Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, Balraj Singh	NDS 164, 1 (2020)	15-Feb-2020

Q(β^-)=10060 *SY*; S(n)=4960 *SY*; S(p)=17550 *SY*; Q(α)=−9930 *SY* 2017Wa10

Estimated uncertainties (2017Wa10): 300 for Q(β^-), 330 for S(n), 500 for S(p), 580 for Q(α).

Q(β^-n)=6140 *300*, S(2n)=7370 *300* (syst,2017Wa10). S(2p)=33110 (2019Mo01,theory). Evaluators deduce Q(β^-2n)=900 *300* from mass values in 2017Wa10.

1997Be70 (also 1997Be12): ^{98}Kr identified by analyzing fragments by Fragment Separator at GSI using tof (of 300 ns) method on fission fragments in Pb(^{238}U,X) and Be(^{238}U,X) reactions at E(^{238}U)=750 MeV/nucleon. A total of 525 events were assigned to ^{98}Kr.

2003Be05: ^{98}Kr produced at PSB-ISOLDE facility in CERN by 1.0 GeV- or 1.4-GeV protons impinging on a uranium-carbide/graphite target. Measured β and neutrons; deduced $T_{1/2}$ and %β^-n.

2011Ni01: ^{98}Kr nuclide produced in Be(^{238}U,F) reactions at E=345 MeV/nucleon produced by the cascade operation of the RBIF complex of accelerators at RIKEN. Target=550 mg/cm^2. Identification of ^{98}Kr 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 ^{98}Kr 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.

Theory references: consult the NSR database (www.nndc.bnl.gov/nsr/) for 26 primary references, 18 dealing with nuclear structure calculations and 8 with decay modes and half-lives.

Additional information 1.

^{98}Kr Levels

Cross Reference (XREF) Flags

A ^{1}H(^{99}Rb,2pγ)

E(level)†	J$^\pi$‡	$T_{1/2}$	XREF	Comments
0.0	0$^+$	43 ms *4*	**A**	%β^-=100; %β^-n=7.0 *10* (2003Be05); %β^-2n=? Theoretical $T_{1/2}$=83.8 ms, %β^-n=12, %β^-2n=0.0 (2019Mo01). Theoretical $T_{1/2}$=34.6 ms, %β^-n=0.9, %β^-2n=0.1 (2016Ma12). $T_{1/2}$: weighted average of 42 ms *4* (2011Ni01, analysis of the (ion)β-correlated decay curve) and 46 ms *8* (2003Be05, from decay of β-delayed neutrons). %β^-n from βn-coin (2003Be05).
329 *7*	(2$^+$)		**A**	
545 *17*	(0$^+$,2$^+$)		**A**	
638? *25*			**A**	
827 *20*	(4$^+$)		**A**	

† From Eγ values.

‡ From 2017Fl03 in ^{1}H(^{99}Rb,2pγ), based on systematics of even-even nuclei for the first 2$^+$ states, and comparison with theoretical calculations for all the three states.

Adopted Levels, Gammas (continued)

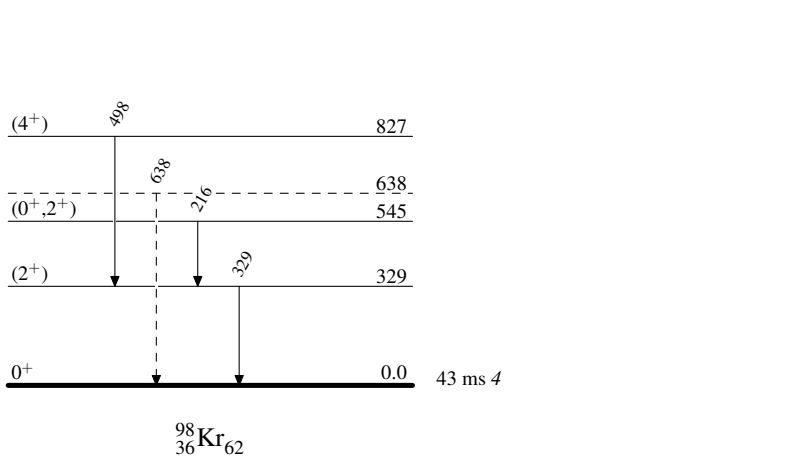
$\gamma(^{98}Kr)$

E_i(level)	J_i^π	E_γ †	E_f	J_f^π
329	(2^+)	329 *7*	0.0	0^+
545	$(0^+,2^+)$	216 *10*	329	(2^+)
638?		638‡ *25*	0.0	0^+
827	(4^+)	498 *13*	329	(2^+)

† From $^1H(^{99}Rb,2p\gamma)$ (2017Fl03).
‡ Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme



$^{98}_{36}Kr_{62}$