Muonic atom 1972Le07,1974Ba77,1984Ru08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. Chen # and F. G. Kondev	NDS 126, 373 (2015)	30-Sep-2013

1972Le07: negative muon beam was produced from the Nevis 160-inch 385 MeV synchron-cyclotron. Target was a 8 g/cm^2 metallic ^{209}Bi foil. x-rays and γ-rays were detected with a Ge(Li) detector. Measured I(x-ray), hfs constants. Deduced levels, μ, quadrupole moment, isomer shift.

1974Ba77,1971Ba11: muon beam was produced at the CERN muon channel. x-rays and γ-rays were detected by Ge(Li) and NaI detectors. Measured Eγ, Iγ, I(x-ray). Deduced isomer shifts.

1984Ru08: muon beam was produced from the SIN accelerator. A 3 g/cm^2 metallic Bi target was used. x-rays and γ-rays were detected with a Ge(Li) detector. Measured hfs. Deduced isomer shifts.

Additional information 1.

From a study of the emission of high-energy γ's (>75 MeV), 1988Do05 determine Iγ/μ=0.58×10^{-5} *10*.

^{209}Bi Levels

Isomer-shift data of 1972Le07 are those quoted by 1974Wa22 and based on muonic E(γ) from 1972Le07, bare nucleus E(γ) of 1974Ba77, and magnetic-shift correction of 1974Ba77. Data are in keV. Values for the 2741 level are means of the values deduced from the crossover to ground-state and cascade to 1608 level transitions.

E(level)†	J$^\pi$‡	Comments
0.0	9/2$^-$	
1608.6	13/2$^+$	Q=−0.37 *3* (1972Le07) Isomer shift=3.7 *+6−8* (1974Ba77), 3.5 *6* (1972Le07), 3.8 *3* (1984Ru08).
2564.2	9/2$^+$	μ=3.5 *7* (1972Le07) Q=+0.11 *5* (1972Le07) B(E3)↑=0.072 *14* (1972Le07) Isomer shift=6.2 *5* (1974Ba77), 5.8 *5* (1972Le07), 6.6 *3* (1984Ru08).
2741.1	15/2$^+$	μ=6.2 *12* (1972Le07) Q=−0.03 *40* (1972Le07) B(E3)↑=0.106 *23* (1972Le07) Isomer shift=6.7 *5* (1974Ba77), 6.2 *5* (1972Le07), 6.29 *18* (1984Ru08). B(E3)↑: Authors′ value of 0.075 *16* has been corrected by the evaluator for additional branching of the 2741 level via the 141γ (I(γ+ce)=29.1% *9* from Adopted Gammas).

† Rounded-off values from Adopted Levels.

‡ From Adopted Levels.