^{130}Te(^{9}Be,4nγ) 2006Ch51,1987Dr13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Alexander A. Rodionov And Yuri L. Khazov	NDS 109, 517 (2008)	22-Jan-2008

Includes ^{128}Te(^{9}Be,2nγ) from 1987Dr13.

2006Ch51, 2007ChZZ: ^{130}Te(^{9}Be,4nγ) E=45 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$(DCO) using an array of 14 Compton-suppressed HPGe detectors. The high-spin levels and gammas reported above the 11/2$^-$ isomer. The details of this study were requested (by the evaluators) through an e-mail to the first author of 2006Ch51, but no reply was received as of July 20, 2007.

1987Dr13: ^{128}Te(^{9}Be,2nγ) and ^{130}Te(^{9}Be,4nγ) E=30-37 MeV. Levels are reported at 874, 951, 1955 and 2002; the details of this study are not available.

All data are from 2006Ch51, unless otherwise specified.

^{135}Ba Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	Comments
0.0[@]	3/2$^+$		
268.22[&] *2*	11/2$^-$	28.7 h *2*	%IT=100 T$_{1/2}$: from 'Adopted Levels'. Configuration=$\nu h_{11/2}^{-1}$.
874.5[#@] *3*	7/2$^+$[#]		
950.5[&] *5*	15/2$^-$		Configuration=$\nu h_{11/2}^{-1}\otimes 2^+$.
1955.4[#@] *5*	(11/2$^+$)[#]		
2002.6[&] *6*	19/2$^-$		Configuration=$\nu h_{11/2}^{-1}\otimes 4^+$.
2133.9 *6*	19/2$^-$		
2388.0 *6*			
2393.5[&] *6*	(21/2$^-$)		
2739.6[b] *6*	23/2$^-$		
2824.6 *7*	(23/2$^+$)		
3084.0[a] *6*	(21/2$^+$)		Configuration=$\nu h_{11/2}^{-2}\otimes\nu s_{1/2}$.
3210.3[b] *7*	27/2$^-$		
3211.8[a] *6*	(23/2$^+$)		Configuration=$\nu h_{11/2}^{-1}\otimes\pi(h_{11/2}d_{5/2}^{-1})$.
3415.7[a] *7*	(25/2$^+$)		Configuration=$\nu h_{11/2}^{-1}\otimes\pi(h_{11/2}d_{5/2}^{-1})$.
3647.5 *8*	(29/2$^-$)		
3758.3[a] *7*	(27/2$^+$)		Configuration=$\nu h_{11/2}^{-1}\otimes\pi(h_{11/2}g_{7/2}^{-1})$.
3805.2[b] *8*	(29/2$^-$)		
4180.9[a] *8*	(29/2$^+$)		Configuration=$\nu h_{11/2}^{-1}\otimes\pi(h_{11/2}g_{7/2}^{-1})\otimes 2^+$.
4254.1 *8*	(31/2$^+$)		
4695.8[a] *9*	(31/2$^+$)		Configuration=$\nu h_{11/2}^{-1}\otimes\pi(h_{11/2}g_{7/2}^{-1})\otimes 2^+$.
4713.2 *9*	(35/2$^+$)		
4816.6[b] *8*	(33/2$^-$)		
5023.4 *9*	(33/2$^+$)		
5235.8[a] *9*	(33/2$^+$)		
5850.2[a] *9*	(35/2$^+$)		

[†] From least-squares fit to Eγ's, assuming Δ(Eγ)=0.3 keV for each γ ray; normalized χ^2=0.6. Levels above 2003 are from 2006Ch51 only.

[‡] From 2006Ch51, unless otherwise specified. The authors' assignments are based on earlier studies, measured DCO ratios and systematics of nuclei in this mass region. The assignments are the same in 'Adopted Levels', except that above 2000 keV, all are in parentheses due to lack of strong supporting arguments.

[#] Level from 1987Dr13, not reported by 2006Ch51.

Continued on next page (footnotes at end of table)

^{130}Te(^{9}Be,4nγ) 2006Ch51,1987Dr13 (continued)

^{135}Ba Levels (continued)

[@] Band(A): $\nu d_{3/2}$, decoupled band (?). The band assignment is uncertain.
[&] Band(B): $\nu h_{11/2}$ multiplet.
[a] Band(C): γ cascade based on $(21/2^+)$.
[b] Band(D): γ cascade based on $23/2^-$.

$\gamma(^{135}Ba)$

DCO values are from 2007ChZZ (also plotted in figure 3 of 2006Ch51) corresponding to data at 90° and 45° (or 135°) and gated on a ΔJ=2, quadrupole gated transition. Typical DCO is expected as 1.2 for ΔJ=2, quadrupole and 0.85 for ΔJ=1, dipole.

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	Comments
128.0	21.8 *6*	3211.8	$(23/2^+)$	3084.0	$(21/2^+)$	D	DCO=0.92 *8*
204.0	33.0 *12*	3415.7	$(25/2^+)$	3211.8	$(23/2^+)$	D	DCO=0.78 *6*
254.1	13.8 *5*	2388.0		2133.9	$19/2^-$		
268.22 *2*		268.22	$11/2^-$	0.0	$3/2^+$		E_γ: from 'adopted gammas', not observed by 2006Ch51 due to its high multipolarity and subsequent large internal conversion.
327.6	5.9 *4*	5023.4	$(33/2^+)$	4695.8	$(31/2^+)$	D	DCO=0.83 *15*
342.6	32.7 *10*	3758.3	$(27/2^+)$	3415.7	$(25/2^+)$	D	DCO=0.90 *6*
390.6	33.9 *14*	2393.5	$(21/2^-)$	2002.6	$19/2^-$	D	DCO=0.83 *7*
422.6	21.6 *8*	4180.9	$(29/2^+)$	3758.3	$(27/2^+)$	D	DCO=0.86 *8*
431.1	<0.5	2824.6	$(23/2^+)$	2393.5	$(21/2^-)$		
437.2	<0.5	3647.5	$(29/2^-)$	3210.3	$27/2^-$		
459.1	5.9 *3*	4713.2	$(35/2^+)$	4254.1	$(31/2^+)$		
470.7	12.7 *5*	3210.3	$27/2^-$	2739.6	$23/2^-$	Q	DCO=1.14 *10*
495.8	13.6 *5*	4254.1	$(31/2^+)$	3758.3	$(27/2^+)$	Q	DCO=1.39 *9*
514.9	26.9 *8*	4695.8	$(31/2^+)$	4180.9	$(29/2^+)$	D	DCO=0.83 *9*
540.0	4.1 *3*	5235.8	$(33/2^+)$	4695.8	$(31/2^+)$	D	DCO=0.87 *17*
591.0	<0.5	3415.7	$(25/2^+)$	2824.6	$(23/2^+)$		
594.9	5.4 *2*	3805.2	$(29/2^-)$	3210.3	$27/2^-$		
614.4	<0.5	5850.2	$(35/2^+)$	5235.8	$(33/2^+)$		
682.3	100	950.5	$15/2^-$	268.22	$11/2^-$	Q	DCO=1.18 *3* E_γ: 682.7 (1987Dr13).
737.0	28.9 *9*	2739.6	$23/2^-$	2002.6	$19/2^-$	Q	DCO=1.25 *6*
818.1	29.7 *9*	3211.8	$(23/2^+)$	2393.5	$(21/2^-)$	D	DCO=0.82 *7*
826.8	0.8 *1*	5850.2	$(35/2^+)$	5023.4	$(33/2^+)$		
874.5[#]		874.5	$7/2^+$	0.0	$3/2^+$		
1011.4	<0.5	4816.6	$(33/2^-)$	3805.2	$(29/2^-)$		
1052.1	92 *4*	2002.6	$19/2^-$	950.5	$15/2^-$	Q	DCO=1.07 *4* E_γ: 1052.0 (1987Dr13). I_γ: >92 *4*.
1080.9[#]		1955.4	$(11/2^+)$	874.5	$7/2^+$		DCO=0.78 *7*
1081.7	25.1 *7*	3084.0	$(21/2^+)$	2002.6	$19/2^-$	D	DCO=0.77 *7*
1169.1	<0.5	4816.6	$(33/2^-)$	3647.5	$(29/2^-)$		
1183.4	53.7 *25*	2133.9	$19/2^-$	950.5	$15/2^-$	Q	DCO=1.07 *5*

[†] Gammas for levels above 2003 are from 2006Ch51 only.
[‡] From 2007ChZZ.
[#] The γ ray from 1987Dr13, not reported by 2006Ch51.
[@] From DCO ratios of 2006Ch51, mult=Q corresponds to ΔJ=2, quadrupole and mult=D to ΔJ=1, dipole (with possible quadrupole admixture for Δπ=no).

^{130}Te(^{9}Be,4nγ) 2006Ch51,1987Dr13

Level Scheme

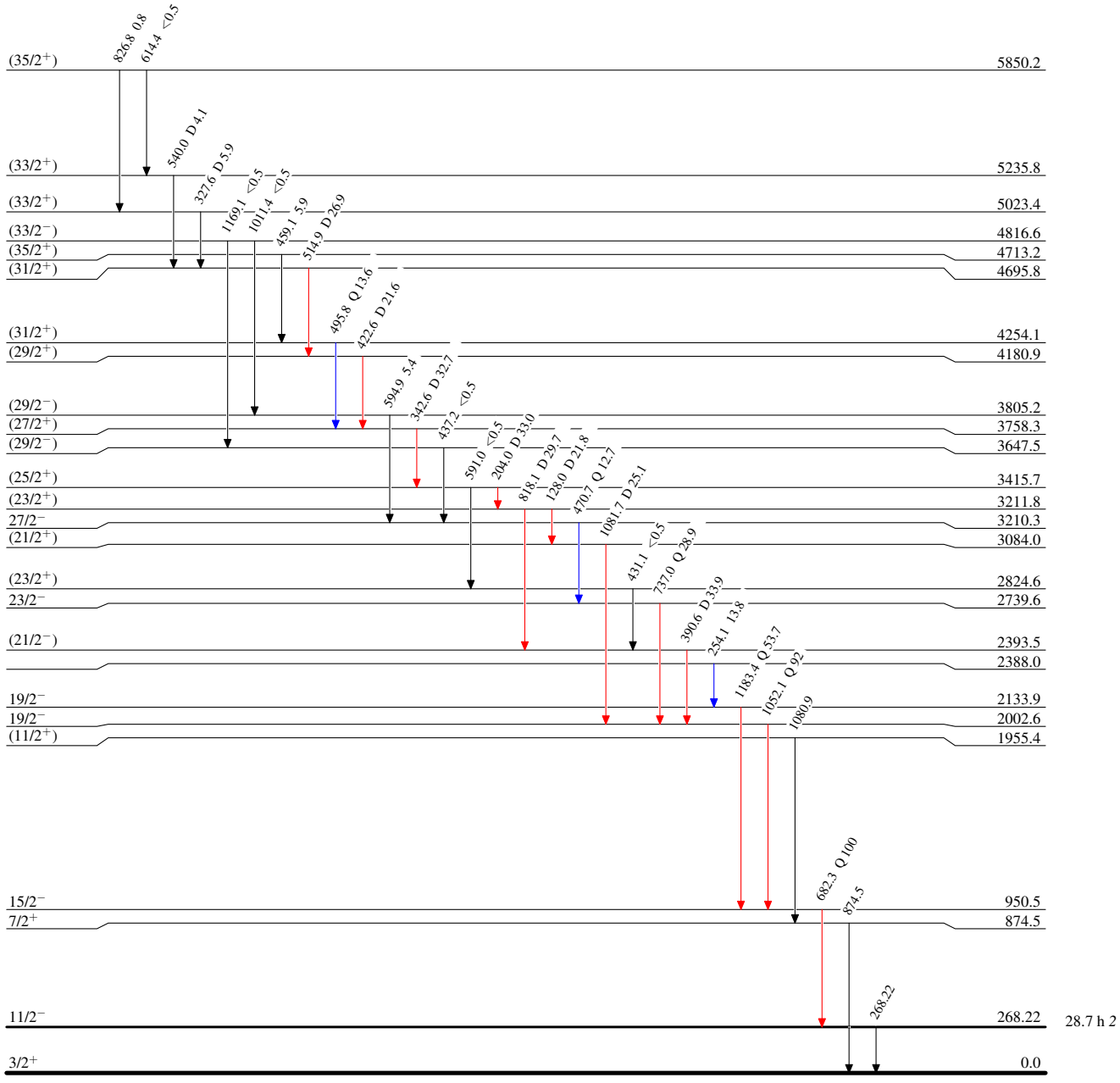
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

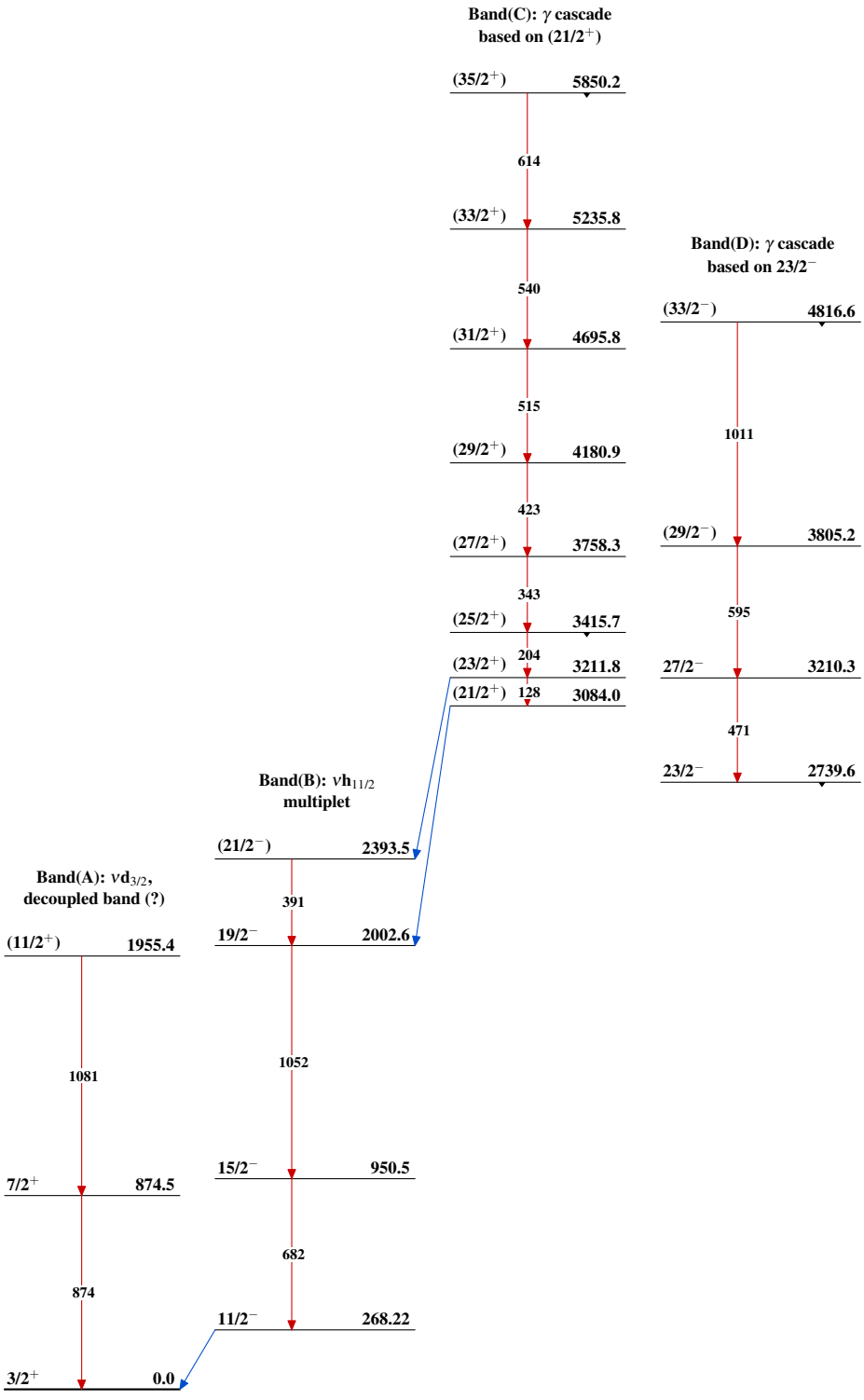
$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{135}_{56}Ba_{79}$

^{130}Te(^{9}Be,4nγ) 2006Ch51,1987Dr13



$^{135}_{56}Ba_{79}$