^{211}Bi α decay 1991Ry01,1976Bl13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev, S. Lalkovski	NDS 112, 707 (2011)	1-Aug-2010

Parent: ^{211}Bi: E=0.0; $J^\pi=9/2^-$; $T_{1/2}$=2.14 min *2*; Q(α)=6750.3 *5*; %α decay=99.724 *4*

1976BL13: Source: Chemically separated ^{223}Ac; Detectors: planar and coaxial Ge(Li) detectors with FWHM(122 keV)=0.75 keV and FWHM(1063 keV)=2.35 keV respectively; Measured: Eγ, Iγ.

Others: 1961Ry02, 1962Gi04, 1962Wa18, 1966Go13, 1967Da10, 1968Br17, 1971Gr17, 1970Ko34, 1971Ko37, 1988Hi14.

^{207}Tl Levels

E(level)†	Jπ†	$T_{1/2}$†	Comments
0.0	$1/2^+$	4.77 min *3*	
351.06 *4*	$3/2^+$	30 ps *7*	$T_{1/2}$: From α-ce(t) coin. in 1970Ko34 and 1971Ko37.
1348.1 *3*	$11/2^-$	1.33 s *11*	

† From Adopted Levels, unless otherwise noted.

α radiations

Eα†	E(level)	Iα#	HF‡	Comments
(5299.4 *5*)	1348.1	≤0.0019	≥9.7	Eα: Not observed experimentally. Energy deduced from Q(α) and the level energy for the $11/2^-$ isomer. Iα: Upper limit deduced by assuming Hf(5299α)=10.
6278.2 *7*	351.06	16.23 *14*	48 *5*	Iα: weighted average of 16.43 *4* (1967Da10), 16.02 *5* (1966Go13), 15.9 *3* (1962Wa18), and 15.8 *1* (1962Gi04). δ(α)(L=5/L=3)=0.271 *32* or 1.36 *6* (1966Go13) from Ag(θ,pol) with δ(351.06γ)=0.271 *4* and the adopted spin sequence: 9/2−(α)3/2+(351.06γ)$1/2^+$.
6622.9 *6*	0.0	83.77 *14*	207 *20*	Iα: 100-Iα(6278.8). Iα: Also: 83.57 *4* (1967Da10).

† From 1991Ry01, based on the measurements in 1961Ry02 (Eα=6277.20 *68*) and 1971Gr17 (Eα=6623.1 *6*), unless otherwise noted.

‡ $r_0(^{207}Tl)$=1.49 *3*. Average of $r_0(^{208}Pb)$=1.5212 *4* and $r_0(^{206}Hg)$=1.449 *20*.

For absolute intensity per 100 decays, multiply by 0.99724 *4*.

γ(^{207}Tl)

Eγ†	Iγ†#	Ei(level)	J_i^π	E_f	J_f^π	Mult.	δ‡	α@	Comments
351.07 *5*	13.06 *12*	351.06	$3/2^+$	0.0	$1/2^+$	M1+E2	+0.271 *4*	0.243 *4*	Eγ: Others: 351.06 *12* (1988Hi14), 351.0 *1* (1968Br17), 350.7 *3* (1967Da10). Iγ: From Iα/(1+α); Others: 14.0 *14* (1967Da10); 12.3 *6* (1976Bl13). Mult.: from α(K)exp=0.204 *4* in 1966Go13, 0.195 *15* (1966Go13), 0.18 (1965Va10), 0.175 *17* (1964Co22), 0.20 *1* (1960Pe05); Also: α(L)exp=0.033 *5* (1960Pe05). δ: Based on angular correlations and γ-ray polarization measurements in 1966Go13; Other: 0.194 *21* from α(K)exp=0.204 *4* (1966Go13).

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$\gamma(^{207}Tl)$ (continued)

† From 1976Bl13.
‡ From 1966Go13, based on angular correlations and γ-ray polarization measurements.
# For absolute intensity per 100 decays, multiply by 0.99724 *4*.
@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays