Adopted Levels

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Filip G. Kondev	ENSDF	20-Feb-2017

Q(β^-)=9725 (syst) *361*; S(n)=3861 (syst) *424*; S(p)=11688 (syst) *500*; Q(α)=−5225 (syst) *424* 2017Wa10
S(2n)=8905 (syst) *424*; S(2p)=25857 (syst) *500*; Q(β^-n)=4060 (syst) *301*; Q(β^-2n)=0 (syst) *361* 2017Wa10
Additional information 1.
2017Wu04: The ^{158}Pr nuclide was produced at the RIBF-RIKEN facility using the ^{9}Be(^{238}U,F) reaction at E=345 MeV/nucleon. Two experiments, optimized for the transmission of ^{158}Nd and ^{170}Dy ions, were carried out with average beam intensities of 7 pnA and 12 pnA, respectively. The identification of the nuclide of interest was made in the BigRIPS separator by determining the atomic number and the mass-to-charge ratio of the ion using the TOF-Bρ-ΔE method. The reaction products were transported through the ZeroDegree Spectrometer and implanted into the beta-counting system WAS3ABi that was surrounded by the EURICA array comprising of 84 HPGe detectors. The typical implantation rate was 100 ions/s. Measured: implanted ion-β^--t, implanted ion-β^--γ-t and implanted ions-γ-t correlations. Deduced: $T_{1/2}$.

^{158}Pr Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	(5$^-$)	0.181 s *14*	%β^-=100; %β^-n=? %β^-: Only β^- decay mode is expected. J^π: From systematics of known quasiparticle states in neighboring nuclei and the proposed configuration (by the evaluator). The assignment is tentative. $T_{1/2}$: From 2017Wu04, using a fit to the implanted ion-β^--t spectrum using the least-squares and maximum-likelihood methods. The data analysis included contributions from the parent, daughter and grand-daughter decays, as well as a constant background. The assignment to the ground state is ambiguous, given the possible existence of an isomeric state. configuration: From systematics of well-deformed nuclei in this mass region, the π3/2[541] and ν7/2[633] Nilsson orbitals are expected near the proton and neutron Fermi surfaces, respectively. Thus, using the Gallagher-Moszkowski rule, one may expect the K^π=5$^-$, π3/2[541]$\otimes\nu$7/2[6333] configuration for the ground state. The existence of a K^π=2$^-$ isomer, arising from the same configuration, is also possible. The assignment is made by the evaluator.