^{238}U(^{12}C,Fγ),^{208}Pb(^{18}O,Fγ) 2013As05

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 152, 331 (2018)	1-Apr-2018

Includes ^{208}Pb(^{136}Xe,^{136}Cs).

2013As05: E(^{12}C)=90 MeV and E(^{18}O)=85 MeV. Measured Eγ, Iγ, γγ-coincidences using the Euroball array consisting of 15 Cluster Ge detectors, 26 Clover detectors and 30 tapered single-crystal Ge detectors. Transitions in ^{136}Cs were identified through coincidences with the main complementary fragments, ^{85,86}Br, in the ^{18}O+^{208}Pb reaction and ^{103,104,105}Tc in the ^{12}C+^{238}U reaction.

2009Ma23: ^{208}Pb(^{136}Xe,^{136}Cs) with E(^{136}Xe)=930 MeV. Measured Eγ, Iγ, γ-recoil using PRISMA spectrometer and CLARA array consisting of 24 HPGe Clover detectors. Identified a 262γ and 1399γ as belonging to ^{136}Cs.

^{136}Cs Levels

Ordering of 66γ and 1398γ could not be unambiguously determined. Present placement of the 66γ below the 1398γ is based on assignment of 8^- and 9^- levels to the $\pi g_{7/2}\otimes\nu h^{-1}_{11/2}$ configuration and the 9^- fully aligned state belonging to the yrast line.

Additional increase of angular momentum would involve breaking of proton pairs, as indicated in neighboring isotopes through an E2 transition close to the energy of the 2^+ to 0^+ yrast transition in even-even isotones.

E(level)†	Jπ‡	$T_{1/2}$	Comments
517.9 *1*	8^-	17.5 s *2*	E(level),$T_{1/2}$: From the Adopted Levels. Configuration=$\pi g_{7/2}\otimes\nu h^{-1}_{11/2}$. Additional information 1.
583.9 *5*	9^-		Configuration=$\pi g_{7/2}\otimes\nu h^{-1}_{11/2}$.
1982.3# *6*	(11^-)		
2243.9# *7*	(12^-)		
2927.6@ *7*	(12^-)		
2973.7# *7*	(13^-)		
3257.8@ *7*	(13^-)		
3380.1# *7*	(14^-)		
3486.8@ *7*	(14^-)		
3562.5& *7*	(13^+)		
3684.0& *7*	(14^+)		
3929.1& *8*	(15^+)		
4086.7@ *8*	(15^-)		
4359.2# *9*	(16^-)		
4396.0@ *8*	(16^-)		
4645.8& *9*			

† From a least-squares fit to Eγ, by evaluator.

‡ As given in 2013As05 based on the assumptions that 1) spin values increase with excitation energy along the yrast line and 2) most of the transitions are dipole in character. Comparisons with shell model calculations were also used for J^π assignments.

Seq.(A): Sequence based on (11^-). Configuration=$\pi d_{5/2}\otimes\pi g^4_{7/2}\otimes\nu h^{-1}_{11/2}$.

@ Seq.(B): Sequence based on (12^-). Configuration=$\pi g^3_{7/2}\otimes\pi d^2_{5/2}\otimes\nu h^{-1}_{11/2}$.

& Seq.(C): Sequence based on (13^+). Possible configuration=$\pi h_{11/2}\otimes\pi g^2_{7/2}\otimes\nu h^{-1}_{11/2}$.

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γ(^{136}Cs)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
66.0 *5*		583.9	9^-	517.9	8^-	M1	α(exp)=2.8 *10* I_γ: in spectra gated by transitions belonging to the complementary fragment, the uncertainty on Iγ(66γ) is very large; no value provided by 2013As05. α(exp): from intensity balance.
121.4 *5*	3.3 *8*	3684.0	(14^+)	3562.5	(13^+)	M1	α(exp)=0.45 *15* α(exp): from intensity balance.
229.0 *4*	6.0 *15*	3486.8	(14^-)	3257.8	(13^-)		
245.1 *3*	15 *4*	3929.1	(15^+)	3684.0	(14^+)		
261.6 *2*	70 *10*	2243.9	(12^-)	1982.3	(11^-)		
309.4 *4*	4 *2*	4396.0	(16^-)	4086.7	(15^-)		
330.2 *3*	8 *2*	3257.8	(13^-)	2927.6	(12^-)		
406.4 *3*	8 *2*	3380.1	(14^-)	2973.7	(13^-)		
513.2 *4*	6 *2*	3486.8	(14^-)	2973.7	(13^-)		
599.8 *5*	9 *3*	4086.7	(15^-)	3486.8	(14^-)		
635.0 *5*	2.5 *12*	3562.5	(13^+)	2927.6	(12^-)		
706.5 *5*	1.0 *5*	4086.7	(15^-)	3380.1	(14^-)		
710.4 *3*	19 *5*	3684.0	(14^+)	2973.7	(13^-)		
716.7 *4*	5 *2*	4645.8		3929.1	(15^+)		
729.8 *3*	40 *8*	2973.7	(13^-)	2243.9	(12^-)		
945.3 *4*	12 *3*	2927.6	(12^-)	1982.3	(11^-)		
979.1 *5*	2 *1*	4359.2	(16^-)	3380.1	(14^-)		
1013.7 *5*	8 *3*	3257.8	(13^-)	2243.9	(12^-)		
1015.9 *5*	2 *1*	4396.0	(16^-)	3380.1	(14^-)		
1113.2 *5*	5 *2*	4086.7	(15^-)	2973.7	(13^-)		
1318.5 *5*	5 *2*	3562.5	(13^+)	2243.9	(12^-)		
1398.4 *3*	100 *15*	1982.3	(11^-)	583.9	9^-		

[†] Relative intensity taking Iγ(1398γ)=100.
[‡] From α(exp).

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Level Scheme

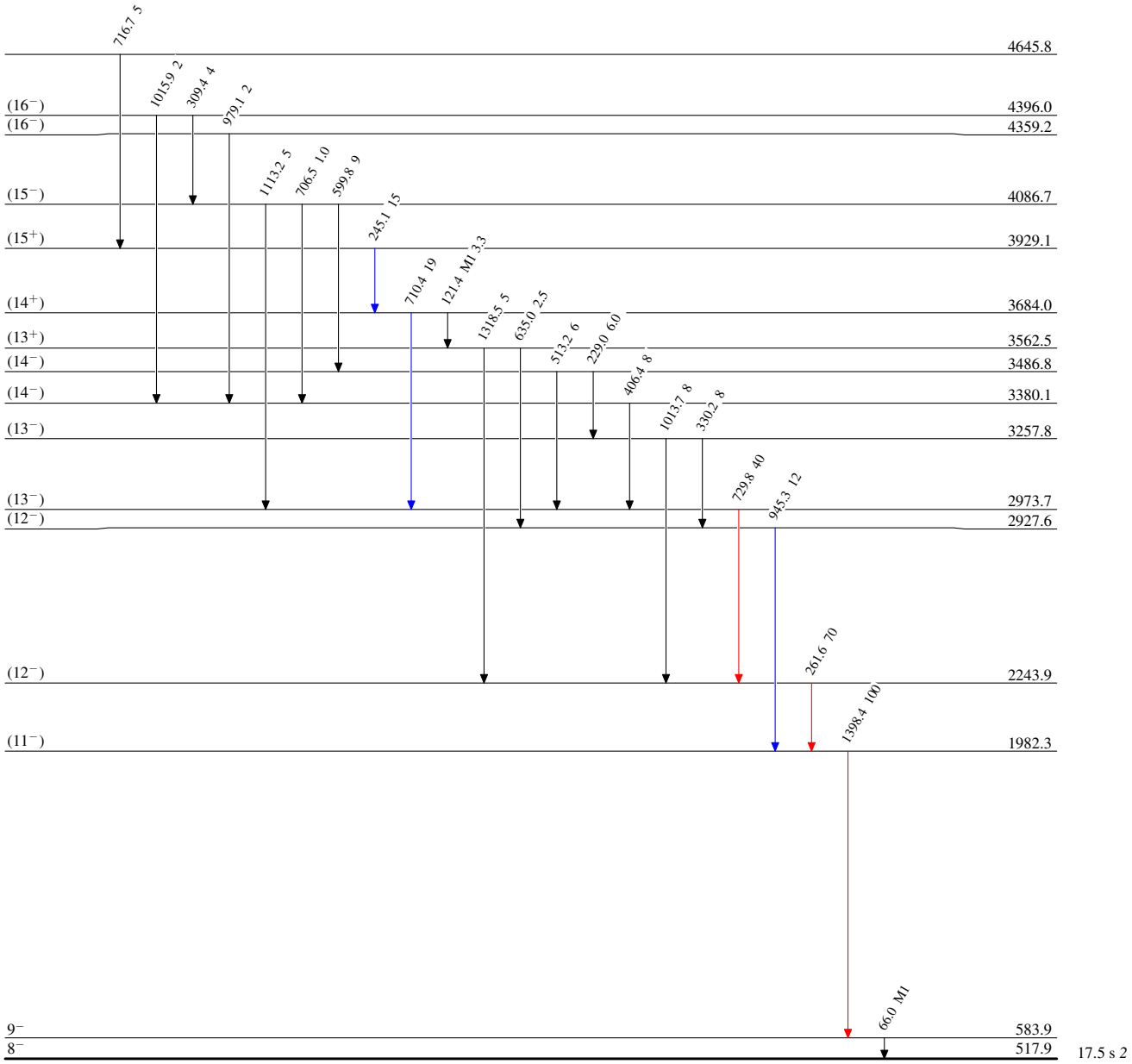
Intensities: Relative I_γ

Legend

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

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

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



$^{136}_{55}Cs_{81}$

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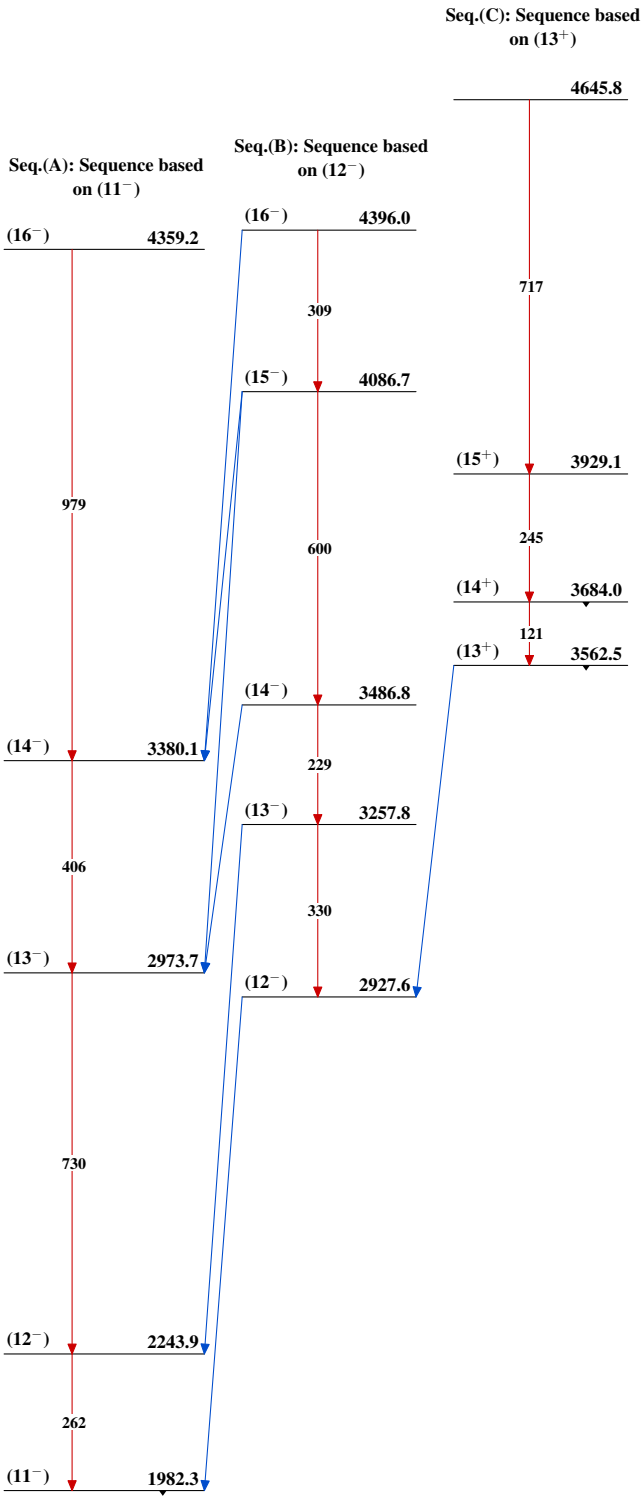

$^{136}_{55}Cs_{81}$