Adopted Levels

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 172, 1 (2021)	31-Jan-2021

Q(β^-)=13574 *21*; S(n)=3197 *20*; S(p)=14780 *SY*; Q(α)=−10510 *SY* 2017Wa10

Estimated uncertainties (2017Wa10): 400 for S(p), 300 for Q(α).

S(2n)=8021 *25*, S(2p)=32580 *400* (syst), Q(β^-n)=8203 *20* (2017Wa10). Q(β^-2n)=4033 *20* (deduced by evaluators from masses in 2017Wa10).

The ^{100}Rb isotope produced and identified by mass separation from fission of ^{235}U with neutrons (1986Wa17,1982Kr11,1979Pe01, 1978Ko29) and protons (1979Az01). 2001Lh02 produced this isotope from fission of ^{238}U by 600-MeV protons at the ISOLDE facility.

2011Ni01: ^{100}Rb nuclide produced in ^{9}Be(^{238}U,F) reactions at E=345 MeV/nucleon produced by the cascade operation of the RIBF complex of accelerators at RIKEN. Target=550 mg/cm^2. Identification of ^{100}Rb made on the basis of magnetic rigidity, time-of-flight and energy loss. The separated nuclei were implanted in a nine-layer double-sided silicon-strip detector (DSSSD). Correlations were recorded between the heavy ions and β rays. The half-life of ^{100}Rb isotope was measured from the correlated ion-β decay curves and maximum likelihood analysis technique. In the analysis of the decay curve, β-detection efficiency, background rate, daughter and granddaughter (including those populated in delayed neutron decays) half-lives, and β-delayed neutron emission probabilities were considered. Comparison of measured half-lives with FRDM+QRPA and KTUY+GT2 calculations.

Additional information 1.

Mass measurements: 2017De18, 2016Kl04, 2013Ma81.

An isomer with possible $J^\pi=(6^+)$ is proposed by 1995Pf04 on the basis of an apparent β^- feeding of a (6^+) level in ^{100}Sr and β^-n feeding of an $11/2^+$ level in ^{99}Sr from ^{100}Rb decay. Possible configuration=π3/2[431]⊗ν9/2[404] (1995Pf04). On the other hand, 2001Lh02 (same authors as those of 1995Pf04) proposed a low-spin isomer 1^- with configuration=π3/2[431]⊗ν5/2[532]. But none of these activities have been confirmed so far.

Theory references: consult the NSR database (www.nndc.bnl.gov/nsr/) for eight primary references, four dealing with nuclear structure calculations and four with decay modes and half-lives.

^{100}Rb Levels

E(level)	J^π	$T_{1/2}$	Comments
0	(4^-)	52 ms *2*	%β^-=100; %β^-n=5.6 *12*; %β^-2n=0.15 *5* J^π: from configuration=π3/2[431]⊗ν5/2[532] and proposed by 2001Lh02, based on ground-state configurations of neighboring nuclides. For this configuration, Gallagher-Moszkowski favors 4^- g.s. and 1^- at higher energy. $J^\pi=(3^+)$ was also suggested earlier in 1995Pf04 by the same authors as 2001Lh02, on the basis that there seemed to be a strong β^- feeding to a 2^+ level in ^{100}Sr and that the possible configuration could be π3/2[431]⊗ν3/2[411]. $T_{1/2}$: weighted average of 48 ms *3* (2011Ni01, (ion)β-correlated decay curve); 53 ms *2* (1987PfZX, β and n decay); 59 ms *10* (1986ReZU, β and n decay, βn-coin, 55 ms *18* in 1986Wa17 is superseded by 1986ReZU); 51 ms *17* (1979Pe01, n decay); 50 ms *10* (1978Ko29, β and γ decay). %β^-n: weighted average of 8 *2* (1987PfZX) and 5.0 *10* (1986ReZU). others: ≈35 (2010MaZS), 26 *8* (2001Lh02, from gamma-ray intensities and assuming no β feeding to ^{100}Sr g.s.). %β^-2n: from measured %β^-2n/%β^-n=0.027 *7* (1981JoZV), and adopted %β^-n=5.6 *12*. Additional information 2.