Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 110,1239 (2009)	1-Feb-2008

Q(β^-)=7761 *14*; S(n)=6061 *14*; S(p)=1.176×10^4 *3*; Q(α)=−7727 *14* 2012Wa38
Note: Current evaluation has used the following Q record 7450 80 *6*.33E3 13 *11050* syst-6730 syst 2003Au03.
Estimated uncertainty from 2003Au03: ΔSP=ΔQA=420.
Q(β^-n)=2690 *120* (2003Au03).
First identification of ^{111}Tc nuclide by 1988Pe13 from fission of ^{238}U induced by protons. Later works from the same and associated groups: 1992PeZX thesis, 1996Me09 and 1998Pf01, where delayed-neutron branch and details of γ rays to ^{111}Ru were studied.
Except for isotopic identification of ^{111}Mo, no information is available about its half-life or its β decay to ^{111}Tc levels.
Mass measurement: 2006MaZZ.

^{111}Tc Levels

Cross Reference (XREF) Flags

A ^{248}Cm SF decay
B ^{252}Cf SF decay

E(level)[†‡]	J$^\pi$[#]	$T_{1/2}$	XREF	Comments
0.0[@]	(5/2$^+$)	290 ms *20*	AB	%β^-=100; %β^-n=0.85 *20* (1996Me09) E(level): the lowest level populated in the two SF decay studies is probably the ground state, although, such studies do not provide definite evidence for this assignment. 2005Ur01, however, rule out 7/2 or 9/2 for the ground state from systematics and model predictions. Such arguments, however, allow 5/2$^-$ ground state. $T_{1/2}$: from 1996Me09. Other: 300 ms 30 (1988Pe13) earlier value from the same group as 1996Me09.
67.3[&] *3*	(7/2$^+$)		AB	
199.1[@] *4*	(9/2$^+$)		AB	
483.2[&] *4*	(11/2$^+$)		AB	
574.9[a] *5*	(11/2$^+$)		AB	
609.7[@] *5*	(13/2$^+$)		AB	
887.6[a] *6*	(13/2$^+$)		AB	
1029.1[&] *5*	(15/2$^+$)		B	
1161.8[@] *5*	(17/2$^+$)		AB	
1181.6[a] *6*	(15/2$^+$)		B	
1706.3[&] *5*	(19/2$^+$)		B	
1830.3[@] *6*	(21/2$^+$)		AB	
2553.9[@] *7*	(25/2$^+$)		B	
3214.1[@] *7*	(29/2$^+$)		B	
3951.9[@] *8*	(33/2$^+$)		B	

[†] If ΔEγ not given, ±0.30 keV assumed for least-squares fitting.
[‡] From least-squares fit to Eγ's, assuming Δ(Eγ)=0.3 keV for each γ ray.
[#] As proposed by 2005Ur01 and 2006Lu12 based on band assignments, systematics and model predictions, except that parentheses have been added here due to lack of strong supporting arguments.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{111}Tc Levels (continued)

[@] Band(A): $\pi 5/2[422]$, $\alpha=+1/2$.
[&] Band(a): $\pi 5/2[422]$, $\alpha=-1/2$.
[a] Band(B): K+2, satellite band.

$\gamma(^{111}Tc)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	Comments
67.3	$(7/2^+)$	67.3	100	0.0	$(5/2^+)$	M1+E2	Mult.: from α(K)exp and $\gamma\gamma(\theta)$.
199.1	$(9/2^+)$	131.8	100	67.3	$(7/2^+)$	D[‡]	
483.2	$(11/2^+)$	284.2	100 *13*	199.1	$(9/2^+)$		
		415.9	44 *13*	67.3	$(7/2^+)$		
574.9	$(11/2^+)$	375.8	100	199.1	$(9/2^+)$		
		507.9[#]		67.3	$(7/2^+)$		
609.7	$(13/2^+)$	126.5	38 *8*	483.2	$(11/2^+)$		
		410.6	100 *11*	199.1	$(9/2^+)$		
887.6	$(13/2^+)$	312.7	100	574.9	$(11/2^+)$		
1029.1	$(15/2^+)$	419.5	100	609.7	$(13/2^+)$		
		545.8	99	483.2	$(11/2^+)$		
1161.8	$(17/2^+)$	132.6	19	1029.1	$(15/2^+)$		
		552.1	100	609.7	$(13/2^+)$	Q[‡]	
1181.6	$(15/2^+)$	293.6[#]		887.6	$(13/2^+)$		
		606.7	100	574.9	$(11/2^+)$		
1706.3	$(19/2^+)$	544.5	100	1161.8	$(17/2^+)$		
		677.3	81	1029.1	$(15/2^+)$		
1830.3	$(21/2^+)$	124.0[#]		1706.3	$(19/2^+)$		
		668.5	100	1161.8	$(17/2^+)$		
2553.9	$(25/2^+)$	723.6	100	1830.3	$(21/2^+)$		
3214.1	$(29/2^+)$	660.2	100	2553.9	$(25/2^+)$		
3951.9	$(33/2^+)$	737.8	100	3214.1	$(29/2^+)$		

[†] Averages of values from the two SF decay datasets.
[‡] From $\gamma\gamma(\theta)$ in ^{248}Cm SF decay; mult=Q refers to $\Delta J=2$ and D to $\Delta J=1$ transitions.
[#] Placement of transition in the level scheme is uncertain.

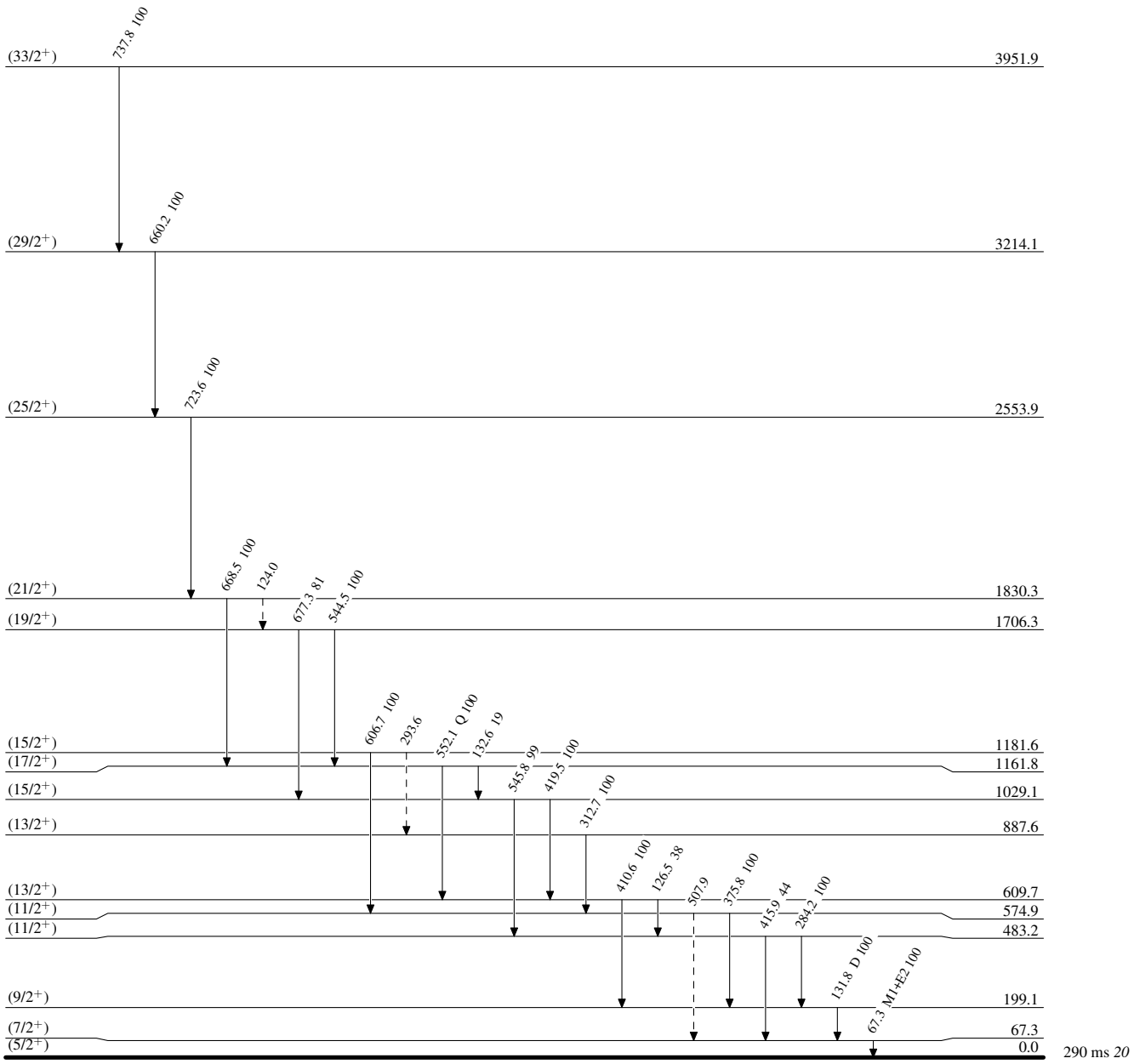
Adopted Levels, Gammas

Legend

Level Scheme

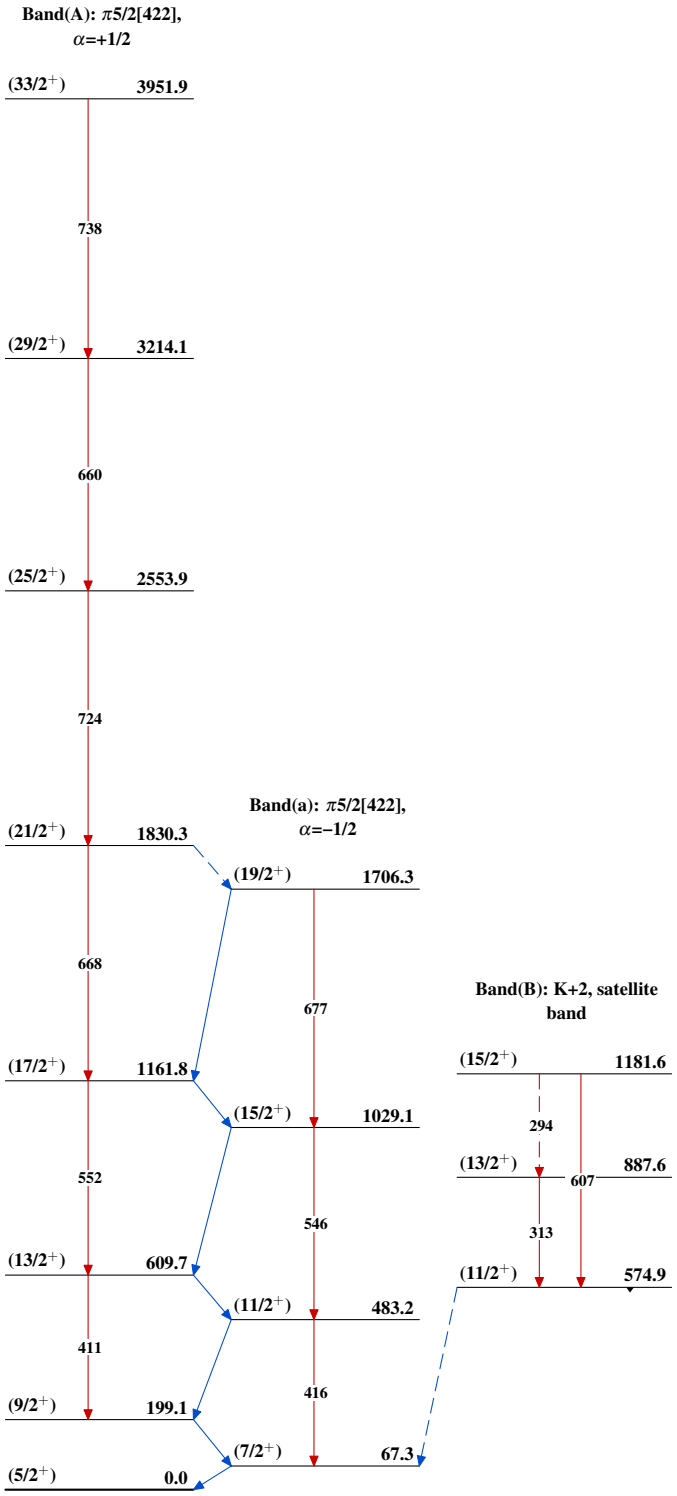
Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{111}_{43}Tc_{68}$

Adopted Levels, Gammas



$^{111}_{43}Tc_{68}$