

²³²Th(¹³⁶Xe,Xγ) 1999Co02

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

E=833 MeV. Measured γ, γγ, γγγ, γγγγ; 73 large-volume Compton-suppressed HPGE detectors. Others (same group): 1999Am04, 2000BuZY.

Determined ratio of intrinsic electric dipole moment and intrinsic electric quadrupole moment=0.26 2 (mean value for L=9-15), intrinsic electric dipole moment=0.023 2 (for L=9-15). Detector: the GAMMASPHERE array of 73 Ge detectors.

²³⁴Th Levels

E(level)	J ^π	E(level)	J ^π	E(level)	J ^π	E(level)	J ^π
0.0 [†]	0 ⁺	996.0 [‡] 5	(7 ⁻)	1924.4 [†] 8	(16 ⁺)	3239.2 [‡] 11	(21 ⁻)
49.6 [†]	2 ⁺	1165.8 [†] 6	(12 ⁺)	2060.2 [‡] 7	(15 ⁻)	3282.4 [†] 12	(22 ⁺)
164.1 [†] 2	4 ⁺	1195.7 [‡] 5	(9 ⁻)	2352.0 [†] 10	(18 ⁺)	3685.2 [‡] 12	(23 ⁻)
337.5 [†] 3	6 ⁺	1442.8 [‡] 5	(11 ⁻)	2423.8 [‡] 8	(17 ⁻)	3776.1 [†] 13	(24 ⁺)
565.7 [†] 4	8 ⁺	1527.6 [†] 7	(14 ⁺)	2806.1 [†] 11	(20 ⁺)		
843.5 [†] 4	(10 ⁺)	1731.9 [‡] 6	(13 ⁻)	2817.5 [‡] 10	(19 ⁻)		

[†] Band(A): g.s. band.

[‡] Band(B): octupole band.

γ(²³⁴Th)

E _γ	I _γ	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. [‡]	I _(γ+ce)
49.55 [†]		49.6	2 ⁺	0.0	0 ⁺		
114.5 2	100 38	164.1	4 ⁺	49.6	2 ⁺	E2	7.4×10 ² 28
173.4 2	345 40	337.5	6 ⁺	164.1	4 ⁺	E2	761 86
199.7 5	35 17	1195.7	(9 ⁻)	996.0	(7 ⁻)	E2	59 28
228.2 2	549 18	565.7	8 ⁺	337.5	6 ⁺	E2	778 26
247.1 5	85 16	1442.8	(11 ⁻)	1195.7	(9 ⁻)	E2	112 21
277.8 2	595 26	843.5	(10 ⁺)	565.7	8 ⁺	E2	725 32
289.1 5	56 19	1731.9	(13 ⁻)	1442.8	(11 ⁻)	E2	67 23
322.3 5	613 12	1165.8	(12 ⁺)	843.5	(10 ⁺)	E2	698 14
328.2 5	52 8	2060.2	(15 ⁻)	1731.9	(13 ⁻)	E2	59 9
361.8 5	531 12	1527.6	(14 ⁺)	1165.8	(12 ⁺)	E2	584 13
363.7 5	30 7	2423.8	(17 ⁻)	2060.2	(15 ⁻)	E2	33 8
393.7 5	21 6	2817.5	(19 ⁻)	2423.8	(17 ⁻)	E2	23 6
396.8 5	317 13	1924.4	(16 ⁺)	1527.6	(14 ⁺)	E2	341 14
421.7 5	8 6	3239.2	(21 ⁻)	2817.5	(19 ⁻)	E2	9 6
427.6 5	167 13	2352.0	(18 ⁺)	1924.4	(16 ⁺)	E2	178 14
446.0 5	32 7	3685.2	(23 ⁻)	3239.2	(21 ⁻)	E2	34 7
454.1 5	77 13	2806.1	(20 ⁺)	2352.0	(18 ⁺)	E2	81 14
465.8 [#] 5		2817.5	(19 ⁻)	2352.0	(18 ⁺)		
476.3 5	4 2	3282.4	(22 ⁺)	2806.1	(20 ⁺)	E2	4 2
493.7 5	18 7	3776.1	(24 ⁺)	3282.4	(22 ⁺)	E2	19 7
499.4 5	3 1	2423.8	(17 ⁻)	1924.4	(16 ⁺)	E1	3 1
532.7 5	5 2	2060.2	(15 ⁻)	1527.6	(14 ⁺)	E1	5 2
566.0 5	23 7	1731.9	(13 ⁻)	1165.8	(12 ⁺)	E1	23 7
599.4 5	61 7	1442.8	(11 ⁻)	843.5	(10 ⁺)	E1	62 7
630.1 5	63 7	1195.7	(9 ⁻)	565.7	8 ⁺	E1	64 7
658.4 5		996.0	(7 ⁻)	337.5	6 ⁺		

Continued on next page (footnotes at end of table)

 ${}^{232}\text{Th}({}^{136}\text{Xe}, \text{X}\gamma)$ **1999Co02 (continued)**

 $\gamma({}^{234}\text{Th})$ (continued)

† From adopted gammas.

‡ From $\gamma\gamma(\theta)$.

Placement of transition in the level scheme is uncertain.

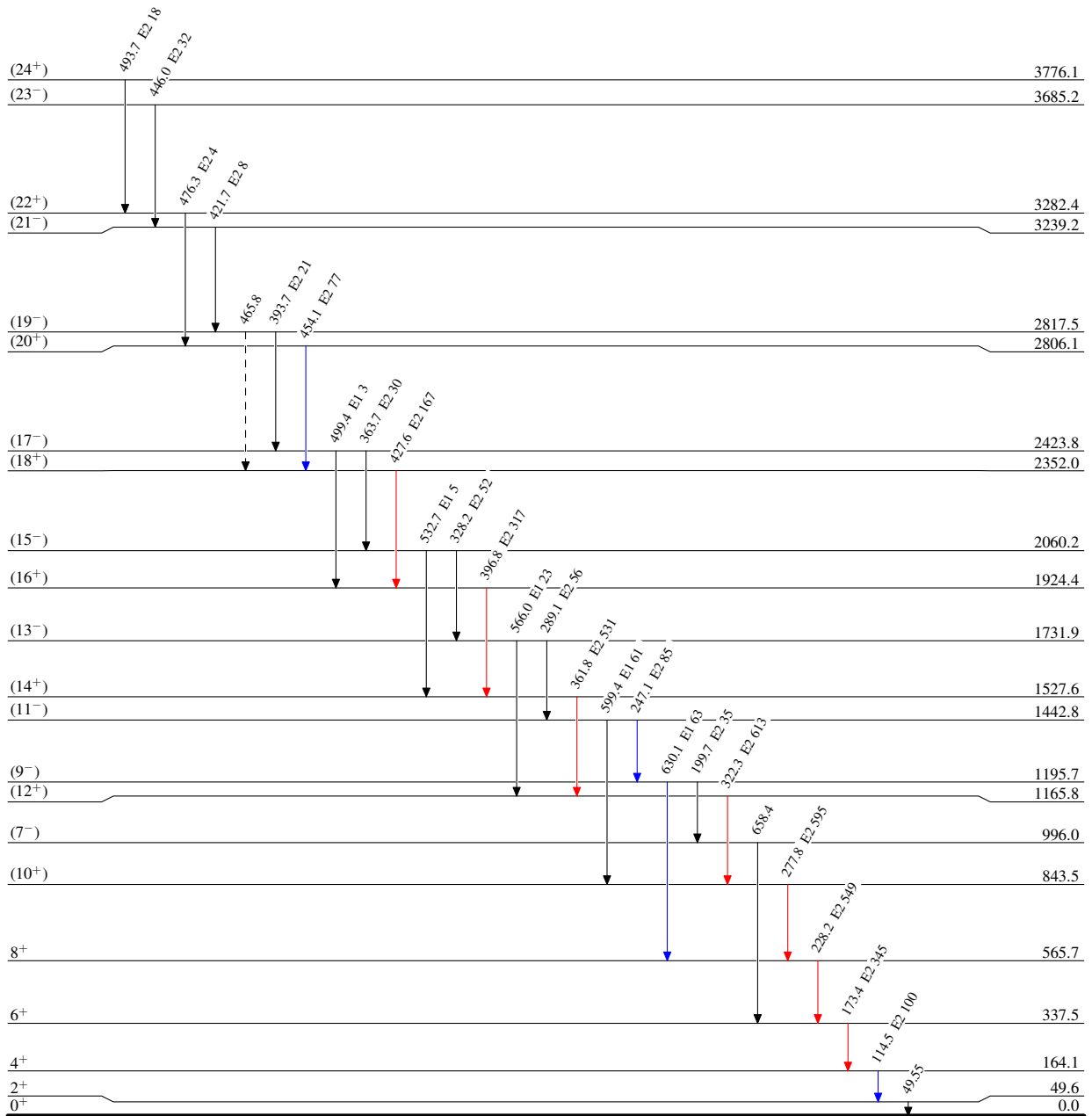
$^{232}\text{Th}(^{136}\text{Xe}, X\gamma)$ 1999Co02

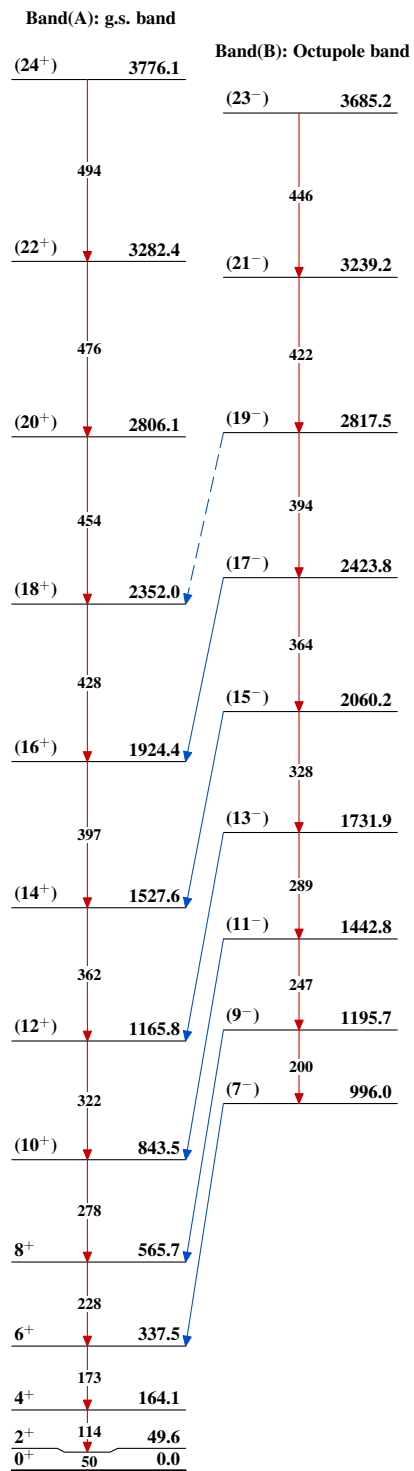
Legend

Level Scheme

Intensities: Relative I_γ

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

 $^{234}_{90}\text{Th}_{144}$

$^{232}\text{Th}(^{136}\text{Xe}, X\gamma)$ 1999Co02 $^{234}_{90}\text{Th}_{144}$