Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev, S. Lalkovski	NDS 112,707 (2011)	1-Aug-2010

Q(β^-)=−6.38×10^3 *6*; S(n)=9.67×10^3 *4*; S(p)=1018 *23*; Q(α)=6893 *20* 2012Wa38
Note: Current evaluation has used the following Q record −6.38E+3 8 *9.67×10^3 6* 1020 *50* 6900 *50* 2003Au03.
SF isomer with $T_{1/2}$>8 ns was reported by 1969Ru08, but not confirmed by 1970Bj02.

^{207}Fr Levels

Cross Reference (XREF) Flags

A ^{211}Ac α decay
B ^{181}Ta(^{30}Si,4nγ)

E(level)†	J$^\pi$	$T_{1/2}$	XREF	Comments
0‡	9/2$^-$	14.8 s *1*	AB	%α=95 *2*; %ε+%β^+=5 *2* μ=+3.89 *8* (1985Co24,2005St24) Q=−0.16 *5* (1985Co24,2005St24) %α: Weighted average of 93% *3* (1974Ho27) and 97% *3* (1981Ri04). %ε+%β^+ decay has not been observed. J$^\pi$: Hyperfine structure, atomic beam (1986Ek02). Favored α decay (HF=1.2) to the daughter nuclide (^{203}At) g.s. (J^π=9/2$^-$). $T_{1/2}$: Weighted average of 14.7 s *3* (1967Va20), 14.8 s *1* (1974Ho27), and 14.9 s *1* (1981Ri04). Other: 18.7 s *8* (1964Gr04). μ,Q: Deduced using the atomic beam laser spectroscopy technique (1985Co24). $\Delta\langle r^2\rangle$=−0.21794 *16* relative to ^{212}Fr (1987Co19, supersedes 1985Co24). The uncertainty is statistical only. Uncertainty in density and calibration add a few percent (1987Co19). Configuration=(π h$_{9/2}$)$^{+1}$. Eα=6768 keV *3* is recommended by 1991Ry01. Measured values are 6773 keV 5 (1967Va20), 6761 keV *5* (1974Ho27), 6766 keV *5* (1981Ri04) and 6900 keV 20 (1964Gr04).
599.6‡ *5*	(13/2$^-$)		B	J$^\pi$: 599.6γ to 9/2$^-$; 599.6γ is assigned E2 multipolarity in 2008Ha39, but the measured A_2 value is inconsistent with such an assignment presumably due to a contamination from a transition of similar energy in ^{204}At.
1154.8‡ *7*	(17/2$^-$)		B	J$^\pi$: 555.2γ (E2) to (13/2$^-$).
1808.5‡ *9*	(21/2$^-$)		B	J$^\pi$: 653.7γ to (17/2$^-$); weakly collective band structure.
1885.2 *9*			B	

† From a least-squares fit to Eγ.
‡ Band(A): Weakly collective structure based on the (π h$_{9/2}$)$^{+1}$ configuration.

γ(^{207}Fr)

E$_i$(level)	J$_i^\pi$	E$_\gamma$†	I$_\gamma$†	E$_f$	J$_f^\pi$	Mult.†	Comments
599.6	(13/2$^-$)	599.6 *5*	100	0	9/2$^-$	[E2]	Mult.: A_2=−0.04 *4* (2008Ha39). The A_2 value is inconsistent with the proposed stretched E2 assignment in 2008Ha39, where a possible contamination from a transition of similar energy in ^{204}At is suggested.
1154.8	(17/2$^-$)	555.2 *5*	100	599.6	(13/2$^-$)	(E2)	Mult.: A_2=+0.67 *12* (2008Ha39).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{207}Fr)$ (continued)

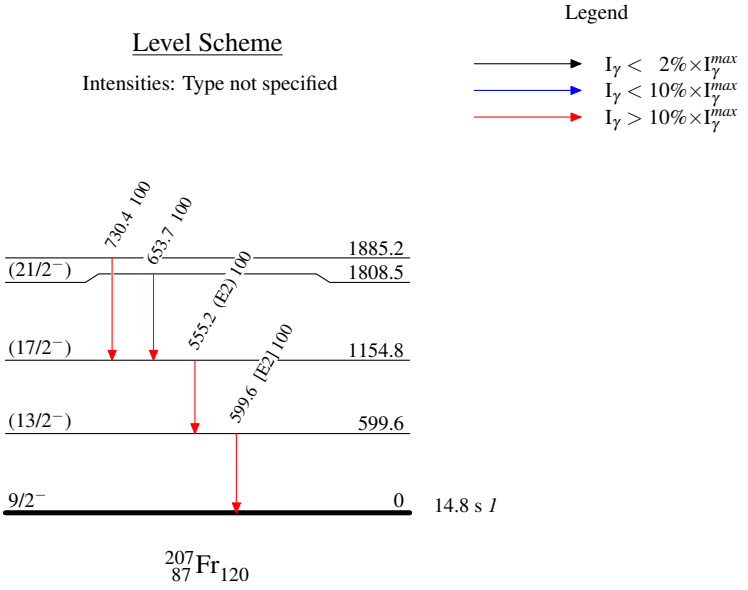
E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
1808.5	(21/2$^-$)	653.7 *5*	100	1154.8	(17/2$^-$)
1885.2		730.4 *5*	100	1154.8	(17/2$^-$)

† From 2008Ha39. The uncertainties in Eγ were estimated by the evaluator. The Mult. assignment is based on $\gamma(\theta)$ analysis with A_4 term set to zero.

Adopted Levels, Gammas

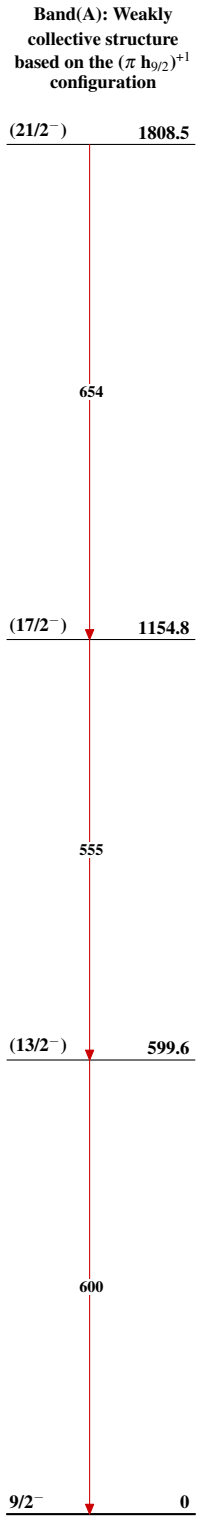
Level Scheme

Intensities: Type not specified



$^{207}_{87}Fr_{120}$

Adopted Levels, Gammas



$^{207}_{87}Fr_{120}$