^{232}Th(α,2nγ),^{232}Th(^{9}Be,α3nγ) 1976WaZO,1985Ve06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 108, 681 (2007)	1-Jun-2006

1987Ze07,1999La26.
Additional information 1.
^{232}Th(α,2nγ): E(α)=25 MeV; singles electron spectra were taken by 1985Ve06 in 10-ns intervals with respect to beam bursts.
^{232}Th(α,2nγ): E(α)=28 MeV; (ce)(ce) and (ce)(γ) coincidences were taken by 1987Ze07.
^{232}Th(^{9}Be,α3nγ): E(^{9}Be)=52 MeV; measured Eγ, Iγ, $\gamma\gamma(\theta)$. Detector: CAESAR array of six Compton-suppressed germanium detectors (1999La26).

^{234}U Levels

E(level)†	J$^{\pi}$†	Comments
0.0‡@	0$^+$	
43.498‡@ *1*	2$^+$	
143.351‡@ *4*	4$^+$	
296.071‡@ *4*	6$^+$	
497.04‡@ *4*	8$^+$	
741.2‡@ *6*	10$^+$	
786.29& *3*	1$^-$	
809.88a *3*	0$^+$	
849.30& *5*	3$^-$	
851.70a *10*	2$^+$	
926.74b *5*	2$^+$	
947.8a *2*	4$^+$	
962.6& *1*	5$^-$	
989.45c *5*	2$^-$	
1023.6b *6*	4$^+$	
1023.8‡@ *8*	12$^+$	
1044.53d *4*	0$^+$	
1085.4d *3*	2$^+$	
1095.8a *3*	6$^+$	
1125.9&	7$^-$	
1172.3b *7*	6$^+$	
1292.6a *4*	8$^+$	
1335.5‡#& *5*	9$^-$	
1340.5‡@	14$^+$	
1365.8‡# *3*	(8$^+$)	Observed only in ^{232}Th(^{9}Be,α3nγ). Possible member of the γ-vibrational band (1996La26).
1589.2& *5*	(11$^-$)	
1687.8‡@	16$^+$	

† Adopted values.
‡ Also observed in ^{232}Th(^{9}Be,α3nγ).
# From Eγ in ^{232}Th(^{9}Be,α3nγ).
@ Band(A): g.s. band.
& Band(B): octupole-vibrational band.
a Band(C): β-vibrational band.

Continued on next page (footnotes at end of table)

^{232}Th(α,2nγ),^{232}Th(^{9}Be,α3nγ) 1976WaZO,1985Ve06 (continued)

^{234}U Levels (continued)

[b] Band(D): γ-vibrational band.
[c] Band(E): K=2$^-$ octupole-vibrational state.
[d] Band(F): K=0$^+$ band.

$\gamma(^{234}U)$

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
43.5		43.498	2$^+$	0.0	0$^+$		
99.9		143.351	4$^+$	43.498	2$^+$		
152.7 *5*		296.071	6$^+$	143.351	4$^+$		
200.9 *5*		497.04	8$^+$	296.071	6$^+$		
244.2 *5*		741.2	10$^+$	497.04	8$^+$		
282.6 *5*		1023.8	12$^+$	741.2	10$^+$		
316.7		1340.5	14$^+$	1023.8	12$^+$		
347.3		1687.8	16$^+$	1340.5	14$^+$		
565.4[#]		1589.2	(11$^-$)	1023.8	12$^+$		
(594.7)		1335.5	9$^-$	741.2	10$^+$		E_γ: from level scheme. The γ was obscured by the 596-keV γ from ^{74}Ge(n,n$'\gamma$) (1987Ze07).
628.9		1125.9	7$^-$	497.04	8$^+$		
666.7 *1*		962.6	5$^-$	296.071	6$^+$		
706.1		849.30	3$^-$	143.351	4$^+$		
742.8		786.29	1$^-$	43.498	2$^+$		
786.3		786.29	1$^-$	0.0	0$^+$		
795.7 *2*		1292.6	8$^+$	497.04	8$^+$	E0+E2	Mult.: Ice(K)(rel)=22 *2*; α(K)exp>0.2 (1985Ve06).
799.7 *2*		1095.8	6$^+$	296.071	6$^+$	E0+E2	Mult.: Ice(K)(rel)=47 *2*; α(K)exp>0.3 (1985Ve06).
804.5 *2*		947.8	4$^+$	143.351	4$^+$	E0+E2	Mult.: Ice(K)(rel)=76 *2*; α(K)exp>0.7 (1985Ve06).
805.8		849.30	3$^-$	43.498	2$^+$		
808.2		851.70	2$^+$	43.498	2$^+$	E0+E2	Mult.: Ice(K)(rel)=100 *4*; α(K)exp>0.5 (1985Ve06).
810.1 *5*		809.88	0$^+$	0.0	0$^+$	E0	Ice(K)(rel)=36 *4* (1985Ve06).
819.6 *1*		962.6	5$^-$	143.351	4$^+$		
829.4		1125.9	7$^-$	296.071	6$^+$		
838.5 *5*		1335.5	9$^-$	497.04	8$^+$		Eγ, Iγ(838γ)/Ti(201γ)≈0.02 (1999La26). Other: 1987Ze07.
848.0 *5*		1589.2	(11$^-$)	741.2	10$^+$		Eγ, Iγ(848γ)/Ti(201γ)≈0.02 (1999La26). Other: 1987Ze07.
868.8 *3*		1365.8	(8$^+$)	497.04	8$^+$		Eγ, Iγ(868γ)/Ti(201γ)=0.04 *2* (1999La26).
875.6 *4*	12 *3*	1172.3	6$^+$	296.071	6$^+$		
879.3 *4*	16 *3*	1023.6	4$^+$	143.351	4$^+$		
882.9 *3*	9 *3*	926.74	2$^+$	43.498	2$^+$		
946.6 *3*	14 *3*	989.45	2$^-$	43.498	2$^+$		
952.7 *5*	7 *2*	1095.8	6$^+$	143.351	4$^+$		
1041.8 *5*		1085.4	2$^+$	43.498	2$^+$		

[†] From 1987Ze07, 1985Ve06, 1982VaZS and 1976WaZO. Decays of levels in the β-vibrational band were studied by 1985Ve06; decays of levels in the g.s. band were studied by 1976WaZO and by 1987Ze07; decay scheme of levels in the K=0$^-$ octupole-vibrational band was studied by 1987Ze07; γ's deexciting the levels in K=2$^+$ γ-vibrational band and the 2$^+$ level of the third K=0$^+$ band are from 1982VaZS.
[‡] Relative photon intensity, given by 1982VaZS.
[#] Placement of transition in the level scheme is uncertain.

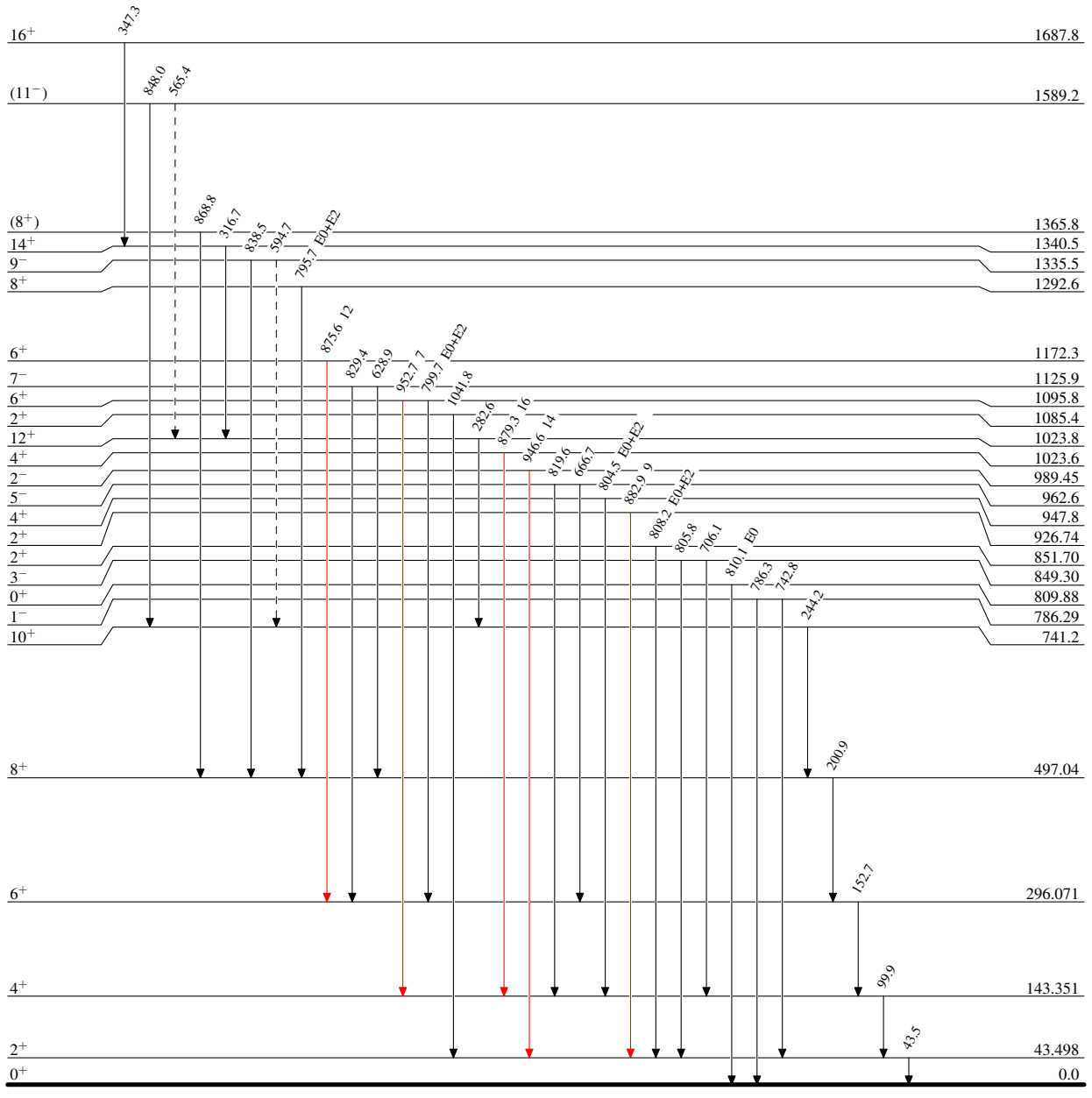
^{232}Th(α,2nγ),^{232}Th(^{9}Be,α3nγ) 1976WaZO,1985Ve06

Level Scheme

Intensities: Relative I_γ

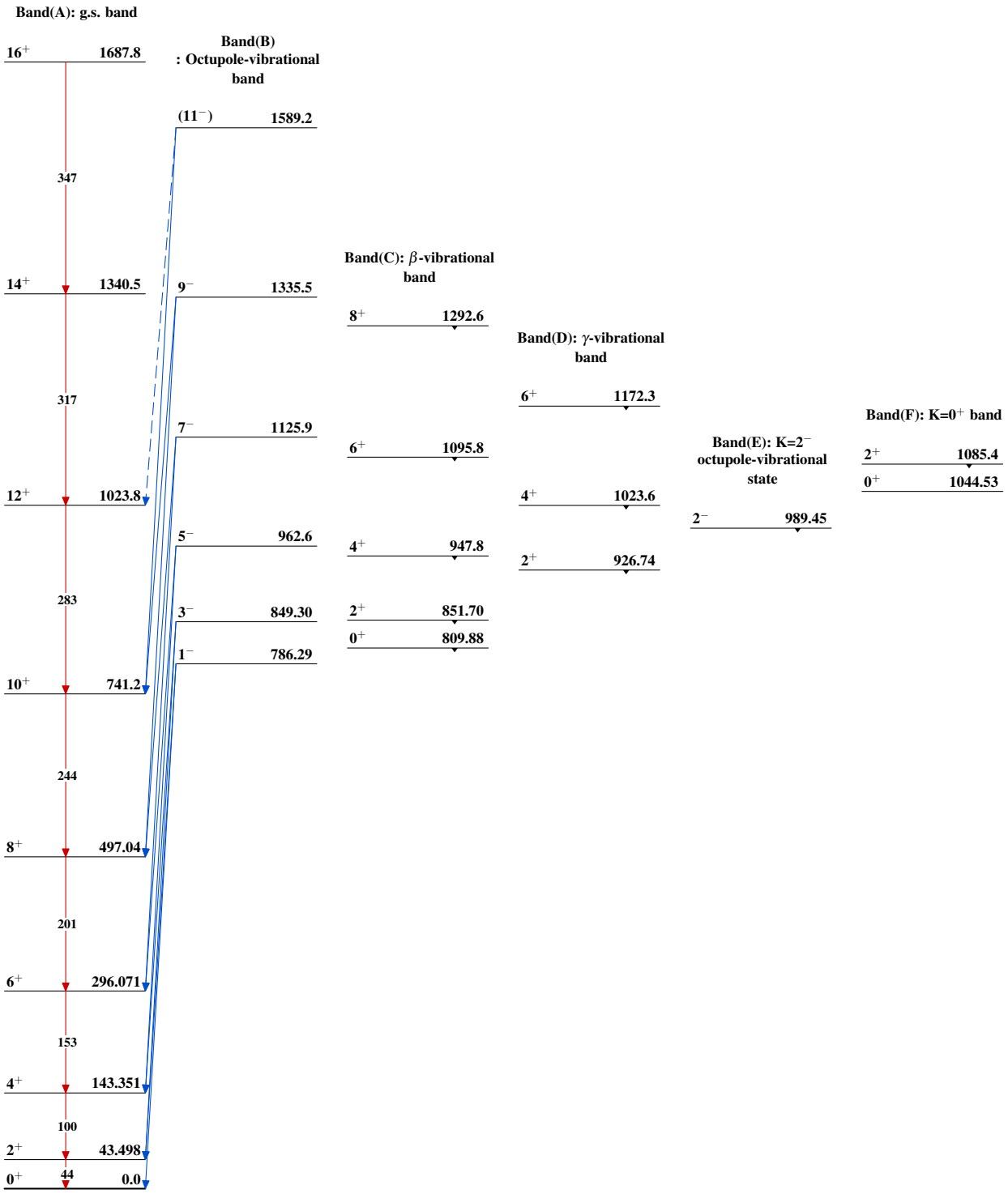
Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{234}_{92}U_{142}$

^{232}Th(α,2nγ),^{232}Th(^{9}Be,α3nγ) 1976WaZO,1985Ve06



$^{234}_{92}U_{142}$