Adopted Levels

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	08-Sep-2009

S(p)=−1265 *18*; Q(α)=7.53×10^3 *11* 2012Wa38

Note: Current evaluation has used the following Q record 9900 calc −1265 *18* 7410 syst.

S(n) from 1997Mo25, S(p) from measured E(p)(lab)=1258 *18* (2004Ke06), Q(α) from systematics (2003Au03, 2009AuZZ) with uncertainty=250 keV.

S(p)=−1250 *220*, Q(εp)=10700 *200*, s(2p)=−170 *220* (syst,2003Au03,2009AuZZ).

2004Ke06: ^{176}Tl identified in ^{102}Pd(^{78}Kr,p3n) E=380-405 MeV reaction at JYFL using RITU gas-filled recoil separator. The isotopic identification was achieved by position, time and energy correlations between implanted nuclei and α-decays of the daughter nuclide ^{175}Hg (Er-proton-α's from mother and daughter correlations). Measured proton energy, half-life, and search for α decay of ^{176}Tl.

2007Me28: calculated proton decay half-life=0.13 ms for L=0 transition.

^{176}Tl Levels

E(level)	J$^\pi$	T$_{1/2}$	Comments
0.0	(3$^-$,4$^-$,5$^-$)	5.2 ms *+30−14*	%p≈100 (2004Ke06) 2004Ke06 searched for α decay, but none was observed, thus proton decay mode is assigned ≈100%. Calculated half-lives (1997Mo25): 1.2 ms for α decay and 362 ms for β decay. This suggests that α decay mode should compete favorably. E(level): it is assumed by 2004Ke06 that the observed proton decay is ground state to ground state decay. There is no indication of a high-spin isomer in the data of 2004Ke06. From WKB calculations, high-spin level available for proton emission from h$_{11/2}$ orbital should be at energy higher than 950 keV. Such a level may have either too short a half-life to be detected in the experiment of 2004Ke06 or it may decay by γ emission. J$^\pi$: based on (7/2$^-$,9/2$^-$) for ^{175}Hg g.s. and L=0 proton transition to this level from ^{176}Tl g.s.. The L=0 (s$_{1/2}$ orbital) transition is assigned from comparison of measured half-life of ^{176}Tl decay with WKB calculations of half-life of 1.49 ms for s$_{1/2}$, 11.2 ms for d$_{3/2}$ and 17.5 s for h$_{11/2}$ orbitals. T$_{1/2}$: from timing of proton decay (2004Ke06).