Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 109, 1383 (2008)	1-Mar-2008

Q(β^-)=5113 *12*; S(n)=7044 *15*; S(p)=9896 *13*; Q(α)=−6148 *10* 2012Wa38
Note: Current evaluation has used the following Q record.
Q(β^-)=4820 *90*; S(n)=7.40×10^3 *15*; S(p)=1.014×10^4 *16*; Q(α)=−6.21×10^3 *16* 2003Au03
The levels derived from γ seen only in ^{107}Mo β^- decay need confirmation.
Suggested band configurations differ in 2004Lu20 & 2004Ur07.

^{107}Tc Levels

Cross Reference (XREF) Flags

- A ^{107}Mo β^- decay
- B ^{252}Cf SF decay
- C ^{248}Cm SF decay

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	XREF	Comments
0.0	(3/2$^-$)	21.2 s *2*	ABC	%β^-=100 J$^\pi$: From systematics (2004Ur07). $T_{1/2}$: from 1969WiZX. Others: 21.0 s *10* (1972Tr08) γ-decay curves; 21 s *2* (1972Tr08) growth-decay of ^{107}Ru in technetium activity. Others: 1943Bo03, 1965Vo06.
0.0+x[b]	(3/2$^+$)		B	Additional information 1.
30.1 *1*	(1/2$^+$)	3.85 μs *5*		$T_{1/2}$: From 2007Si06.
45.84[c] *10*	(5/2$^-$)		ABC	E(level): the relative order of the 20.0γ and 45.6γ is not established in ^{107}Mo β^- decay so a level at 20.0 instead of at 45.6 could be possible; however, a 2-component $T_{1/2}$ value (6 ns and 194 ns) measured in SF for 45.6γ suggests that it lies below 20.6γ and that $T_{1/2}$(45.6)=6 ns *2*.
65.72 *14*	(5/2$^+$)	184 ns *3*	ABC	g=−0.92 *3* g-factor: from ^{252}Cf SF decay. $T_{1/2}$: from $\beta\gamma$ and $\gamma\gamma$ coin (1986OhZZ). Others: 238 ns *7* (1974ClZX), 245 ns *15* (1976ChZD), 194 ns *35* (1974ClZX). All from ^{252}Cf SF decay.
134.4 *2*	5/2$^-$		C	
137.43[@] *16*	(7/2$^+$)		ABC	
172.34+x[b] *10*	(7/2$^+$)		B	
207.8[c] *6*	(7/2$^-$)		C	
275.79[#] *16*	(9/2$^+$)		BC	
413.3[c] *8*	(9/2$^-$)		C	
466.30 *20*			A	
495.92 *16*			A	
501.44+x[b] *15*	(11/2$^+$)		B	
549.32 *16*			A	
568.39[@] *17*	(11/2$^+$)		BC	
646.2[c] *9*	11/2$^-$		C	
727.96[#] *17*	(13/2$^+$)		BC	
766.05[a] *17*	(11/2$^+$)		B	
850.70 *17*			A	
934.7[c] *13*	13/2$^-$		C	
983.99+x[b] *18*	(15/2$^+$)		B	
1087.74[&] *17*	(13/2$^+$)		B	E(level): one Eγ=519.5 is also shown deexciting, but with no level to feed.
1143.33[@] *18*	(15/2$^+$)		BC	

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Adopted Levels, Gammas (continued)

^{107}Tc Levels (continued)

E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF
1228.8[c] *14*	(15/2⁻)	C	1730.92[&] *19*	(17/2⁺)	B	2604.67[@] *20*	(23/2⁺)	B
1330.27[#] *18*	(17/2⁺)	BC	1839.97[@] *19*	(19/2⁺)	BC	2845.12[#] *21*	(25/2⁺)	BC
1374.9 *6*		A	1941.8[c] *14*	(19/2⁻)	C	3226.2+x[b] *3*	(27/2⁺)	B
1391.64[a] *18*	(15/2⁺)	B	2056.46[#] *19*	(21/2⁺)	BC	3350.77[@] *22*	(27/2⁺)	B
1596.3[c] *16*	(17/2⁻)	C	2094.77[a] *20*	(19/2⁺)	B	3587.1[#] *3*	(29/2⁺)	BC
1613.04+x[b] *20*	(19/2⁺)	B	2379.68+x[b] *24*	(23/2⁺)	B	4320.6[#] *4*	(33/2⁺)	B

† Level energy from least-squares adjustment.
‡ From γ multipolarities and bands assignments.
# Band(A): π7/2[413], α=+1/2(2004Lu20), π5/2[422], α=+1/2 (2004Ur07).
@ Band(a): π7/2[413], α=−1/2(2004Lu20), π5/2[422], α=+1/2 (2004Ur07).
& Band(B): K+2 satellite band, α=+1/2. Band originating from 7/2[413] band (2004Lu20).
a Band(b): K+2 satellite band, α=−1/2. Band originating from 7/2[413] band (2004Lu20).
b Band(C): π1/2[431] intruder band (2004Lu20).
c Band(D): π5/2[303] (2004Ur07).

γ(^{107}Tc)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.†	α@	$I_{(\gamma+ce)}$	Comments
30.1	(1/2⁺)	30.1 *1*	100	0.0	(3/2⁻)	E1	3.94	100	
45.84	(5/2⁻)	45.83 *10*	100	0.0	(3/2⁻)	M1+E2	12	100	α(K)exp=6.0 *15*
65.72	(5/2⁺)	20.0		45.84	(5/2⁻)				
		65.77 *14*	100	0.0	(3/2⁻)	E1	0.444		
137.43	(7/2⁺)	71.72 *14*	100	65.72	(5/2⁺)	E1	0.346		
172.34+x	(7/2⁺)	172.34 *10*		0.0+x	(3/2⁺)				
207.8	(7/2⁻)	72.4	5	134.4	5/2⁻	D			
		161.2	37	45.84	(5/2⁻)	D			
		206.8	15	0.0	(3/2⁻)	Q			
275.79	(9/2⁺)	138.40 *14*	100	137.43	(7/2⁺)				
		210.1 *1*	1	65.72	(5/2⁺)				
413.3	(9/2⁻)	205.8	13	207.8	(7/2⁻)				
		367.1	19	45.84	(5/2⁻)	Q			
466.30		400.3	100	65.72	(5/2⁺)				
		465.8‡	3	0.0	(3/2⁻)				
495.92		358.51 *11*	100	137.43	(7/2⁺)				
		430.14 *10*	47	65.72	(5/2⁺)				
501.44+x	(11/2⁺)	329.1 *1*	100	172.34+x	(7/2⁺)				
549.32		53.7‡	9	495.92		E1	0.791		
		83.3‡	16	466.30		M1	0.467		
		411.9‡	19	137.43	(7/2⁺)				
		483.64‡# *10*	100	65.72	(5/2⁺)				
		549.4‡	19	0.0	(3/2⁻)				
568.39	(11/2⁺)	292.58 *10*	100	275.79	(9/2⁺)				
		430.96 *10*	27	137.43	(7/2⁺)				
646.2	11/2⁻	232.7	7	413.3	(9/2⁻)				
		438.6	53	207.8	(7/2⁻)	Q			
727.96	(13/2⁺)	159.58 *10*	75	568.39	(11/2⁺)				
		452.23 *10*	100	275.79	(9/2⁺)				

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Adopted Levels, Gammas (continued)

γ(^{107}Tc) (continued)

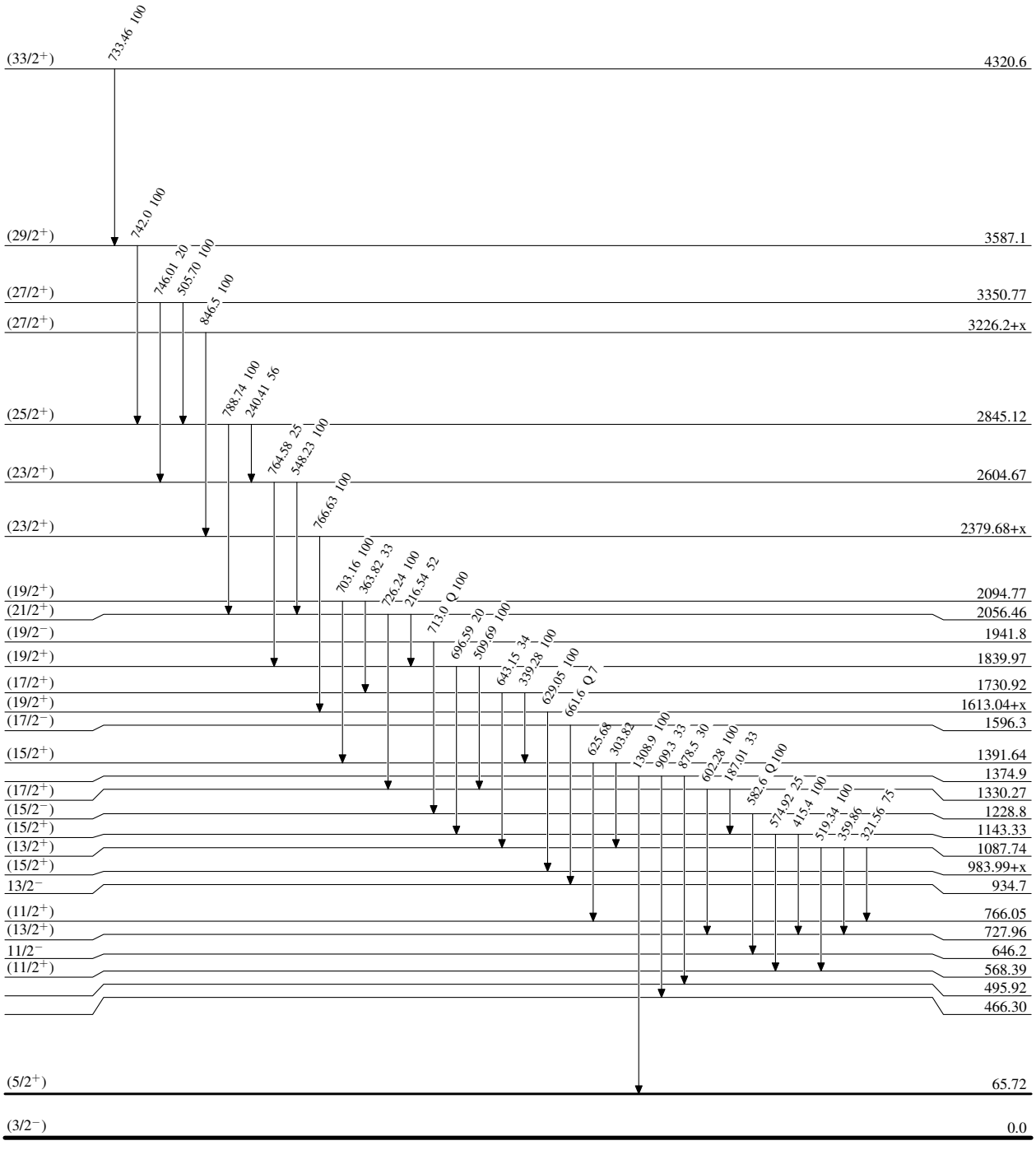
E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]
766.05	(11/2$^+$)	490.29 *10*	100	275.79	(9/2$^+$)	
		628.56 *10*	14	137.43	(7/2$^+$)	
850.70		301.42[‡] *10*		549.32		
		354.74[‡] *11*	17	495.92		
		384.37[‡] *12*	100	466.30		
		713.5[‡]	3.5	137.43	(7/2$^+$)	
		785.0[‡]	47	65.72	(5/2$^+$)	
934.7	13/2$^-$	288.6[&]	4	646.2	11/2$^-$	
		521.4	12	413.3	(9/2$^-$)	
983.99+x	(15/2$^+$)	482.55 *10*	100	501.44+x	(11/2$^+$)	
1087.74	(13/2$^+$)	321.56 *10*	75	766.05	(11/2$^+$)	
		359.86 *13*		727.96	(13/2$^+$)	
		519.34 *10*	100	568.39	(11/2$^+$)	
1143.33	(15/2$^+$)	415.4 *1*	100	727.96	(13/2$^+$)	
		574.92 *10*	25	568.39	(11/2$^+$)	
1228.8	(15/2$^-$)	582.6	100	646.2	11/2$^-$	Q
1330.27	(17/2$^+$)	187.01 *10*	33	1143.33	(15/2$^+$)	
		602.28 *10*	100	727.96	(13/2$^+$)	
1374.9		878.5[‡]	30	495.92		
		909.3[‡]	33	466.30		
		1308.9[‡]	100	65.72	(5/2$^+$)	
1391.64	(15/2$^+$)	303.82 *10*		1087.74	(13/2$^+$)	
		625.68 *10*		766.05	(11/2$^+$)	
1596.3	(17/2$^-$)	661.6	7	934.7	13/2$^-$	Q
1613.04+x	(19/2$^+$)	629.05 *10*	100	983.99+x	(15/2$^+$)	
1730.92	(17/2$^+$)	339.28 *10*	100	1391.64	(15/2$^+$)	
		643.15 *12*	34	1087.74	(13/2$^+$)	
1839.97	(19/2$^+$)	509.69 *10*	100	1330.27	(17/2$^+$)	
		696.59 *10*	20	1143.33	(15/2$^+$)	
1941.8	(19/2$^-$)	713.0 *1*	100	1228.8	(15/2$^-$)	Q
2056.46	(21/2$^+$)	216.54 *11*	52	1839.97	(19/2$^+$)	
		726.24 *10*	100	1330.27	(17/2$^+$)	
2094.77	(19/2$^+$)	363.82 *12*	33	1730.92	(17/2$^+$)	
		703.16 *13*	100	1391.64	(15/2$^+$)	
2379.68+x	(23/2$^+$)	766.63 *12*	100	1613.04+x	(19/2$^+$)	
2604.67	(23/2$^+$)	548.23 *10*	100	2056.46	(21/2$^+$)	
		764.58 *11*	25	1839.97	(19/2$^+$)	
2845.12	(25/2$^+$)	240.41 *11*	56	2604.67	(23/2$^+$)	
		788.74 *10*	100	2056.46	(21/2$^+$)	
3226.2+x	(27/2$^+$)	846.5 *1*	100	2379.68+x	(23/2$^+$)	
3350.77	(27/2$^+$)	505.70 *12*	100	2845.12	(25/2$^+$)	
		746.01 *16*	20	2604.67	(23/2$^+$)	
3587.1	(29/2$^+$)	742.0 *2*	100	2845.12	(25/2$^+$)	
4320.6	(33/2$^+$)	733.46 *13*	100	3587.1	(29/2$^+$)	

[†] From α(exp) in ^{107}Mo β^-decay.
[‡] Seen only in ^{107}Mo β^- decay.
[#] A 482.7γ seen in ^{252}Cf SF, see 983.8+x level.
[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[&] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{107}_{43}Tc_{64}$

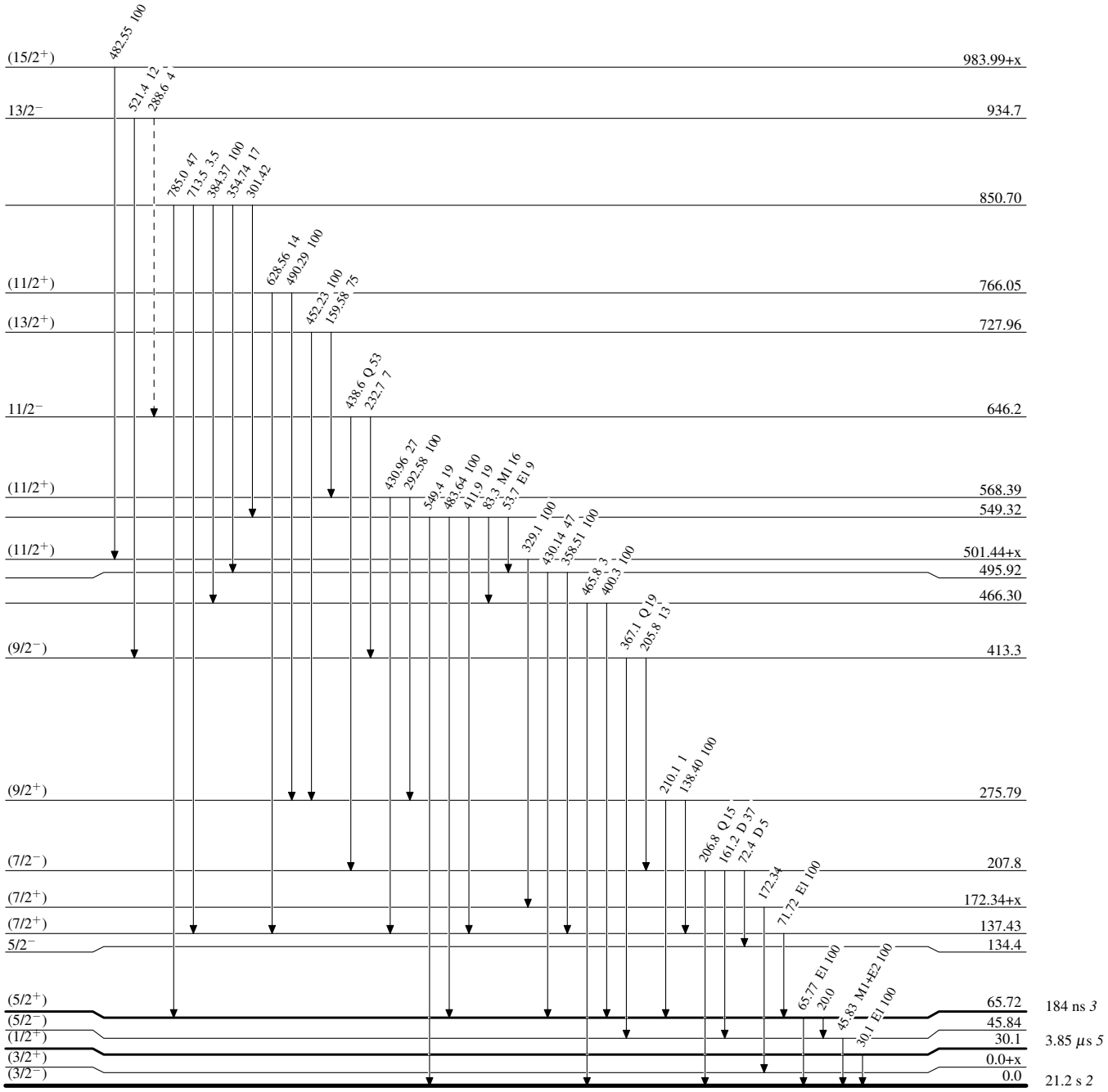
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



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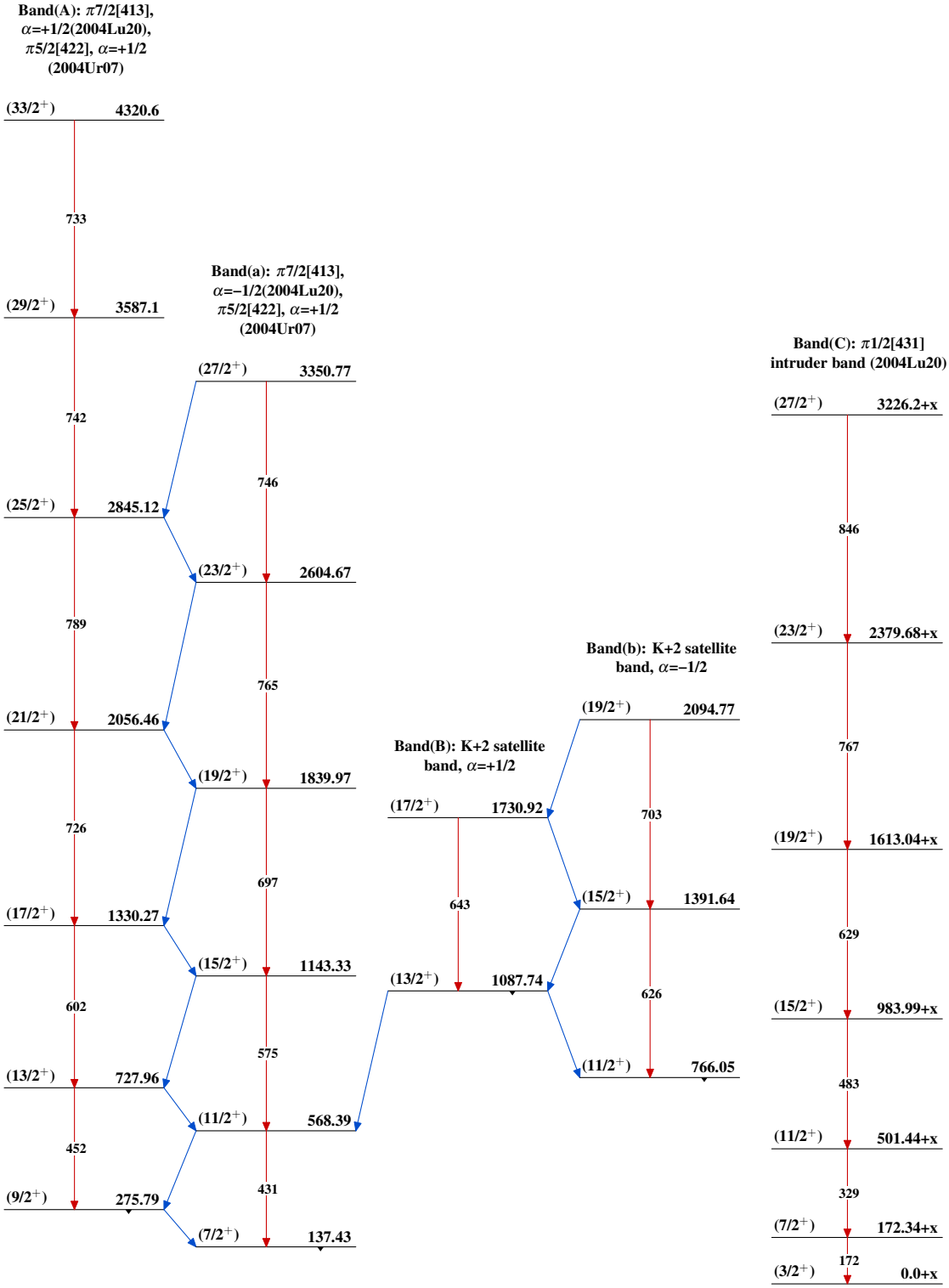
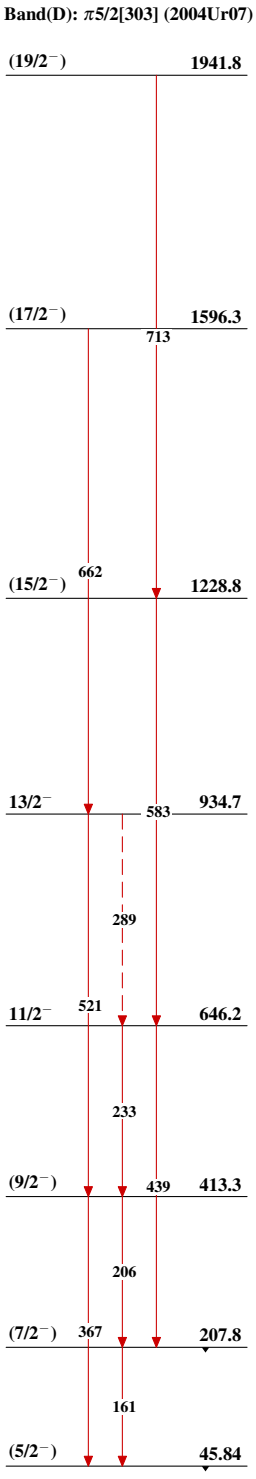
Adopted Levels, Gammas



$^{107}_{43}Tc_{64}$

Adopted Levels, Gammas (continued)



$^{107}_{43}Tc_{64}$