^{235}U(n,Fγ),^{238}U(n,Fγ) 2012Mu08

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

2012Mu08: Thermal neutrons were produced from the Canada India Research Utility Services (CIRUS) reactor facility, Bhabha Atomic Research Center (BARC), Mumbai. Target was ≈5.1 mg/cm^3 UAl_3 (17% enriched in ^{235}U). γ rays were detected by two clover HPGe detectors equipped with anti-Compton shields. Measured Eγ, Iγ, γγ-coin. Deduced levels, J, π, isotopic yield, angular momentum distribution.

2016Il01: A cold-neutron beam was produced from the collimated neutron guide PF1B at the Institute Laue-Langevin (ILL) in Grenoble. Target was 0.674 mg ^{235}U sandwiched between two 24−μm-thick layers of beryllium. γ rays were detected with the EXILL&FATIMA array, with EXILL consisting of 8 Clover detectors with four HPGe crystals each and FATIMA consisting of 16 $LaBr_3$(Ce) fast scintillators. Measured Eγ, Iγ, γγ-coin, γγ(t). Deduced lifetime. Comparisons with available data and theoretical calculations.

1988FiZV: E=3 MeV. ^{235,238}U targets. Measured Eγ, Iγ. Deduced γ yields.

Others: 1973Kh05, 1979Bo26.

^{138}Xe Levels

E(level)†	Jπ‡	$T_{1/2}$	Comments
0#	0^+		
588.90# *20*	2^+	15 ps *11*	$T_{1/2}$: from γγ(t) in 2016Il01.
1071.1# *4*	(4^+)		
1463.9 *11*	(2^+)		
1554.1# *11*	(6^+)		
1901.1 *11*	$(2^+,3,4^+)$		
2284.1# *15*	(8^+)		
2295	$(4^+,5,6^+)$		
2391			
2656.1 *18*	$(6^+,7,8^+)$		
2972.1# *18*	(10^+)		
3571.1# *21*	(12^+)		

† From a least-squares fit to γ-ray energies, assuming ΔEγ=1 keV if not given.
‡ From Adopted Levels.
# Band(A): g.s. band.

γ(^{138}Xe)

E_γ†	I_γ†	E_i(level)	J_i^π	E_f	J_f^π	Comments
372		2656.1	$(6^+,7,8^+)$	2284.1	(8^+)	
482.2 *3*	100 *5*	1071.1	(4^+)	588.90	2^+	Eγ: from 1988FiZV. Iγ: % intensities: Iγ(^{235}U, E=3.0 keV)=4.6 *6*, Iγ(^{238}U)=2.2 *6* (1988FiZV).
483	55 *3*	1554.1	(6^+)	1071.1	(4^+)	
588.9 *2*	>116.2	588.90	2^+	0	0^+	Eγ: from 1988FiZV. Iγ: % intensities: Iγ(^{235}U, E=3.0 keV)=4.7 *6*, Iγ(^{238}U)=2.3 *5*, Iγ(^{235}U, E=th)=5.03 (1988FiZV).
599	9.1 *23*	3571.1	(12^+)	2972.1	(10^+)	
688	17 *4*	2972.1	(10^+)	2284.1	(8^+)	
730	25 *4*	2284.1	(8^+)	1554.1	(6^+)	
739‡		2295	$(4^+,5,6^+)$	1554.1	(6^+)	

Continued on next page (footnotes at end of table)

^{235}U(n,Fγ),^{238}U(n,Fγ) 2012Mu08 (continued)

γ(^{138}Xe) (continued)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π
830		1901.1	(2^+,3,4^+)	1071.1	(4^+)
836[‡]		2391		1554.1	(6^+)
875	16 *4*	1463.9	(2^+)	588.90	2^+

[†] From 2012Mu08, unless otherwise noted. Quoted values of intensities are relative intensities normalized to Iγ(482γ)=100 *5*. 2012Mu08 state that uncertainties are of 5% to 25% depending on the γ-ray intensity. Uncertainties are assigned as follows: 5% for γ rays with I$\gamma\geq$50, 15% for Iγ=20-50 and 25% for Iγ<20.

[‡] Placement of transition in the level scheme is uncertain.

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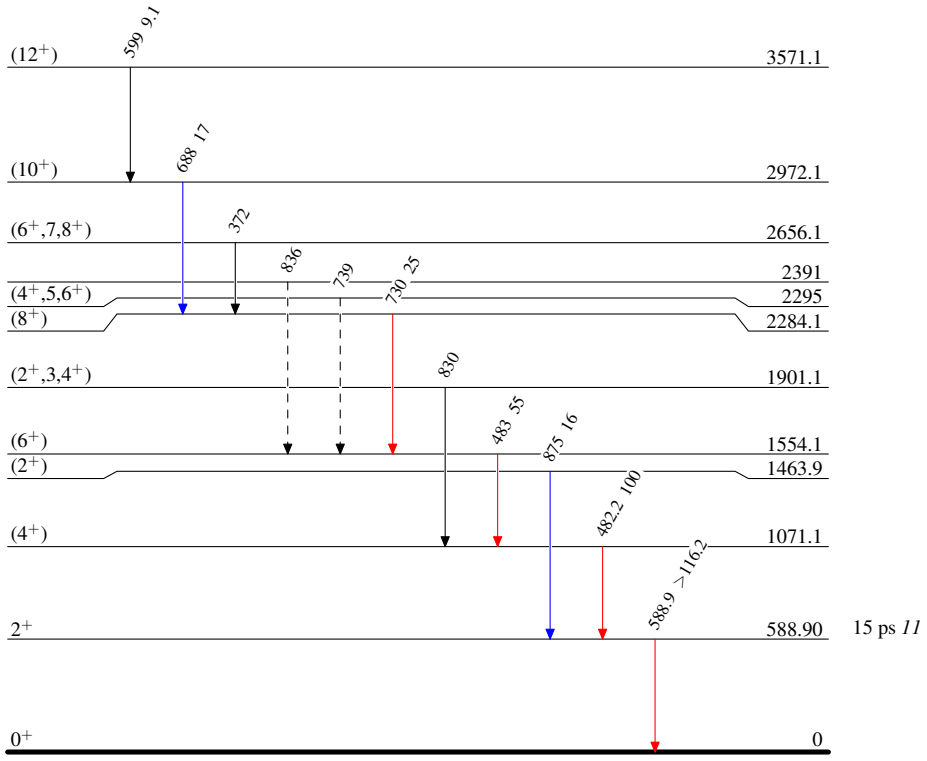
Level Scheme

Intensities: Relative I_γ

Legend

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



$^{138}_{54}Xe_{84}$

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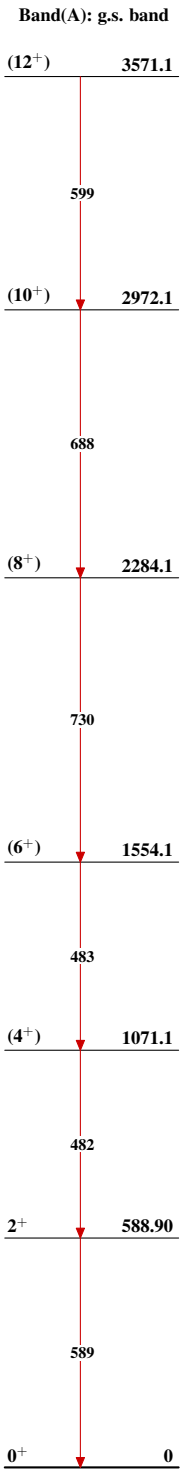

$^{138}_{54}Xe_{84}$