Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 122, 205 (2014)	1-Feb-2014

Q(β^-)=1368 *14*; S(n)=6123 *15*; S(p)=5615 *14*; Q(α)=4101 *19* 2012Wa38
Q(β^-)= 1410 *50*, from 1968Tr07 and adopted decay scheme.
Additional information 1.
Discovery of ^{235}Th: 2013Fr03.
Mass measurements: 2012Ch19, 2012Zh46.
Neutron fission cross-section measurements: 2012Pr13.
Cluster decay half-lives. ^{235}Pa(^{23}F,^{24}Ne): 2012Sa31.
Calculated Q(α), t, single-particle energies: 2008Do12.
Other reaction: ^{16}O, ^{19}F on ^{232}Th. Measured excitation functions (2000Si04).

^{235}Pa Levels

Cross Reference (XREF) Flags

A ^{235}Th β^- decay
B ^{236}U(t,α)

E(level)	J$^\pi$[†]	$T_{1/2}$	XREF	Comments
0[‡]	(3/2$^-$)	24.4 min *2*	AB	%β^-=100 Additional information 2. $T_{1/2}$: weighted average of 24.2 min *3* (1968Tr07), 24.6 min *2* (1986Mi10), 23.7 min *5* (1950Me08), 24.2 min *3* (1968Tr07), and 24.7 min *6* (1989Yu01). J$^\pi$: similarity with ^{231}Pa and ^{233}Pa suggests 3/2$^-$ member of 1/2[530] rotational band. Also J^π=(1/2$^-$) is possible.
(10[‡] *10*)	(1/2$^-$)		AB	E(level): from analogy with ^{231}Pa (9.20 keV) and ^{233}Pa (6.65 keV). J$^\pi$: similarity with ^{231}Pa and ^{233}Pa suggests 1/2$^-$ member of 1/2[530] rotational band. Also J^π=(3/2$^-$) is possible.
18.51[#] *17*	(1/2$^+$)		AB	
51.79[@] *17*	(3/2$^+$)		A	
55[‡] *4*	(7/2$^-$)		B	
65[@] *6*	(9/2$^+$)		B	
100 *4*			B	
132[@] *4*	(13/2$^+$)		B	
162 *6*			B	
192 *8*			B	
252 *8*			B	
344.69[&] *19*	(3/2$^+$)		AB	
378[&] *10*	(5/2$^+$)		B	
468.79 *15*	(1/2,3/2)		A	J$^\pi$: log *ft*≈7.2 from ^{235}Th (J^π=(1/2$^+$)) β^- decay.
484 *12*			B	
525 *12*			B	
570 *12*			B	
630 *12*			B	
649 *12*			B	
682 *12*			B	
727.01 *17*	(1/2,3/2)		A	J$^\pi$: log *ft*≈7.1 from ^{235}Th (J^π=(1/2$^+$)) β^- decay.
747.90 *15*	(1/2,3/2)		A	J$^\pi$: log *ft*≈7.0 from ^{235}Th (J^π=(1/2$^+$)) β^- decay.
751[a] *8*	(11/2$^-$)		B	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{235}Pa Levels (continued)

E(level)	J^{π}[†]	XREF	Comments
755.75 *24*	(1/2,3/2)	A	J^{π}: log *ft*≈7.4 from ^{235}Th (J^{π}=(1/2$^+$)) β^- decay.
965[b] *8*	(5/2$^-$)	B	

[†] From a comparison of σ(exp)/σ(calc) in (t,α), systematics of Nilsson orbitals in other odd-Z nuclei, and in analogy with J^{π} assignments in ^{233}Pa (1972El21). Additional arguments are given with some individual levels.
[‡] Band(A): 1/2[530].
[#] Band(B): 1/2[400].
[@] Band(C): 3/2[651].
[&] Band(D): 3/2[402].
[a] Band(E): 9/2[514] ?
[b] Band(F): 1/2[541] ?

γ(^{235}Pa)

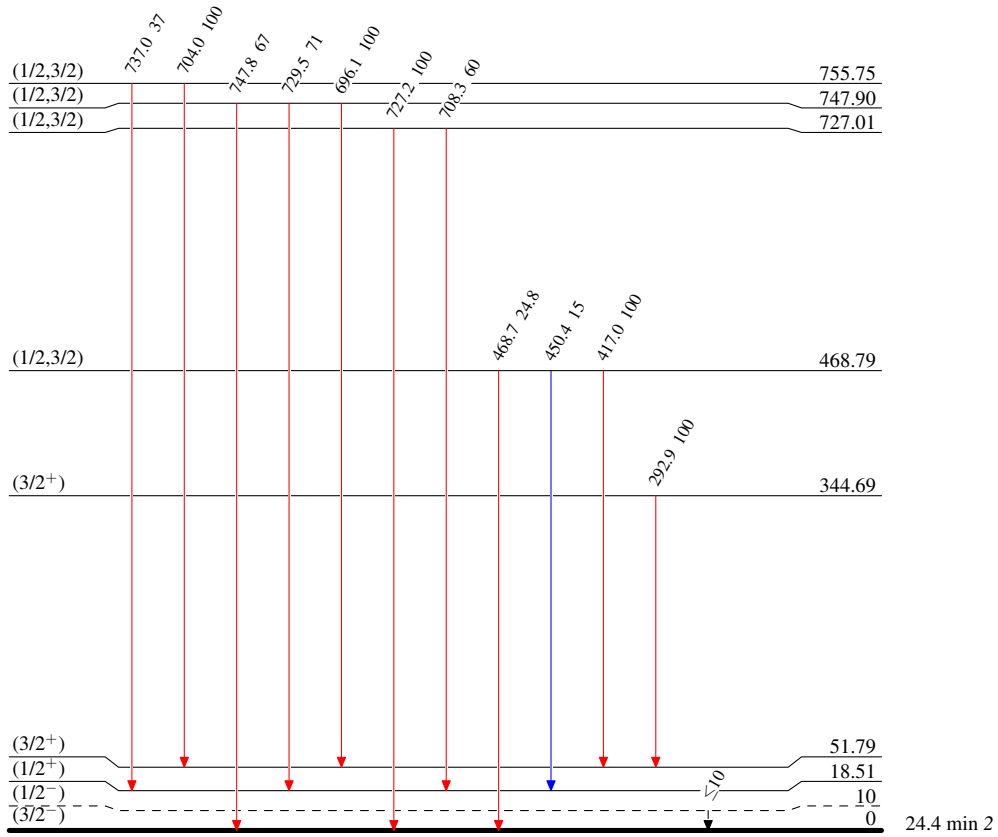
E_i(level)	J_i^{π}	E_{γ}	I_{γ}	E_f	J_f^{π}	E_i(level)	J_i^{π}	E_{γ}	I_{γ}	E_f	J_f^{π}
(10)	(1/2$^-$)	(≤10)		0	(3/2$^-$)	727.01	(1/2,3/2)	727.2[†] *2*	100 *5*	0	(3/2$^-$)
344.69	(3/2$^+$)	292.9 *1*	100	51.79	(3/2$^+$)	747.90	(1/2,3/2)	696.1 *2*	100 *6*	51.79	(3/2$^+$)
468.79	(1/2,3/2)	417.0 *1*	100	51.79	(3/2$^+$)			729.5 *2*	71 *5*	18.51	(1/2$^+$)
		450.4 *2*	15 *4*	18.51	(1/2$^+$)			747.8[†] *2*	67 *5*	0	(3/2$^-$)
		468.7[†] *2*	24.8 *16*	0	(3/2$^-$)	755.75	(1/2,3/2)	704.0 *2*	100 *6*	51.79	(3/2$^+$)
727.01	(1/2,3/2)	708.3 *2*	60 *4*	18.51	(1/2$^+$)			737.0 *5*	37 *11*	18.51	(1/2$^+$)

[†] Probably a doublet feeding the g.s. and first excited state.

Adopted Levels, Gammas

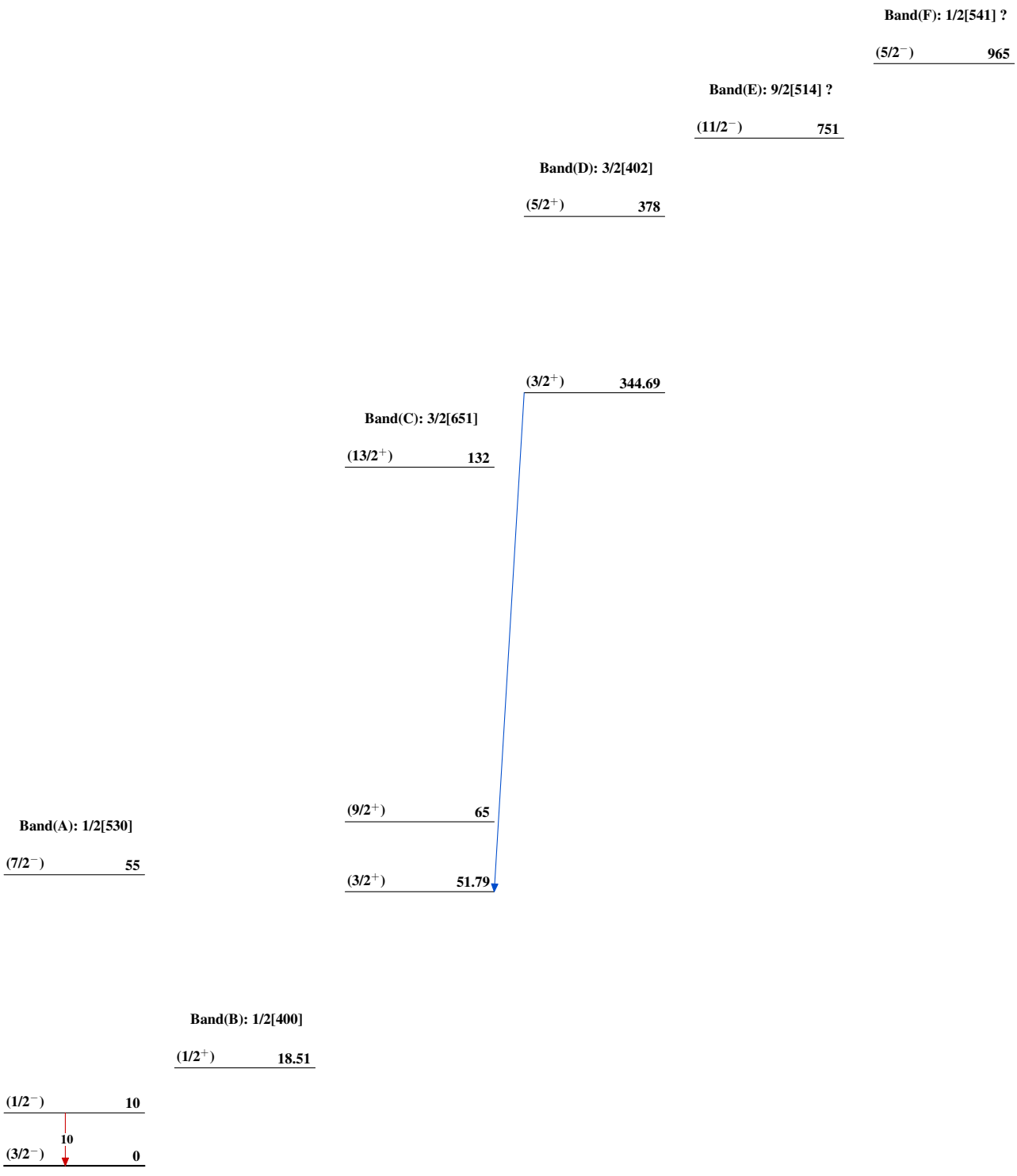
Level Scheme

Intensities: Type not specified



$^{235}_{91}Pa_{144}$

Adopted Levels, Gammas



$^{235}_{91}Pa_{144}$