Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	12-Apr-2010

Q(β^-)=8.30×10^3 *23*; S(n)=6.2×10^3 *3*; S(p)=1.23×10^4 *3*; Q(α)=−8.5×10^3 *4* 2012Wa38

Note: Current evaluation has used the following Q record 8.34E3 23 *6*.18E3 31 *12*.54E330-8990 syst 2009AuZZ,2003Au03.

ΔQ(α)=380 (syst,2009AuZZ,2003Au03).

Q(β^-n)=3020 *230*, S(2n)=11180 *250*, S(2p)=29190 *770* (2009AuZZ,2003Au03).

1990Tu01: ^{57}V activity produced by 800 MeV proton induced fission and fragmentation using natural Th target and subsequent particle analysis with a tof isochronous spectrometer.

1998So03: ^{57}V activity produced by the fragmentation of 64.5 MeV/nucleon ^{65}Cu beam impinging on a ^{9}Be target and subsequent mass separation using the lise3 spectrometer. Measured $T_{1/2}$ from β^- singles and β-γ coincidence decay curves.

Additional information 1.

1998Am04: activity produced by the fragmentation of 500 MeV/nucleon ^{86}Kr beam on a ^{9}Be target and subsequent mass separation using the FRS spectrometer. Measured $T_{1/2}$. See also 1997AmZZ thesis.

1999So20: calculated potential energy surfaces for odd-A vanadium isotopes by the HFB method with the Gogny D1S force.

2005Li53: shell-model calculations of 3/2$^-$, 5/2$^-$ and 7/2$^-$ states up to 2.5 MeV excitation, carried out in the full *pf* space with the interaction GXPF1; 7/2$^-$ and 5/2$^-$ are predicted to be g.s. and 95 keV, respectively. First 3/2$^-$ state is predicted at 530 keV.

^{57}V Levels

Cross Reference (XREF) Flags

A ^{57}Ti β^- decay (98 ms)
B ^{238}U(^{64}Ni,Xγ)

E(level)	J$^\pi$	$T_{1/2}$	XREF	Comments
0.0	(7/2$^-$)	0.32 s *3*	AB	%β^-=100; %β^-n=? %β^-n: 0.44 (calculated,1997Mo25). J$^\pi$: shell-model calculations with GXPF1 interaction and full *pf* space predict 7/2$^-$ g.s., first 5/2$^-$ at 95 keV, and first 3/2$^-$ at 530 keV. Potential energy surface HFB calculations using Gogny DIS force (1999So20) predict 7/2 as the lowest state for slight oblate deformation and 3/2$^-$ for small prolate deformation. 3/2$^-$ with π3/2[521] configuration is predicted (1998So03) in QRPA calculations and comparisons with observed decay pattern. 7/2$^-$ is preferred from systematics of neighboring odd-A Vanadium and even-even Ti nuclides, and recent (2008LuZZ) observation of an (11/2$^-$) to (7/2$^-$) γ transition in ^{238}U(^{64}Ni,xγ) reaction. But 5/2,3/2 is favored if β feeding is real in ^{57}V decay to (3/2)$^-$ g.s. in ^{57}Cr. Other: 3/2$^-$ from calculations (1997Mo25). $T_{1/2}$: from timing of $\beta\gamma$ coin (1998So03). Others: 0.34 s *8* (1998Am04,1997AmZZ, earlier values from the same group: 0.66 s *4* (1995AmZY), 0.6 s *1* (1995AmZX)). See 1998Am04 and 1998So03 for a comparison of their measurements of $T_{1/2}$ with theoretical estimates using different models.
113.2 *4*			A	
174.8 *4*			A	
1163	(11/2$^-$)		B	J$^\pi$: from systematics of neighboring odd-A Vanadium and even-even Ti nuclides.
1731.9 *4*			A	
1754.3? *5*			A	
2036.3 *4*			A	
2475.6 *5*			A	

Adopted Levels, Gammas (continued)

$\gamma(^{57}V)$

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	E_i(level)	E_γ	I_γ	E_f
113.2		113.1 *4*	100	0.0	(7/2$^-$)	1754.3?	1579.4[†] *4*	100	174.8
174.8		(61.7)	35 *10*	113.2		2036.3	1861.5 *4*	100 *14*	174.8
		174.8 *4*	100 *6*	0.0	(7/2$^-$)		1922.9 *5*	19 *4*	113.2
1163	(11/2$^-$)	1163		0.0	(7/2$^-$)	2475.6	744.0 *4*	46 *8*	1731.9
1731.9		1557.3 *5*	100 *23*	174.8			2300.4 *4*	100 *10*	174.8
		1732.2 *6*	55 *9*	0.0	(7/2$^-$)				

[†] Placement of transition in the level scheme is uncertain.

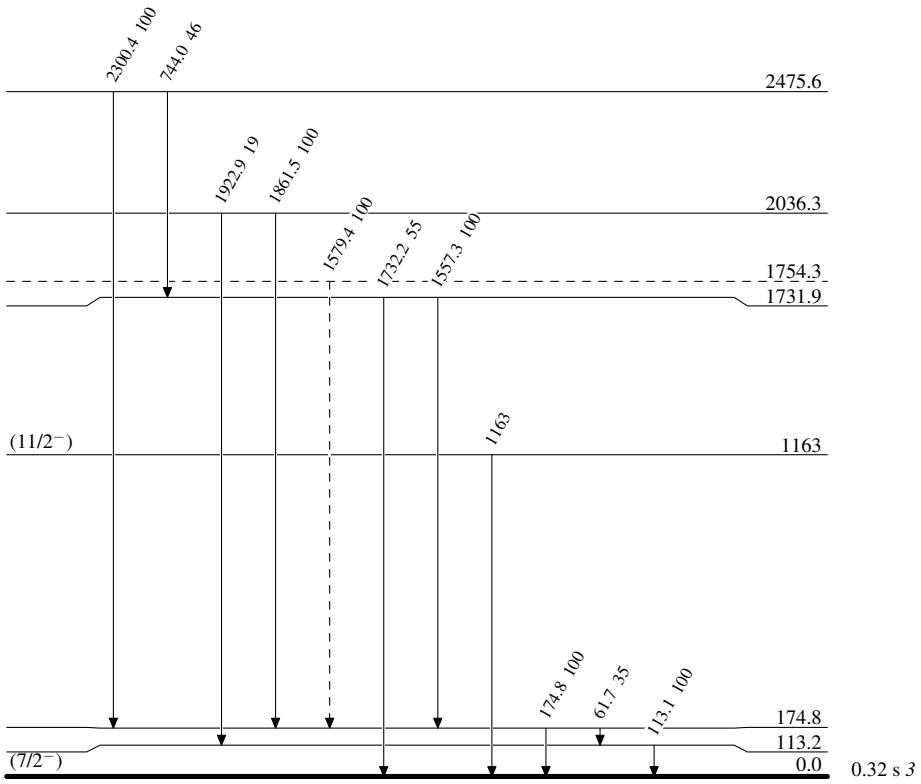
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{57}_{23}V_{34}$