Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Caroline D. Nesaraja, Scott D. Geraedts and Balraj Singh	NDS 111,897 (2010)	12-Jan-2010

Q(β^-)=3.99×10^3 *21*; S(n)=7.38×10^3 *21*; S(p)=1.49×10^4 *3*; Q(α)=−8.66×10^3 *24* 2012Wa38

Note: Current evaluation has used the following Q record 4.07E3 21 7.38E3 20 *14*.93E331-8.67E3 24 2009AuZZ,2003Au03. S(2n)=12700 *200*, S(2p)=27480 *280* (2009AuZZ).

1988Bo06, 1985Bo49: ^{58}Cr produced and identified in W(^{76}Ge,X) reaction at 11.5 MeV/nucleon followed by mass separation at GSI facility. Measured γ, β, $\beta\gamma$ coin, isotopic half-life using Ge and Si detectors and plastic scintillators.

1994Se12, 1990Tu01: ^{58}Cr produced in Th(p,X) at E=800 MeV, followed by mass separation and time-of-flight isochronous spectrometer, deduced mass.

1996Do23: ^{58}Cr produced in Be(^{65}Cu,X) at E=64.5 MeV/nucleon at GANIL facility.

Structure calculation (levels, transition probabilities, etc.): 2008Ka41, 2002Ca48.

Additional information 1.

The β^-n decay of ^{59}V to ^{58}Cr has been investigated by 2005Li53 and an upper limit of 3% feeding of the first 2$^+$ state in ^{58}Cr has been suggested.

^{58}Cr Levels

Cross Reference (XREF) Flags

- A ^{58}V β^- decay (191 ms)
- B Coulomb excitation
- C ^{238}U(^{48}Ca,Xγ),^{208}Pb(^{48}Ca,Xγ)
- D ^{238}U(^{64}Ni,Xγ)

E(level)	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0†	0$^+$	7.0 s *3*	ABCD	%β^-=100 T$_{1/2}$: from 1985Bo49. Other: 6 s (1996Do23). Additional information 2.
880.7† *2*	2$^+$	5.4 ps *+21−12*	ABCD	T$_{1/2}$: deduced by evaluators from B(E2)(W.u.)=14.8 *42* (2005Bu29). J$^\pi$: E2 γ to 0$^+$.
1938.6† *4*	4$^+$		A CD	J$^\pi$: ΔJ=2 γ to 2$^+$; band assignment.
2981.8 *5*	(4$^+$)		A C	J$^\pi$: γ to 4$^+$; population in heavy-ion fusion reaction favors ascending spin with excitation energy.
3219.3† *5*	6$^+$		CD	J$^\pi$: ΔJ=2 γ to 4$^+$; band assignment.
3256.1 *5*	(4,5,6$^+$)		C	J$^\pi$: γ to 4$^+$, ascending spins assumed in heavy-ion reaction.
3311.0‡ *5*	(5$^-$)		CD	J$^\pi$: ΔJ=1 γ to 4$^+$, possible band assignment.
3617.7 *5*			C	J$^\pi$: γ to 4$^+$.
3715.1‡ *5*	(6$^-$)		CD	J$^\pi$: ΔJ=1 γ to (5$^-$); band assignment.
3954.8 *5*			C	J$^\pi$: γ to 4$^+$.
3981.2 *5*	(6,7)		CD	J$^\pi$: ΔJ=1 or 0 γ to 6$^+$.
4185.4‡ *5*	(7$^-$)		C	J$^\pi$: γ's to (5$^-$), 6$^+$ and (6$^-$); band assignment.
4670.2‡ *5*	(8$^-$)		C	J$^\pi$: γ's to (6$^-$) and (7$^-$); band assignment.
4679.7† *6*	8$^+$	≈2.1 ps	C	T$_{1/2}$: from broadened line shape of 1460.4γ. J$^\pi$: γ to 6$^+$; band assignment.

† Band(A): g.s. band.

‡ Band(B): 5$^{(-)}$ band.

Adopted Levels, Gammas (continued)

γ(^{58}Cr)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.†	Comments
880.7	2^+	880.7 *2*	100	0.0	0^+	E2	B(E2)(W.u.)=15 *4* (2005Bu29) Mult.: ΔJ=2, Q from γ(θ) in ^{238}U(^{48}Ca,Xγ); E2 from RUL.
1938.6	4^+	1057.9 *3*	100	880.7	2^+	Q	
2981.8	(4^+)	1043.2‡# *2*	100	1938.6	4^+		
3219.3	6^+	1280.5 *3*	100	1938.6	4^+	Q	
3256.1	$(4,5,6^+)$	1317.5 *3*	100	1938.6	4^+		
3311.0	(5^-)	1372.5 *3*	100	1938.6	4^+	D	
3617.7		1679.1‡# *3*	100	1938.6	4^+		
3715.1	(6^-)	404.2 *1*	100	3311.0	(5^-)	D	
3954.8		2016.1‡# *3*	100	1938.6	4^+		
3981.2	(6,7)	761.9 *2*	100	3219.3	6^+		
4185.4	(7^-)	470.6 *2*	38 *13*	3715.1	(6^-)		
		873.9 *3*	100 *25*	3311.0	(5^-)		
		966.1 *2*	75 *25*	3219.3	6^+		
4670.2	(8^-)	484.8 *2*	14 *7*	4185.4	(7^-)		
		955.1 *3*	100 *14*	3715.1	(6^-)		
4679.7	8^+	1460.4 *3*	100	3219.3	6^+		

† From ^{238}U(^{48}Ca,Xγ).

‡ Very weak line, seen in delayed (out-of-beam) coincidence spectrum which indicates presence of a long-lived isomer, but due to weak intensity, no further information was deduced by 2006Zh42. The evaluators treat this transition as uncertain.

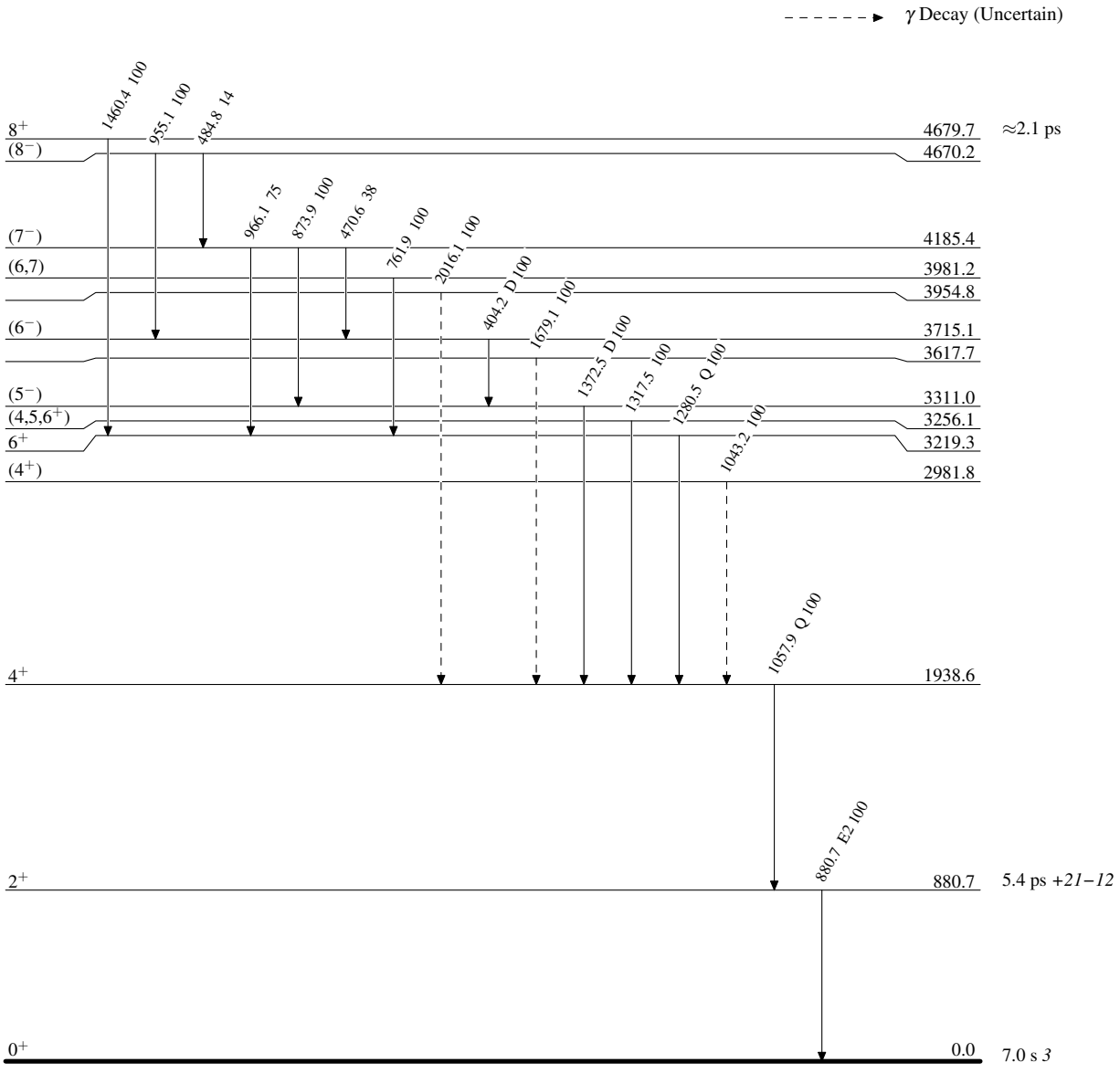
Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

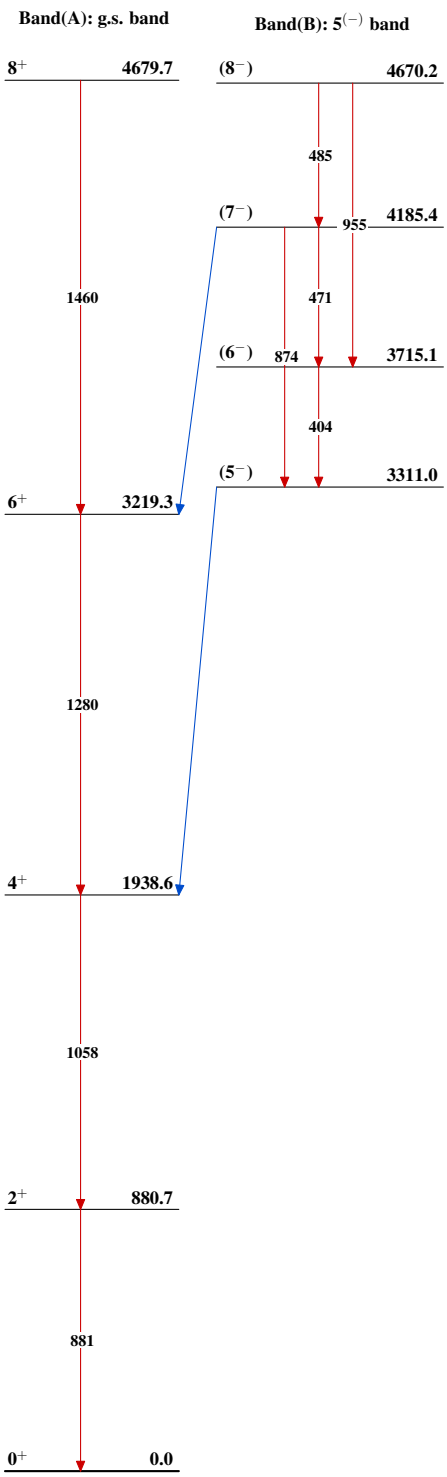
Level Scheme

Intensities: Relative photon branching from each level



$^{58}_{24}Cr_{34}$

Adopted Levels, Gammas



$^{58}_{24}Cr_{34}$