^{209}Bi(α,p)   1971Ch37,1980Di09,1987Po14

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	K. Auranen and E. A. Mccutchan	NDS 168, 117 (2020)	1-Aug-2020

1971Ch37: E=26.5-60.0 MeV. From a comparison between the experimental recoil angular distribution and DWBA calculations, the authors obtain L=11 or 12 for the L-transfer leading to the 45-s ^{212}Po isomer. L=13 can be ruled out. If the isomer is populated directly and has π=+, then J≤16. As authors pointed out, their experiments do not exclude the possibility of the 45-s level being populated by γ ray-decay from higher energy levels produced in L=11 (or L=12) transfers. Based on later work (1987Po14,1989Ku08), however, the adopted spin assignment is J^{π}=(18^{+}).

1980Di09: E=45-172.5 MeV; measured excitation function and isomer ratio. Deduced that the reaction is dominated by preequilibrium processes.

1987Po14: E(α)=40 MeV followed by collection with a helium-jet system. Measured Eα with a Si(Au) detector and Eγ with a Ge(Li) detector.

^{212}Po Levels

E(level)†	$J^{\pi \dagger}$	T$_{1/2}$†	Comments
0.0	0^{+}	294.3 ns 8	E(level): observed by 1980Di09 based on 8.78-MeV α activity.
1355.49 14	6^{+}	0.76 ns 21	E(level): population of this level and the 1476-keV level is proposed by 1980Di09 based on observation of a 10.18 MeV α group.
1476.39 17	8^{+}	14.6 ns 3	E(level): population of this level and the 1355-keV level is proposed by 1980Di09 based on observation of a 10.18 MeV α group.
2930 10	(18^{+})	45.1 s 6	%IT=0.07 2; %α=99.93 2

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Configuration=((π h$_{9/2}$)$^{+2}$(ν g$_{9/2}$)(ν h$_{11/2}$))

E(level): from Q(α)(^{212}Po 45.1 s level)-Q(α)(^{212}Po g.s.), taking Eα to g.s. from 1976FrZO.

J^{π}: shell model suggest 16^{+} or 18^{+} for this isomer. From RUL the unobserved isomeric transition to (14^{+}) level is not of E2 multipolarity. Therefore, $J^{\pi} \neq$ 16^{+}. For further discussion see 1989Ku08, 1987Po14.

T$_{1/2}$: from the decay of 8.53-, 9.08- and 11.65-MeV α's (1962Pe15). Other: 47 s 10 (1962Ka15).

%α,%IT: from Iα(8.784 MeV)/Iα(11.65 MeV) (1989Ku08) (see α decay data set).

Production: ^{209}Bi(α,p) (1989Ku08); daughter ^{212}Bi(7.0 min) β^{-} decay.

† From the Adopted Levels, except where noted.