^{131}Xe(n,γ) E=th 1971Gr28,1988Ha28

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, A. A. Rodionov and S. Sakharov, Balraj Singh	NDS 104, 497 (2005)	10-Feb-2005

1971Gr28: Enriched XeF_2 target. Measured Eγ, Iγ from 0.4-1.5 MeV and 4.5-9.5 MeV. All the transitions with Eγ>4500 are assumed to be primary transitions.

1988Ha28: measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$. Natural xenon target. About 275 γ rays are listed from 85-5500; only about 40 γ's are assigned to a level scheme of ^{132}Xe.

^{132}Xe Levels

E(level)[†]	J$^{\pi}$[#]	Comments
0.0	0^+	
667.83 *3*	2^+	
1298.10 *6*	2^+	
1440.56 *5*	4^+	
1531.5? *22*		
1803.93 *11*	3^+	
1963.26 *10*	4^+	
1986.08 *11*	2^+	
2040.60 *19*	(5^-)	
2110.2 *4*	4^+	
2167.7? *4*	5^+	
2169.3 *6*	$(1,2^+)$	
2187.63 *15*	2^+	
2350.96 *13*	5^+	
2395.4 *4*	4^+	
2425.1 *4*	3^+	
2469.17 *10*	(3^-)	
2512.4 *4*	(4^+)	
2556.12 *13*	$(2^+,3)$	
2587.3 *13*	(4^+)	
2670.1 *3*	3^+	E(level): level proposed (evaluators) from decay studies.
2713.5 *9*	$(1,2^+)$	
2754.1 *7*	(4^+)	
2873.0 *8*		
3049.6 *22*		
3181.51 *25*	(3^-)	
3243.7 *3*		
3248.6 *22*		
3694.6 *22*		
3732.6[‡] *22*		
3788.6 *22*		
3824.6[‡] *22*		
3854.6 *22*		
3868.6 *22*		
3908.6[‡] *22*		
3951.6 *22*		
3989.6 *22*		
4017.6 *22*		
4032.6 *22*		
4091.6 *22*		
4109.6[‡] *22*		
4146.6[‡] *22*		
4167.6 *22*		
4199.6 *22*		

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^{131}Xe(n,γ) E=th 1971Gr28,1988Ha28 (continued)

^{132}Xe Levels (continued)

E(level)[†]	J$^{\pi}$[#]	Comments
4229.6 *22*		
(8934.7 *9*)	1$^+$,2$^+$	J$^{\pi}$: s-wave capture in 3/2$^+$ target. E(level): S(n)=8936.59 *22* (2003Au03).

[†] From least-squares fit to γ-ray energies.
[‡] Level not confirmed In (n,γ) E=14.1 eV, primary γ-ray data of 1971Ge05.
[#] From Adopted Levels.

γ(^{132}Xe)

A_2 and A_4 are from 1988Ha28.

E$_{\gamma}$[†]	I$_{\gamma}$[†‡&]	E$_i$(level)	J$_i^{\pi}$	E$_f$	J$_f^{\pi}$	Mult.	δ	Comments
325.4 *5*	4.7 *31*	2512.4	(4$^+$)	2187.63	2$^+$			
363.8[@] *3*	2.1 *3*	1803.93	3$^+$	1440.56	4$^+$			
428.75 *22*	2.6 *3*	2469.17	(3$^-$)	2040.60	(5$^-$)			
471.2 *5*	10.6 *31*	2512.4	(4$^+$)	2040.60	(5$^-$)	(E1+M2)	−0.27 *11*	(471γ)[600γ](773γ)(θ): A_2=+0.08 *9*, A_4=−0.04 *9*.
483.03 *5*	31.0 *7*	2469.17	(3$^-$)	1986.08	2$^+$	(E1(+M2))	−0.01 *11*	(483γ)[1318γ](668γ)(θ): A_2=−0.04 *4*, A_4=−0.02 *4*.
505.9 *3*	22.3 *4*	1803.93	3$^+$	1298.10	2$^+$	M1+E2	+1.7 *+6−4*	δ: +0.35 *+32−16* is also possible which is the preferred value by 1988Ha28. δ=+7.5 *6* In Adopted Gammas. (506γ)(630γ)(θ): A_2=+0.05 *5*, A_4=−0.07 *6*. (506γ)(630γ)(668γ)(θ): A_2=+0.04 *5*, A_4=−0.05 *7*.
522.81 *12*	15.4 *4*	1963.26	4$^+$	1440.56	4$^+$	(M1+E2)	−0.14 *+5−83*	(523γ)(727γ)(θ): A_2=+0.24 *6*, A_4=−0.09 *10*. (523γ)[773γ](668γ)(θ): A_2=+0.22 *5*, A_4=+0.01 *5*.
547.01 *16*	5.3 *4*	2350.96	5$^+$	1803.93	3$^+$			
570.13 *9*	10.6 *4*	2556.12	(2$^+$,3)	1986.08	2$^+$	D+Q		δ: +0.65 *+41−30* if J=2; −0.11 *12* if J=3 from (570γ)[1318γ](668γ)(θ) : A_2=−0.08 *9*, A_4=−0.08 *10*.
600.1 *3*	29.5 *7*	2040.60	(5$^-$)	1440.56	4$^+$	(E1(+M2))	+0.032 *25*	(600γ)(773γ)(θ): A_2=−0.075 *25*, A_4=−0.003 *3*. (600γ)[773γ](668γ)(θ): A_2=−0.013 *3*, A_4=−0.015 *35*.
[x]608.81[#] *25*	7.2 *4*							
621.2 *7*	4.9 *3*	2425.1	3$^+$	1803.93	3$^+$			
630.32 *5*	79.2 *16*	1298.10	2$^+$	667.83	2$^+$	(M1+E2)	+4.0 *2*	(630γ)(668γ)(θ): A_2=−0.23 *1*, A_4=+0.24 *9*. Additional information 1.
667.84 *3*	379 *17*	667.83	2$^+$	0.0	0$^+$			
727.1 *4*	2.3 *4*	2167.7?	5$^+$	1440.56	4$^+$			
772.74 *4*	100.0 *12*	1440.56	4$^+$	667.83	2$^+$	Q		(773γ)(668γ)(θ): A_2=+0.10 *1*, A_4=−0.01 *2*.

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^{131}Xe(n,γ) E=th 1971Gr28,1988Ha28 (continued)

γ(^{132}Xe) (continued)

E_γ †	I_γ †‡&	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	Comments
								Additional information 2.
812.4 *7*	4.5 *4*	2110.2	4^+	1298.10	2^+			
832.4 *7*	6.1 *5*	2873.0		2040.60	(5^-)			
889.58 *15*	4.8 *4*	2187.63	2^+	1298.10	2^+			
910.42 *16*	2.8 *12*	2350.96	5^+	1440.56	4^+			
954.8 *4*	4.1 *6*	2395.4	4^+	1440.56	4^+			
984.2 *4*	5.3 *6*	2425.1	3^+	1440.56	4^+			
[x]1008.8[#] *5*	1.1 *4*							
1028.81 *15*	22.5 *9*	2469.17	(3^-)	1440.56	4^+	(E1(+M2))	−0.071 *11*	(1029γ)(773γ)(θ): A_2=−0.095 *3*, A_4=−0.057 *74*. (1029γ)[773γ](668γ)(θ): A_2=−0.02 *7*, A_4=−0.06 *6*.
1114.5 *3*	8.4 *9*	2556.12	$(2^+,3)$	1440.56	4^+			E_γ: poor fit. Level-energy difference=1115.5.
1135.97 *14*	25.1 *11*	1803.93	3^+	667.83	2^+			
1140.89 *17*	2.8 *5*	3181.51	(3^-)	2040.60	(5^-)			
1171.22 *15*	12.2 *5*	2469.17	(3^-)	1298.10	2^+			
1280.47 *25*	2.3 *4*	3243.7		1963.26	4^+			
1295.31 *12*	4.7 *21*	1963.26	4^+	667.83	2^+			
1297.3 *3*	7.2 *13*	1298.10	2^+	0.0	0^+			
1317.85 *22*	50.1 *12*	1986.08	2^+	667.83	2^+	(M1+E2)	−0.16 *5*	(1318γ)(668γ)(θ): A_2=+0.36 *3*, A_4=−0.08 *3*.
1372.0 *3*	2.0 *7*	2670.1	3^+	1298.10	2^+			
1442.2 *5*	3.3 *11*	2110.2	4^+	667.83	2^+			
1501.6 *6*	2.2 *4*	2169.3	$(1,2^+)$	667.83	2^+			
1519.7 *6*	5.0 *5*	2187.63	2^+	667.83	2^+			
1758.9 *9*	2.1 *5*	2425.1	3^+	667.83	2^+			
1801.3 *9*	15.2 *5*	2469.17	(3^-)	667.83	2^+			
1887.8 *11*	13.4 *15*	2556.12	$(2^+,3)$	667.83	2^+			
1919.5 *13*	1.0 *3*	2587.3	(4^+)	667.83	2^+			
1985.8 *13*	30.1 *11*	1986.08	2^+	0.0	0^+			
2001.9 *14*	1.1 *4*	2670.1	3^+	667.83	2^+			
2086.2 *7*	1.1 *11*	2754.1	(4^+)	667.83	2^+			
2167.8 *18*	0.37 *20*	2169.3	$(1,2^+)$	0.0	0^+			
2187.5 *10*	1.7 *4*	2187.63	2^+	0.0	0^+			
2714.2 *10*	4.2 *8*	2713.5	$(1,2^+)$	0.0	0^+			
4705 *2*	0.17	(8934.7)	$1^+,2^+$	4229.6				
4735 *2*	0.17	(8934.7)	$1^+,2^+$	4199.6				
4767 *2*	0.17	(8934.7)	$1^+,2^+$	4167.6				
4788 *2*	0.04	(8934.7)	$1^+,2^+$	4146.6				
4825 *2*	0.15	(8934.7)	$1^+,2^+$	4109.6				
4843 *2*	0.37	(8934.7)	$1^+,2^+$	4091.6				
4902 *2*	0.24	(8934.7)	$1^+,2^+$	4032.6				
4917 *2*	0.11	(8934.7)	$1^+,2^+$	4017.6				
4945 *2*	0.10	(8934.7)	$1^+,2^+$	3989.6				
4983 *2*	0.15	(8934.7)	$1^+,2^+$	3951.6				
5026 *2*	0.12	(8934.7)	$1^+,2^+$	3908.6				
5066 *2*	0.22	(8934.7)	$1^+,2^+$	3868.6				
5080 *2*	0.54	(8934.7)	$1^+,2^+$	3854.6				
5110 *2*	0.12	(8934.7)	$1^+,2^+$	3824.6				
5146 *2*	0.35	(8934.7)	$1^+,2^+$	3788.6				
5202 *2*	0.04	(8934.7)	$1^+,2^+$	3732.6				
5240 *2*	0.26	(8934.7)	$1^+,2^+$	3694.6				
5686 *2*	0.22	(8934.7)	$1^+,2^+$	3248.6				

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^{131}Xe(n,γ) E=th 1971Gr28,1988Ha28 (continued)

γ(^{132}Xe) (continued)

E_γ [†]	I_γ [†‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.
5751 *2*	0.95	(8934.7)	$1^+,2^+$	3181.51	(3^-)	
5885 *2*	0.16	(8934.7)	$1^+,2^+$	3049.6		
6224 *2*	0.12	(8934.7)	$1^+,2^+$	2713.5	$(1,2^+)$	
6378 *2*	1.07	(8934.7)	$1^+,2^+$	2556.12	$(2^+,3)$	
6466 *2*	5.94	(8934.7)	$1^+,2^+$	2469.17	(3^-)	(E1)
6744 *2*	0.06	(8934.7)	$1^+,2^+$	2187.63	2^+	
7403[a] *2*	0.06	(8934.7)	$1^+,2^+$	1531.5?		
7635[a] *2*	0.04	(8934.7)	$1^+,2^+$	1298.10	2^+	
8267 *2*	0.57	(8934.7)	$1^+,2^+$	667.83	2^+	

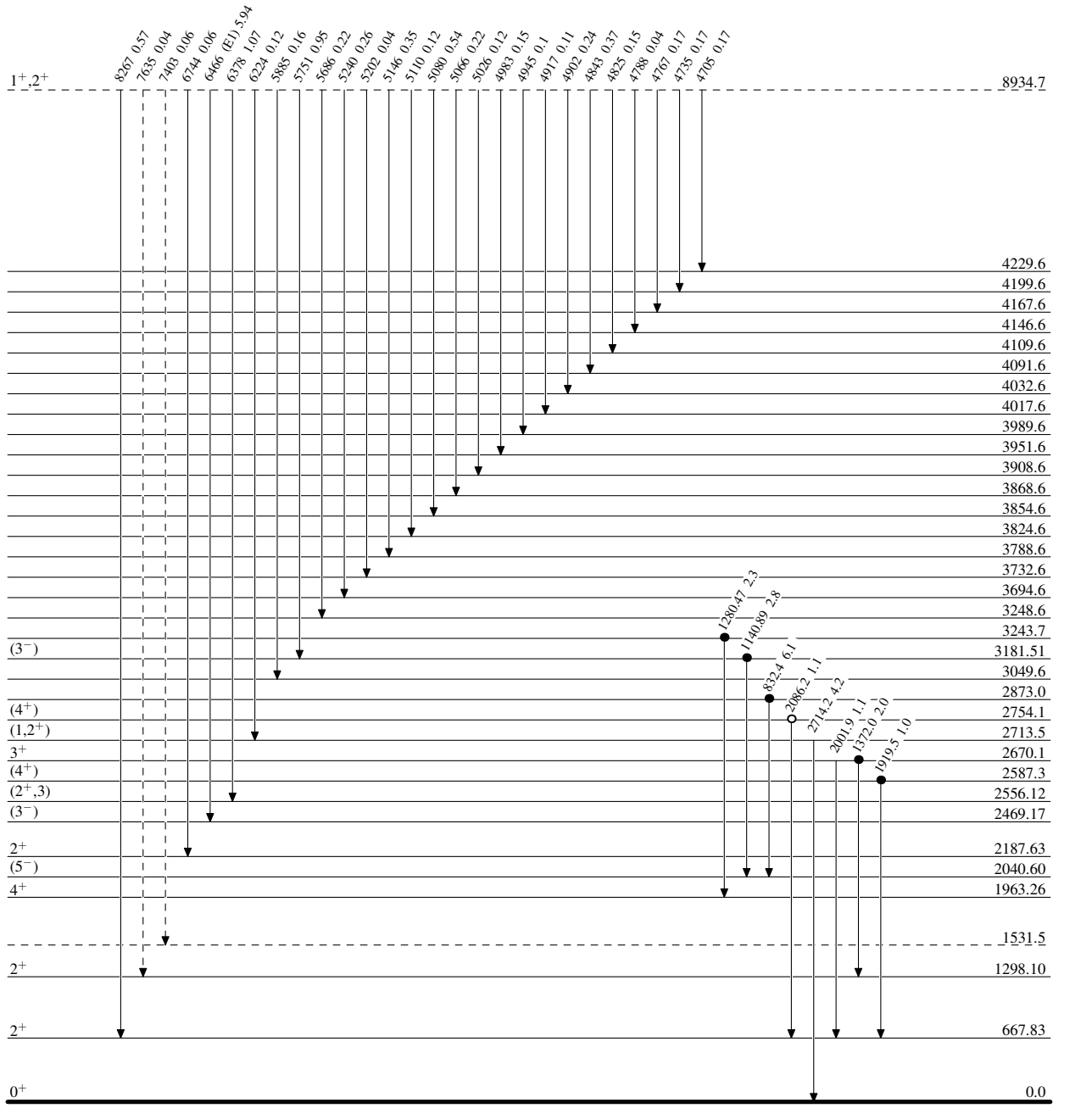
† From 1988Ha28 for secondary transitions; from 1971Gr28 for primary transitions.
‡ Relative intensities for secondary transitions from 1988Ha28, per 100 neutron captures for primary transitions from 1971Gr28.
# In coin with 667.8γ.
@ Unplaced In 1988Ha28.
& Intensity per 100 neutron captures.
a Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

^{131}Xe(n,γ) E=th 1971Gr28,1988Ha28

Level Scheme

Intensities: Per 100 neutron captures for primary γ's; relative intensities for secondary γ's For secondary γ's

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)
- Coincidence
- Coincidence (Uncertain)

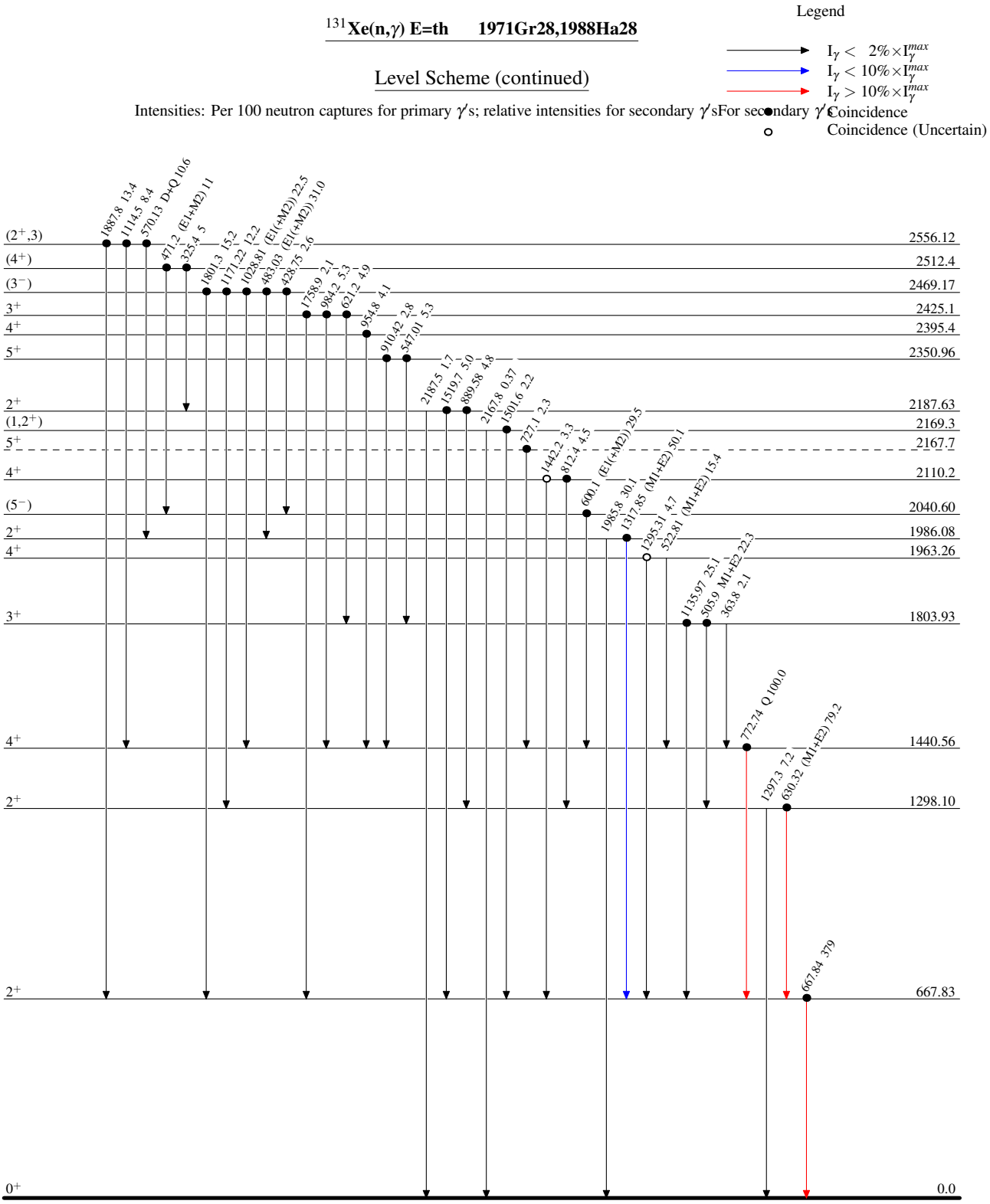


$^{132}_{54}Xe_{78}$

^{131}Xe(n,γ) E=th 1971Gr28,1988Ha28

Level Scheme (continued)

Intensities: Per 100 neutron captures for primary γ's; relative intensities for secondary γ'sFor secondary γ's



$^{132}_{54}Xe_{78}$