Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Update	B. Singh	ENSDF	18-Jun-2015

Q(β^-)=6670 *70*; S(n)=5840 *70*; S(p)=15450 *SY*; Q(α)=−9030 *SY* 2012Wa38
Estimated uncertainties: ΔS(p)=ΔQ(α)=200 (2012Wa38).
S(2n)=9990 *5*, S(2p)=28840 *300* (syst), Q(β^-n)=2089 *8* (2012Wa38).
No new experimental references since the last ENSDF update in 2013, except the 2015Lo04 which is included here.
1994Be24: produced by Pb(^{238}U,F), E=750 MeV/nucleon at GSI; identification by time-of-flight. See also 1998Do08 from the same lab.
1997So07: ^{116}Ru produced in ^{208}Pb(^{238}U,X) at 20 MeV/nucleon.
2006Mo07: ^{116}Ru produced in fragmentation of ^{136}Xe at 121.8 MeV/nucleon with ^{9}Be target. The A1900 fragment separator at NSCL facility at MSU was used to separate nuclei of interest. The secondary beam was implanted into β-decay arrangement consisting of Si(PIN) detectors and Si strip detectors (DSSD) and single-sided Si strip detectors (SSSD). Implantation and decay events were time stamped and correlated. Measured half-life from β spectrum.
2011Ha48: measured precise mass by Penning-trap method at JYFL.
2015Lo04: measured half-life from ion-β correlations, isotope produced in ^{9}Be(^{238}U,F) reaction at E=345 MeV/nucleon at RIKEN facility.
Nuclear structure calculations:
2010Bo12 (also 1980Va15), 2010No01, 1998Du02: levels, J, π, B(E2), potential energy surfaces; IBM-1 model.
1997Sk01: ground state deformation and other spectroscopic properties.

^{116}Ru Levels

Bands are proposed by 2013So17 based on IBM-1 model calculations.

Cross Reference (XREF) Flags

A ^{116}Tc β^- decay (57 ms)

E(level)†	Jπ‡	$T_{1/2}$	XREF	Comments
0#	0^+	204 ms *6*	A	%β^-=100; %β^-n=? Theoretical %β^-n=0.11 (1997Mo25). $T_{1/2}$: from (ion)β correlated curve (2015Lo04). Other: 204 ms *+32−29* (2006Mo07).
292.43# *21*	(2^+)		A	
614.30@ *23*	(2^+)		A	
760.1# *4*	(4^+)		A	
910.9@ *3*	(3^+)		A	
1150.1@ *3*	(4^+)		A	
1375.7# *5*	(6^+)		A	
1467.9@ *4*	(5^+)		A	
1476.5 *3*	(4^+)		A	
1502.5 *4*			A	
1760.7 *4*			A	
1836.7@ *5*	(6^+)		A	
1850.4 *5*			A	
1867.4 *4*	(5^+)		A	
2166.4 *6*			A	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{116}Ru Levels (continued)

† From least-squares fit to Eγ values.
‡ From systematics of e-e nuclei for first 2^+ and 4^+ states, and from comparisons with IBM-1 model calculations for higher states (2013So17).
# Band(A): Ground-state band.
@ Band(B): γ-band.

γ(^{116}Ru)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π
292.43	(2^+)	292.43 *25*	100	0	0^+	1476.5	(4^+)	325.73 *27*	100 *19*	1150.1	(4^+)
614.30	(2^+)	321.76 *25*	100 *13*	292.43	(2^+)			565.82 *29*	57 *15*	910.9	(3^+)
		614.29 *33*	60 *9*	0	0^+			862.66 *29*	81 *16*	614.30	(2^+)
760.1	(4^+)	467.68 *25*	100	292.43	(2^+)	1502.5		591.63 *31*	100	910.9	(3^+)
910.9	(3^+)	296.65 *26*	100 *13*	614.30	(2^+)	1760.7		849.81 *30*	100	910.9	(3^+)
		618.57 *27*	64 *11*	292.43	(2^+)	1836.7	(6^+)	686.66 *28*	100	1150.1	(4^+)
1150.1	(4^+)	389.8† *5*	22 *15*	760.1	(4^+)	1850.4		939.50 *42*	100	910.9	(3^+)
		535.17 *26*	100 *14*	614.30	(2^+)	1867.4	(5^+)	390.04† *39*	36 *24*	1476.5	(4^+)
1375.7	(6^+)	615.59 *25*	100	760.1	(4^+)			956.57 *28*	100 *22*	910.9	(3^+)
1467.9	(5^+)	318.14† *32*	31 *9*	1150.1	(4^+)	2166.4		698.50 *36*	100	1467.9	(5^+)
		557.04 *25*	100 *15*	910.9	(3^+)						

† Placement of transition in the level scheme is uncertain.

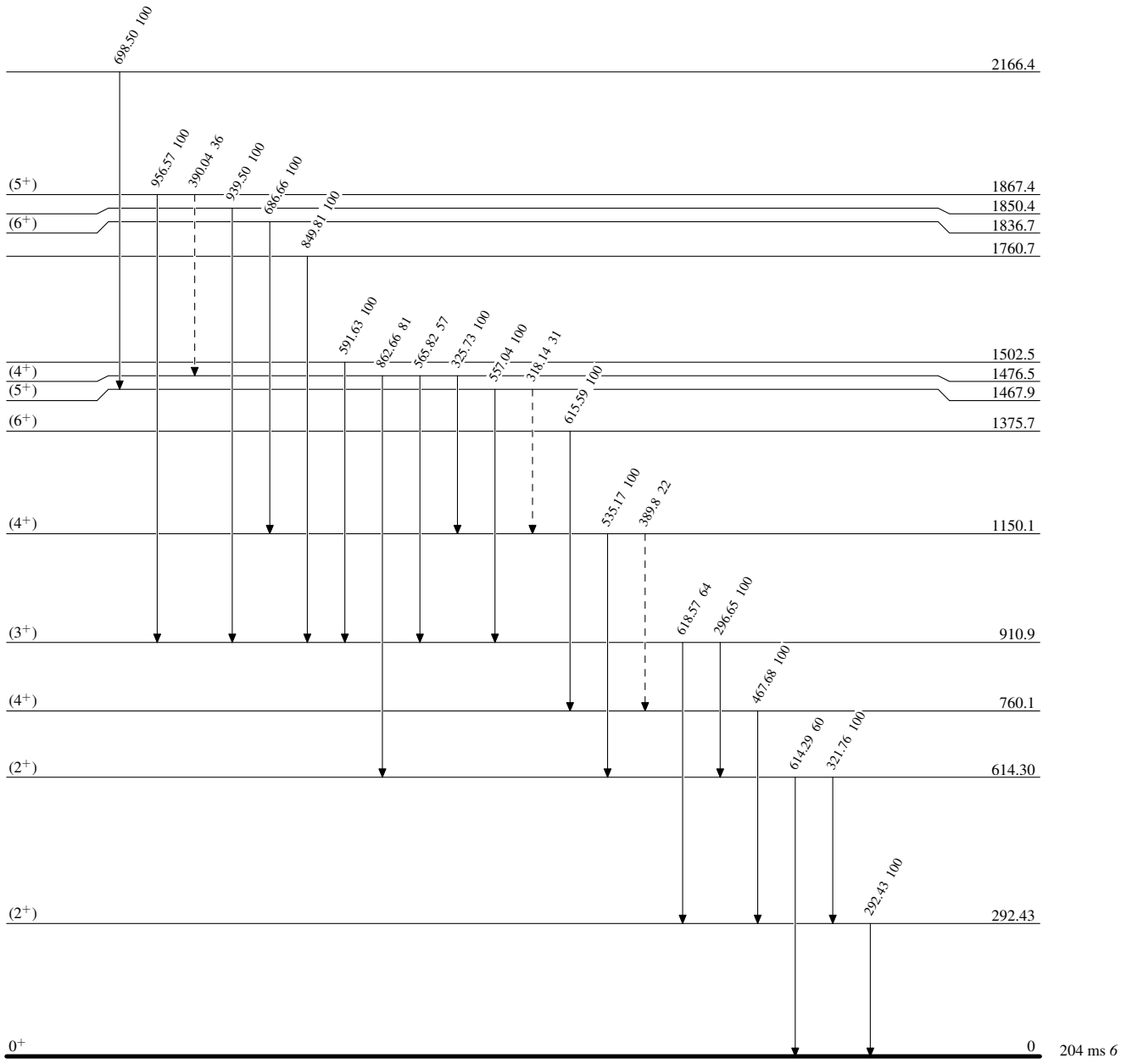
Adopted Levels, Gammas

Legend

Level Scheme

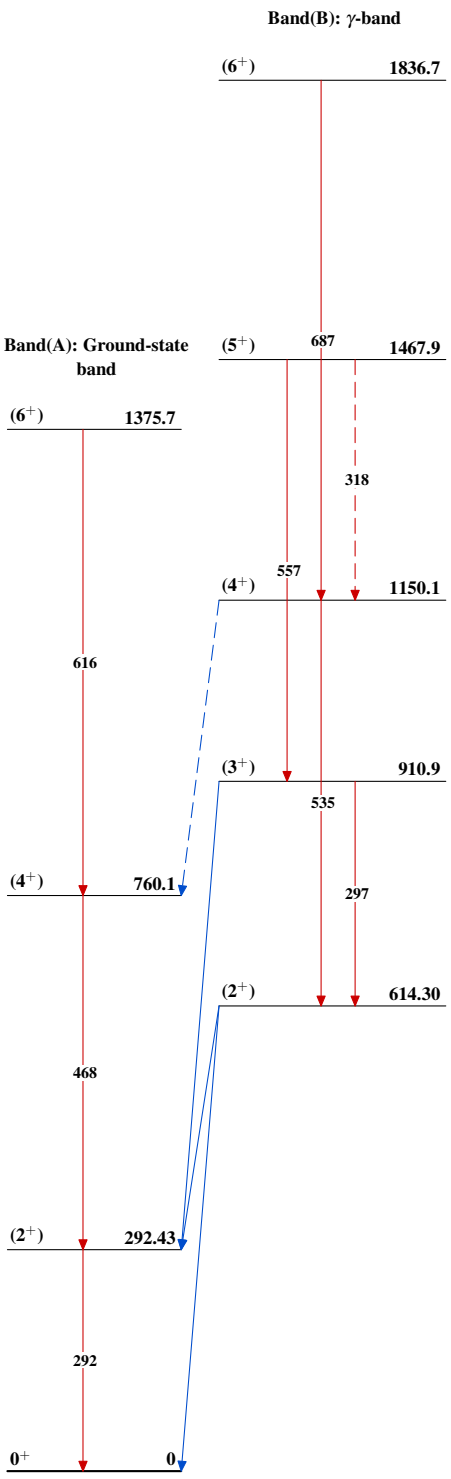
Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{116}_{44}Ru_{72}$

Adopted Levels, Gammas



$^{116}_{44}Ru_{72}$