^{124}Sn(^{18}O,4nγ) 1999Zh28

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 146, 1 (2017)	30-Sep-2017

1999Zh28: E=78 MeV ^{18}O beam was produced from the H-13 tandem accelerator at the China Institute of Atomic Energy (CIAE). Target was 5.1 mg/cm^2 isotopically enriched ^{124}Sn evaporated on a natural lead backing of thickness 7 mg/cm^2. γ rays were detected with nine Compton-suppressed Ge detectors. Measured Eγ, Iγ, $\gamma\gamma$-coin, γ(DCO). Deduced levels, J, π. Systematics of neighboring nuclei.

1986Da22,1983Da29: Measured $\gamma(\theta$,H,t). Deduced quadrupole moment ratios and half-life for 10^+ isomers in Ce isotopes.

^{138}Ce Levels

E(level)‡	J$^\pi$†	T$_{1/2}$	Comments
0.0	0^+		
788.8 *10*	2^+		
1826.5 *13*	4^+		
2128.9 *15*	7^-		
2136.5 *13*	4^+		
2217.0 *14*	5^-		
2293.4 *14*	6^+		
2525.5 *17*			
3108.5 *15*	8^+		
3538.4 *16*	10^+	82 ns *2*	Q=0.77 T$_{1/2}$: from 1983Da29 and 1986Da22. Q: estimated in 1983Da29. Q(^{138}Ce):Q(^{136}Ce):Q(^{134}Ce)=1:1.45 *14*:1.71 *16* (1983Da29).
3941.4 *17*	11^+		
4358.7 *19*	12^+		
4973.6 *21*	13^+		
5088.4 *19*	12^+		
5213.1 *20*	13^+		
5311.3 *21*	14^+		
5564.8 *23*	15^+		
6012.5 *24*	16^+		
6683.9# *25*	16^+		
6839.9 *25*	17^+		
6887.1# *25*	17^+		
7102.8 *25*	18^+		
7209# *3*	18^+		
7681 *3*	19^+		
7683# *3*	19^+		
7801 *3*	20^+		
8348# *3*	20^+		
8872 *3*	(22^+)		
x@	(13^-)		Additional information 1. J$^\pi$: following comparison with ^{136}Ce. E(level): linking transition was not observed.
x+146.5@ *10*	(14^-)		
x+408.8@ *15*	(15^-)		
x+798.8@ *18*	(16^-)		
x+1294.8@ *20*	(17^-)		
x+1869.8@ *23*	(18^-)		

† From 1999Zh28, based on γ(DCO) and systematics of nearby nuclei.

Continued on next page (footnotes at end of table)

^{124}Sn(^{18}O,4nγ) 1999Zh28 (continued)

^{138}Ce Levels (continued)

‡ From a least-squares fit to γ-ray energies assuming $\Delta E\gamma$=1 keV.
# Band(A): Oblate band 1 (1999Zh28).
@ Band(B): Oblate band 2 (1999Zh28). The γ transitions in this sequence has been re-ordered by 2009Bh04 in (^{12}C,4nγ) based on their measured coincidence intensity balance.

γ(^{138}Ce)

E_γ	E_i(level)	J_i^π	E_f	J_f^π	E_γ	E_i(level)	J_i^π	E_f	J_f^π
76.6	2293.4	6^+	2217.0	5^-	467.0	2293.4	6^+	1826.5	4^+
80.5	2217.0	5^-	2136.5	4^+	474.5	7683	19^+	7209	18^+
98.3	5311.3	14^+	5213.1	13^+	496.0†	x+1294.8	(17^-)	x+798.8	(16^-)
120.3	7801	20^+	7681	19^+	575.0†	x+1869.8	(18^-)	x+1294.8	(17^-)
124.7	5213.1	13^+	5088.4	12^+	578.3	7681	19^+	7102.8	18^+
146.5†	x+146.5	(14^-)	x	(13^-)	614.8	4973.6	13^+	4358.7	12^+
156.8	2293.4	6^+	2136.5	4^+	664.6	8348	20^+	7683	19^+
164.5	2293.4	6^+	2128.9	7^-	788.8	788.8	2^+	0.0	0^+
203.1	6887.1	17^+	6683.9	16^+	815.2	3108.5	8^+	2293.4	6^+
253.5	5564.8	15^+	5311.3	14^+	827.5	6839.9	17^+	6012.5	16^+
262.3†	x+408.8	(15^-)	x+146.5	(14^-)	854.5	5213.1	13^+	4358.7	12^+
262.8	7102.8	18^+	6839.9	17^+	874.6	6887.1	17^+	6012.5	16^+
302.4	2128.9	7^-	1826.5	4^+	979.6	3108.5	8^+	2128.9	7^-
321.8	7209	18^+	6887.1	17^+	1037.7	1826.5	4^+	788.8	2^+
337.6	5311.3	14^+	4973.6	13^+	1070.6	8872	(22^+)	7801	20^+
390.0†	x+798.8	(16^-)	x+408.8	(15^-)	1090.4	7102.8	18^+	6012.5	16^+
390.6	2217.0	5^-	1826.5	4^+	1119.1	6683.9	16^+	5564.8	15^+
396.5	2525.5		2128.9	7^-	1147.0	5088.4	12^+	3941.4	11^+
403.0	3941.4	11^+	3538.4	10^+	1274.9	6839.9	17^+	5564.8	15^+
417.4	4358.7	12^+	3941.4	11^+	1347.7	2136.5	4^+	788.8	2^+
430.0	3538.4	10^+	3108.5	8^+	1409.4	3538.4	10^+	2128.9	7^-
447.9	6012.5	16^+	5564.8	15^+	1415.8	3941.4	11^+	2525.5	

† The first four transitions in this sequence are placed in different order by 2009Bh04 in (^{12}C,4nγ) based on their measured coincidence intensity balance and the 575γ was not observed by 2009Bh04. The evaluator has adopted the placements by 2009Bh04 in Adopted Gammas.

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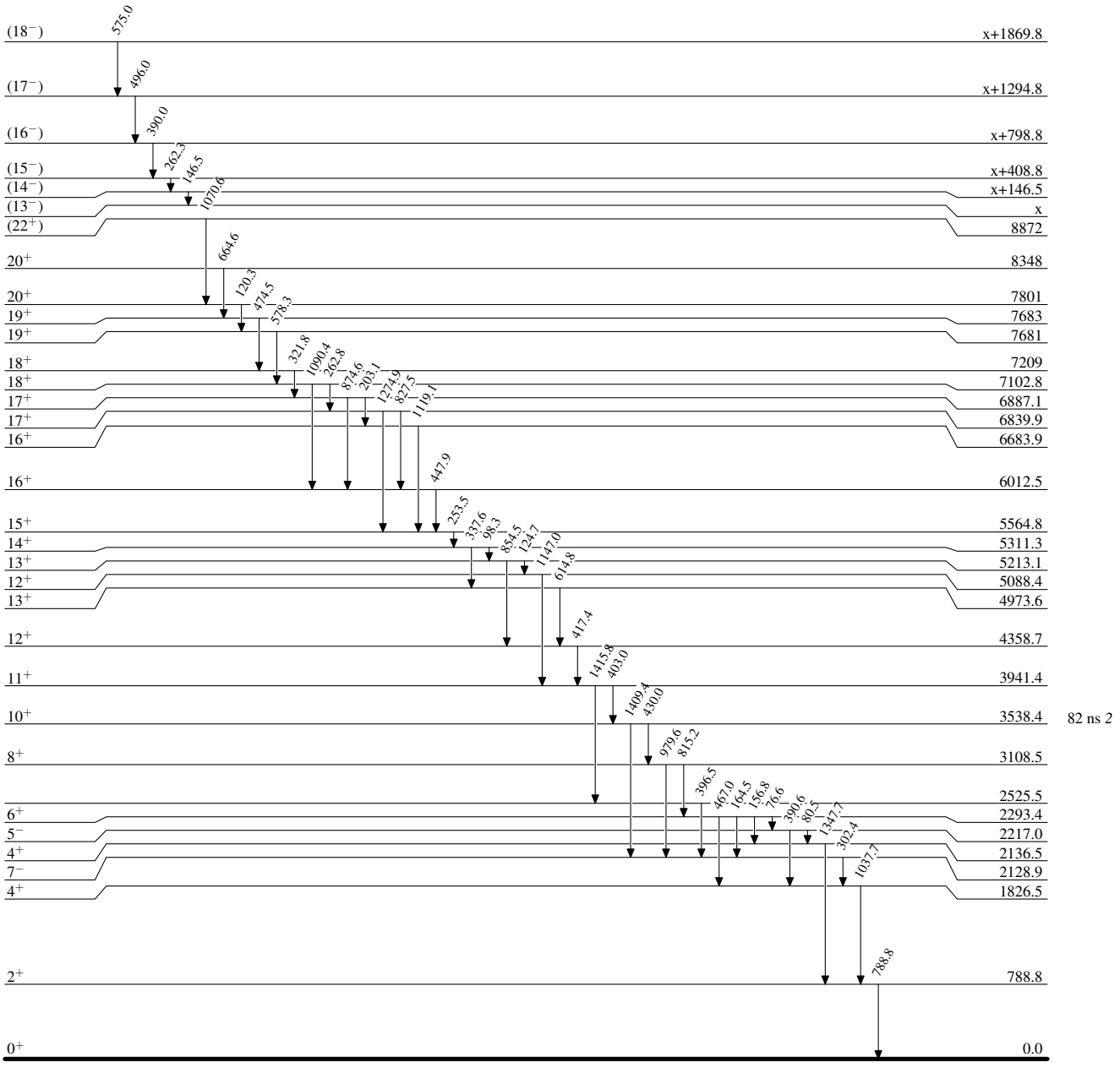
Level Scheme



$^{138}_{58}Ce_{80}$

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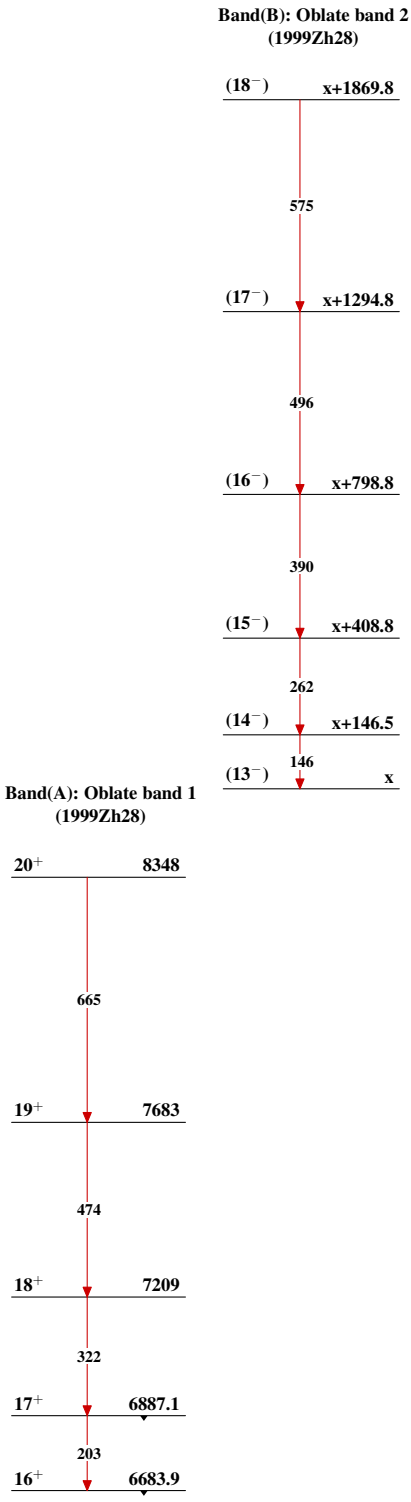

$^{138}_{58}Ce_{80}$