Adopted Levels

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. W. Reich	NDS 113, 157 (2012)	31-Dec-2010

S(p)=−1599 (syst) *53*; Q(α)=6759 (syst) *55* 2017Wa10
Q(ε)=10550 (syst) *426*; S(2p)=−271 (syst) *53*; Q(εp)=9133 (syst) *362* 2017Wa10
Additional information 1.
Additional information 2.
Data are primarily from 2006Jo10, with α-related data from 2007Pa27. these two studies have a number of authors in common.
2006Jo10: ^{159}Re produced in the ^{106}Cd(^{58}Ni,P4N) reaction, E(^{58}Ni)= 300 MeV. 1.1 mg/cm^2 thick self-supporting ^{106}Cd target (96.5% enrichment). Reaction products were separated in-flight in the gas-filled separator RITU and implanted into a double-sided Si-strip detector (DSSD) of the GREAT spectrometer. Measured protons, α, temporal correlations between α and protons, and $T_{1/2}$. authors do not report α emission associated with the ^{159}Re decay. for related information in a conference report by these authors, see 2007JoZX.
2007Pa27: similar reaction and experimental conditions as reported in 2006Jo10. Report α-related data, including Eα, %α and $T_{1/2}$. For related information by these authors in a conference report, see 2007PaZT.

^{159}Re Levels

E(level)	J^π	$T_{1/2}$	Comments
(0)	$(1/2^+)$		E(level): 2006Jo10 indicate that the ^{159}Re g.s. May be $\pi s_{1/2}$ and suggest that the short half-life expected for s-wave proton decay is one reason why it would not have been observed in their experiment. J^π: Probable $\pi s_{1/2}$ spherical shell-model state.
0+x	$11/2^-$	20 μs *4*	%α=7.5 *35*; %p=92.5 *35* %α: From 2007Pa27. The calculated $T_{1/2}$ for β decay is ≈0.24 s (1997Mo25), which suggests that β decay does not contribute significantly to the decay of this state. 2007JoZX report %p=92. E(level): From the systematics of the separation of the $1/2^+$ and $11/2^-$ states in the heavier odd-mass Re isotopes, the excitation energy of this level is suggested to be≈160 *50* (G. Audi, private communication to the evaluator, (March, 2010)). 2006Jo10 suggest that this level energy May be≈120. J^π: From l=5 proton transition to the ^{158}W g.s. ($J^\pi=0^+$) (2006Jo10). l=5 is deduced from comparison of the measured $T_{1/2}$ value, with those expected for l=0, 2 and 5 emission, the three possibilities based on the available proton orbitals. Since the g.s. of the daughter nuclide, ^{158}W, has $J^\pi=0^+$, this establishes $\pi h_{11/2}$ as the configuration of the initial state. $T_{1/2}$: Weighted average of 21 μs *4*, from 2006Jo10 (p(t)), and 16 μs *9*, from 2007Pa27 (α(t)).