Muonic atom 1974Ba77,1983Gu02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 108, 79 (2007)	15-Oct-2006

1974Ba77: measured x rays, isomer shifts measured.
1983Gu02 (also 1979Ha08,1977HaXE): measured Muonic x rays.

Muonic x rays (1983Gu02)

Initial state	Final State	x-ray energy (keV)	Intensity (%)
$[(1/2)^-\otimes 2p_{3/2}]2^+$	$[(1/2)^-\otimes 1s_{1/2}]1^-$	5847.7 5	17.7 8
$[(1/2)^-\otimes 2p_{3/2}]1^+$	$[(1/2)^-\otimes 1s_{1/2}]0^-,1^-$	5831.7 5	18.5 10
$[(5/2)^-\otimes 2p_{1/2}]2^+$	$[(1/2)^-\otimes 1s_{1/2}]1^-$	5810.7 9	4.0 2
$[(1/2)^-\otimes 2p_{3/2}]2^+$	$[(5/2)^-\otimes 1s_{1/2}]2^-,3^-$	5689.0 5	8.0 4
$[(1/2)^-\otimes 2p_{1/2}]0^+,1^+$	$[(1/2)^-\otimes 1s_{1/2}]0^-,1^-$	5663.2 5	34.1 9
$[(5/2)^-\otimes 2p_{1/2}]2^+$	$[(5/2)^-\otimes 1s_{1/2}]2^-,3^-$	5652.6 6	8.7 5
$[(1/2)^-\otimes 2p_{3/2}]1^+$	$[(3/2)^-\otimes 1s_{1/2}]1^-,2^-$	5623.7 7	3.5 3
$[(1/2)^-\otimes 3d_{3/2}]1^-,2^-$	$[(1/2)^-\otimes 2p_{1/2}]0^+,1^+$	2534.16 9	26.6 8
$[(1/2)^-\otimes 3d_{5/2}]2^-,3^-$	$[(5/2)^-\otimes 2p_{1/2}]2^+$	2425.41 14	9.3 4
$[(1/2)^-\otimes 3d_{5/2}]2^-$	$[(1/2)^-\otimes 2p_{3/2}]1^+$	2404.86 13	16.3 6
$[(1/2)^-\otimes 3d_{5/2}]2^-,3^-$	$[(1/2)^-\otimes 2p_{3/2}]2^+$	2388.55 11	22.4 7
$[(1/2)^-\otimes 3d_{3/2}]1^-,2^-$	$[(1/2)^-\otimes 2p_{3/2}]1^+$	2366.2 3	1.9 4
$[(1/2)^-\otimes 3d_{5/2}]2^-$	$[(3/2)^-\otimes 2p_{1/2}]1^+$	2359.8 4	2.4 3
$[(1/2)^-\otimes 3d_{3/2}]1^-,2^-$	$[(1/2)^-\otimes 2p_{3/2}]2^+$	2349.9 3	2.3 3

^{199}Hg Levels

See 1983Gu02 for discussion of μ and Q in a strong coupling model. See 'Adopted Levels, gammas' for comparison of B(E2)'s with adopted $T_{1/2}$ and for reduced transition probabilities.

E(level)	J^π[†]	Comments
0	$1/2^-$	Isotope shift measured (1974Ba77).
158.17 *12*	$5/2^-$	B(E2)↑=0.362 *8* (1983Gu02) Q=+0.85 *12* (1983Gu02) Isomer shift=+0.27 keV *17* (1983Gu02) from x rays, +0.26 keV *15* (1974Ba77) from γ's. Other: B(E2)=0.362 *10*, Q=+0.95 *6* (1979Ha08).
208.29 *6*	$3/2^-$	B(E2)↑=0.201 *9* (1983Gu02) Q=+0.50 *12* (1983Gu02) B(E2)(from 158, $5/2^-$ level)=0.060 *10* (1983Gu02). Isomer shift=−0.56 keV *38* (1983Gu02) from x rays; +0.41 keV *12* (1974Ba77) from γ's. See 1983Gu02 for discussion of discrepancy. Other: B(E2)=0.216 *10*, Q=+0.62 *15* (1979Ha08).

[†] From 'Adopted Levels'.

γ(^{199}Hg)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π
158.17 *12*	10.8	158.17	$5/2^-$	0	$1/2^-$
208.29 *6*	5.9	208.29	$3/2^-$	0	$1/2^-$

Continued on next page (footnotes at end of table)

Muonic atom 1974Ba77,1983Gu02 (continued)

$\gamma(^{199}Hg)$ (continued)

† Lowest energy component of the hyperfine structure (1974Ba77).
‡ Per 100 muon stops (1974Ba77).

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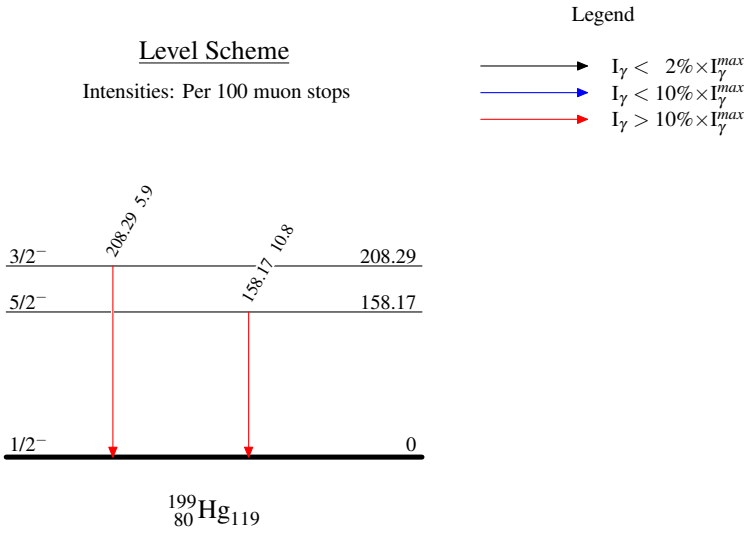
Level Scheme

Intensities: Per 100 muon stops



$^{199}_{80}Hg_{119}$