1 (2020)	15-Oct-2020

1981Ho22 (also 1977Ho23,1977HoYL): measured muonic atom x rays, deduced isomer and isotope shifts. Authors also give calculated muonic transition energies and intensities.

1974Ba77 (also 1974Wa22,1973BaUA,1972Li33,1968Ba36): measured γ rays for muonic atom, deduced isomer shifts. Magnetic moment measurement reported in 1973BaUA.

Theoretical calculations: 1976Fu04, 1975Fu11, 1974Fu04, 1974En08, 1973Me08, 1968Pi06.

Muonic x-ray transitions (1981Ho22)

Transition	Energy (keV)	Intensity (relative)
2^+,2p1/2 - 0^+,1s1/2	5588.1 *7*	5.6 *7*
2^+,2p3/2 - 2^+,1s1/2	5539.9 *11*	1.1 *2*
0^+,2p3/2 - 0^+,1s1/2	5499.4 *5*	30 *3*
2^+,2p1/2 - 2^+,1s1/2	5401.1 *6*	13.0 *14*
0^+,2p1/2 - 0^+,1s1/2	5371.0 *5*	37 *4*
0^+,2p3/2 - 2^+,1s1/2	5312.5 *6*	14.1 *15*
0^+,3d3/2 - 0^+,2p1/2	2311.49 *16*	34 *4*
0^+,3d5/2 - 0^+,2p3/2	2214.98 *16*	36 *4*
0^+,3d3/2 - 0^+,2p3/2	2183.2 *3*	3.7 *5*
0^+,3d5/2 - 2^+,2p1/2	2126.40 *17*	15.6 *17*
0^+,3d3/2 - 2^+,2p1/2	2094.8 *6*	1.0 *2*
0^+,3p3/2 - 0^+,2s1/2	1358.7 *4*	1.0 *2*
0^+,3p1/2 - 0^+,2s1/2	1319.6 *5*	0.7 *2*
0^+,2s1/2 - 0^+,2p1/2	1006.62 *23*	0.6 *1*
0^+,2s1/2 - 0^+,2p3/2	878.3 *5*	0.4 *2*

^{190}Os Levels

E(level)[†]	J^π[†]	Comments
0.0	0^+	$\Delta<r^2>(^{190}Os,^{188}Os)$=0.090 fm^2 *4* (1981Ho22).
187	2^+	Q=−1.18 *3* (1981Ho22) B(E2)↑=2.46 *2* (1981Ho22) Magnetic splitting=0.66 keV *+8−4* (1972Li33). Muonic isomer shift (from γ-ray data)=−0.145 keV *+65−45* (1974Ba77). Other: −0.01 keV *7* (from x-ray data, 1981Ho22). μ=0.662 *32* (1973BaUA).
558	2^+	B(E2)(from 2^+,187)=0.42 *6* (1981Ho22). Muonic isomer shift (from γ−ray data)=+1.44 keV *12* (1974Ba77).

[†] From the Adopted Levels.

$\gamma(^{190}Os)$

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
186.180 *25*	26	187	2^+	0.0	0^+	E_γ: 186.58 *+6−4* (corrected for magnetic shift; correction for nuclear polarization is negligible). I_γ: 1974Wa22 quote 34 *8*. Magnetic shift=−0.400 keV *+50−25* (1974Ba77).
372.93 *12*	2.9	558	2^+	187	2^+	Magnetic shift=−0.008 keV *30* (1974Ba77).
559.32 *12*	2.3	558	2^+	0.0	0^+	Magnetic shift=−0.018 keV *30* (1974Ba77).

Continued on next page (footnotes at end of table)

muonic atom 1981Ho22,1974Ba77 (continued)

$\gamma(^{190}Os)$ (continued)

† Nuclear transition energy for muonic atom (1974Ba77). The value is shifted relative to that for an electronic atom.
‡ In percent per muon stop (1974Ba77). The uncertainty is probably ≈25%.

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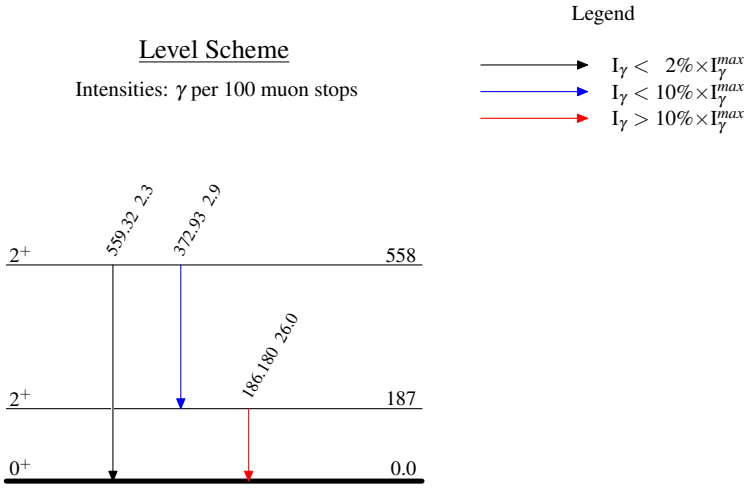
Level Scheme

Intensities: γ per 100 muon stops



$^{190}_{76}Os_{114}$