^{128}Te(α,nγ), ^{130}Te(α,3nγ) 1983Lo08,1979Ir01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, I. Mitropolsky, A. Rodionov	NDS 107, 2715 (2006)	17-Jul-2006

1983Lo08: ^{128}Te(α,nγ) E=18 MeV; measured γ, γ(θ), γ(t), ce, deduced ^{131}Xe levels, Iγ, J, π.
1979Ir01, 1978Pa09: ^{128}Te(α,nγ) E=16 MeV; measured γ, γ(θ) and γ linear pol, deduced levels, J, π, δ, B(λ), γ branching.
1971Ke13: ^{130}Te(α,3nγ) E=31.5 MeV; measured γ-ray excitation functions γγ, γ(θ), αγ(t), deduced levels, J, π, $T_{1/2}$.

^{131}Xe Levels

The level scheme is based on γγ coincidences and on γ-ray excitation functions. J^π values are from angular distributions, linear polarization data, and α(K)exp.

E(level)[†]	J^π	$T_{1/2}$	E(level)[†]	J^π	E(level)[†]	J^π	$T_{1/2}$
0.0	3/2+	stable	994.11 *24*		1641.3 *3*	(11/2+)	
80.01 *11*	1/2+		1034.01 *24*	(5/2)+	1654.1 *3*	(13/2+)	
164.00 *20*	11/2−	11.84 d *6*	1045.7 *4*	(13/2)−	1721.8 *3*	(11/2)	
341.3 *3*	9/2−		1113.3 *3*	(9/2)−	1804.3 *3*		
364.29 *11*	5/2+		1156.7 *4*	(11/2)−	1805.4 *4*	19/2+	14[#] ns *3*
404.51 *13*	3/2+		1191.3 *4*	(11/2−)	1860.8 *4*	(17/2)−	
636.85 *13*	7/2+		1244.9 *10*		1997.7 *4*	(17/2+)	
666.83 *25*	7/2−		1320.4 *4*	(13/2−)	2089.6 *4*	(19/2)	
699.63 *12*	3/2+		1397.19 *21*	11/2+	2194.4 *5*	(23/2+)	
722.69 *12*	5/2+		1456.15 *24*	(9/2)+	2249.4 *5*	(21/2+)	
806.0 *3*	15/2−		1584.02 *22*	(13/2+)	2297.0 *4*	(15/2+)	
952.3 *3*			1600.7 *4*	17/2−	2517.8 *5*		
971.05[‡] *17*	(9/2+)		1616.3 *4*	19/2−	3186.0 *6*		
973.03 *16*	7/2+		1620.9 *3*				

[†] From least-squares fit to Eγ′s.
[‡] The γ-rays with Eγ=566.5 *2* and 971.3 *3* populating 3/2+ states were reported by 1979Ir01. Not observed by 1983Lo08.
[#] From Iγ(t) (1971Ke13).

γ(^{131}Xe)

E_γ[†]	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	Comments
80.2 *2*	15 *3*	80.01	1/2+	0.0	3/2+	M1+E2	γ(θ): A_2=−0.04 *9*, A_4=−0.22 *13*. Mult.: from ^{131}I β decay data.
164.0 *2*	[a]	164.00	11/2−	0.0	3/2+	M4	Mult.: from 131I β decay data.
177.3 *2*	105 *11*	341.3	9/2−	164.00	11/2−	(M1+E2)	γ(θ): A_2=+0.06 *2*, A_4=−0.19 *2*.
186.9 *2*	4 *1*	1584.02	(13/2+)	1397.19	11/2+	(M1,E2)	α(K)exp=0.07 *2* γ(θ): A_2=−0.08 *9*, A_4=−0.15 *13*.
189.1 *2*	20 *4*	1805.4	19/2+	1616.3	19/2−	E1	α(K)exp=0.014 *3* γ(θ): A_2=+0.40 *2*, A_4=−0.23 *3*.
204.5[&] *3*	≈2	1805.4	19/2+	1600.7	17/2−	E1	γ(θ): A_2=−0.20 *6*, A_4=−0.02 *7* (1971Ke13). I_γ: from γ branching.
272.9 *2*	2.0 *6*	636.85	7/2+	364.29	5/2+		γ(θ): A_2=+0.1 *3*, A_4=+0.2 *3*.
284.4 *2*	9 *2*	364.29	5/2+	80.01	1/2+	E2	α(K)exp=0.035 *8* γ(θ): A_2=+0.13 *4*, A_4=−0.21 *6*.
285.8 *2*	1.0 *3*	952.3		666.83	7/2−		
295.3[@] *2*	≈1.2	699.63	3/2+	404.51	3/2+		
318.2 *2*	1.0 *3*	722.69	5/2+	404.51	3/2+	M1,E2	γ(θ): A_2=+0.3 *2*, A_4=+0.1 *3*.

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^{128}Te(α,nγ), ^{130}Te(α,3nγ) 1983Lo08,1979Ir01 (continued)

γ(^{131}Xe) (continued)

E_γ [†]	I_γ [†]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [‡]	δ [#]	Comments
324.7 2	8 2	404.51	3/2+	80.01	1/2+			γ(θ): A_2=−0.2 4, A_4=−0.2 5.
325.8 2	10 2	666.83	7/2−	341.3	9/2−	M1,E2		γ(θ): A_2=+0.1 3, A_4=−0.1 4.
334.3 2	4 1	971.05	(9/2+)	636.85	7/2+	(M1+E2)		α(K)exp=0.013 8 γ(θ): A_2=−0.31 3, A_4=−0.15 5.
335.5 2	<3 [b]	699.63	3/2+	364.29	5/2+			
336.2 2	<3 [b]	973.03	7/2+	636.85	7/2+			
343.6 2	1.0 3	1997.7	(17/2+)	1654.1	(13/2+)	(E2)		α(K)exp=0.09 6 γ(θ): A_2=+0.6 2, A_4=−0.3 2.
358.4 [@] 3	≈0.24	722.69	5/2+	364.29	5/2+			
364.5 2	100 10	364.29	5/2+	0.0	3/2+	M1+E2	−3.8 3	α(K)exp=0.010 1 γ(θ): A_2=−0.12 1, A_4=+0.04 1 (1979Ir01).
389.0 [&] 3		2194.4	(23/2+)	1805.4	19/2+	(E2)		γ(θ): A_2=+0.39 1, A_4=−0.13 3 (1971Ke13).
404.5 2	13 2	404.51	3/2+	0.0	3/2+	M1+E2	+8 −4+7	α(K)exp=0.009 2 γ(θ): A_2=+0.16 1, A_4=−0.03 1 (1979Ir01).
444.0 [&] 3		2249.4	(21/2+)	1805.4	19/2+	(M1,E2)		γ(θ): A_2=−0.66 6, A_4=+0.01 12 (1971Ke13).
446.3 2	3 1	1113.3	(9/2)−	666.83	7/2−	M1,E2		α(K)exp=0.021 9 γ(θ): A_2=−0.41 14, A_4=−0.4 2.
502.7 2	15 3	666.83	7/2−	164.00	11/2−	E2		α(K)exp=0.0022 13 γ(θ): A_2=+0.08 2, A_4=−0.19 3.
589.6 2	3 1	994.11		404.51	3/2+			γ(θ): A_2=+0.4 2, A_4=+0.3 3.
606.6 2	72 8	971.05	(9/2+)	364.29	5/2+	(E2)		α(K)exp=0.0030 5 γ(θ): A_2=+0.15 1, A_4=−0.18 2.
608	4 1	1244.9		636.85	7/2+			
609	6 2	973.03	7/2+	364.29	5/2+			
610.7 2	13 2	952.3		341.3	9/2−			
612.9 2	5 2	1584.02	(13/2+)	971.05	(9/2+)			γ(θ): A_2=−0.3 4, A_4=0.0 6.
619.4 2	2.0 6	699.63	3/2+	80.01	1/2+			γ(θ):A_2=+0.18 6, A_4=+0.05 7, lin. pol. P_z=0.15 47 or 0.22 14 (979Ir01).
629.5 2	17 3	1034.01	(5/2)+	404.51	3/2+	M1,E2		α(K)exp=0.0040 14 γ(θ): A_2=−0.27 5, A_4=−0.11 7.
636.7 2	79 8	636.85	7/2+	0.0	3/2+	E2		α(K)exp=0.0023 3 γ(θ): A_2=+0.30 2, A_4=−0.19 2.
642.0 2	112 11	806.0	15/2−	164.00	11/2−	E2		α(K)exp=0.0029 5 γ(θ): A_2=+0.21 7, A_4=−0.08 9.
642.7 [@] 1	≈1.2	722.69	5/2+	80.01	1/2+			
649.8 2	4 1	1620.9		971.05	(9/2+)			
655.7 2	2.0 6	2297.0	(15/2+)	1641.3	(11/2+)	(E2)		γ(θ): A_2=+0.45 5, A_4=−0.11 7.
670.2 2	35 4	1641.3	(11/2+)	971.05	(9/2+)	(M1,E2)		α(K)exp=0.005 2 γ(θ): A_2<0, A_4>0.
683.0 2	29 5	1654.1	(13/2+)	971.05	(9/2+)	E2		α(K)exp=0.0023 8 γ(θ): A_2=+0.38 1, A_4=−0.36 1.
699.5 2	9 2	699.63	3/2+	0.0	3/2+			
704.4 2	18 3	1045.7	(13/2)−	341.3	9/2−	E2		α(K)exp=0.0033 13 γ(θ): A_2=+0.37 3, A_4=−0.33 4.
722.6 2	10 2	722.69	5/2+	0.0	3/2+	M1+E2	+0.12 −2+5	α(K)exp=0.002 1 γ(θ): A_2=−0.06 1, A_4=−0.03 2 (1979Ir01).
748.8 2	12 3	1721.8	(11/2)	973.03	7/2+	(Q)		α(K)exp=0.007 2 γ(θ): A_2=+0.31 1, A_4=−0.23 2.
760.4 2	33 4	1397.19	11/2+	636.85	7/2+	E2		α(K)exp=0.0015 4 γ(θ): A_2=+0.36 5, A_4=−0.30 7.

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^{128}Te(α,nγ), ^{130}Te(α,3nγ) 1983Lo08,1979Ir01 (continued)

γ(^{131}Xe) (continued)

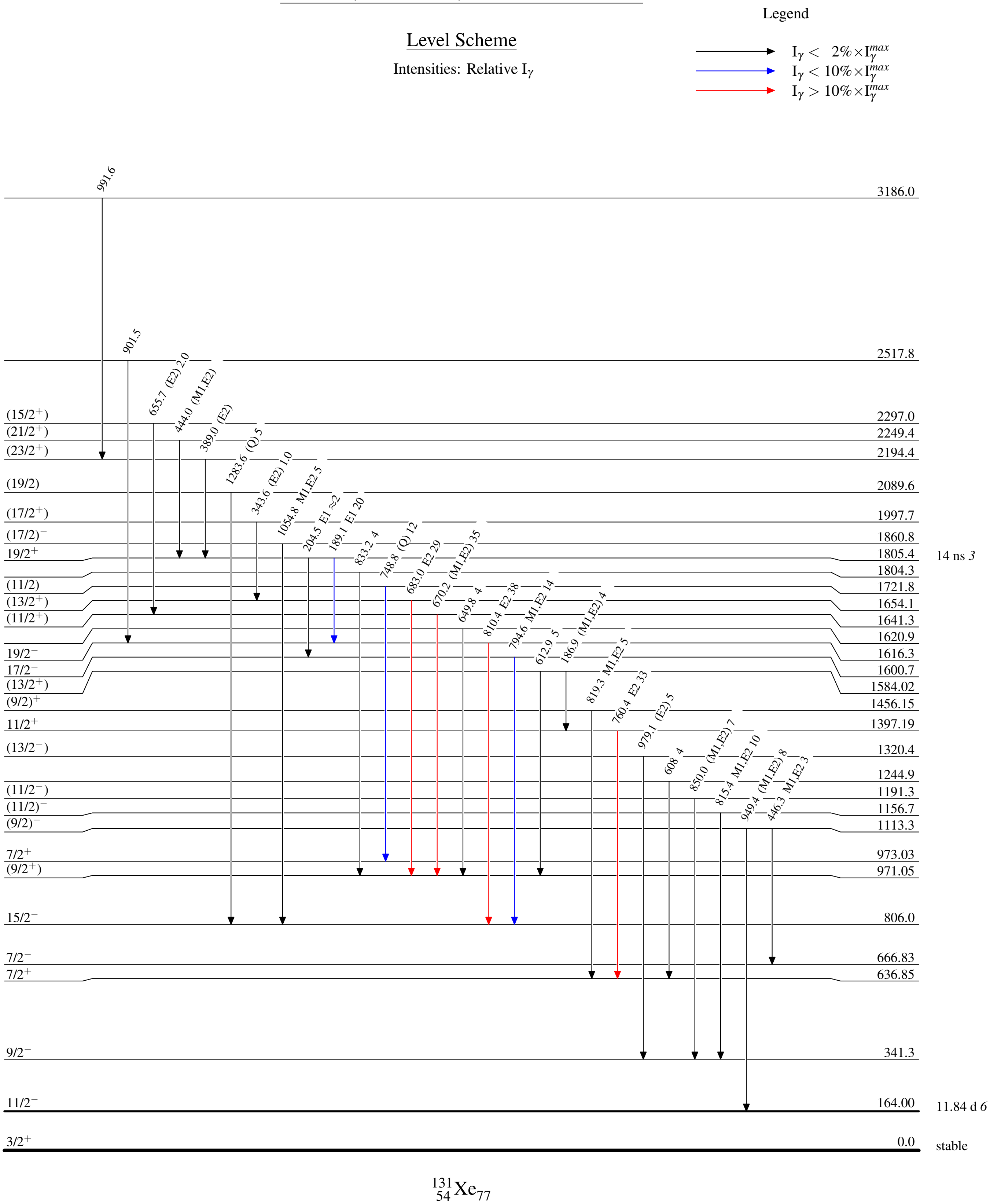
Eγ[†]	Iγ[†]	Ei(level)	J^π_i	Ef	J^π_f	Mult.[‡]	Comments
794.6 *2*	14 *3*	1600.7	17/2⁻	806.0	15/2⁻	M1,E2	α(K)exp=0.0017 *7* γ(θ): A_2=−0.71 *2*, A_4=−0.09 *4*.
810.4 *2*	38 *4*	1616.3	19/2⁻	806.0	15/2⁻	E2	α(K)exp=0.0022 *4* γ(θ): A_2=+0.39 *6*, A_4=−0.21 *8*.
815.4 *2*	10 *2*	1156.7	(11/2)⁻	341.3	9/2⁻	M1,E2	α(K)exp=0.003 *1* γ(θ): A_2=−0.32 *4*, A_4=−0.15 *5*.
819.3 *2*	5 *2*	1456.15	(9/2)⁺	636.85	7/2⁺	M1,E2	α(K)exp=0.004 *2* γ(θ): A_2=−0.16 *9*, A_4=+0.07 *13*.
833.2 *2*	4 *1*	1804.3		971.05	(9/2⁺)		γ(θ): A_2=+0.01 *7*, A_4=+0.15 *9*.
850.0 *2*	7 *2*	1191.3	(11/2⁻)	341.3	9/2⁻	(M1,E2)	α(K)exp=0.0024 *17* γ(θ): A_2=−0.2 *2*, A_4=+0.3 *2*.
901.5[&] *3*		2517.8		1616.3	19/2⁻		γ(θ): A_2=+0.28 *4*, A_4=−0.10 *10* (1971Ke13).
949.4 *2*	8 *2*	1113.3	(9/2)⁻	164.00	11/2⁻	(M1,E2)	α(K)exp=0.001 *1* γ(θ): A_2=−0.05 *5*, A_4=−0.11 *7*.
973.0 *2*	7 *2*	973.03	7/2⁺	0.0	3/2⁺	E2	γ(θ): A_2=+0.45 *6*, A_4=−0.20 *8*.
979.1 *2*	5 *2*	1320.4	(13/2⁻)	341.3	9/2⁻	(E2)	γ(θ): A_2=+0.4 *2*, A_4=−0.5 *4*.
991.6[&] *3*		3186.0		2194.4	(23/2⁺)		γ(θ): A_2=+0.35 *6*, A_4=+0.06 *20* (1971Ke13).
1054.8 *2*	5 *2*	1860.8	(17/2)⁻	806.0	15/2⁻	M1,E2	α(K)exp=0.003 *2* γ(θ): A_2=−0.49 *4*, A_4=+0.03 *6*.
1283.6 *2*	5 *2*	2089.6	(19/2)	806.0	15/2⁻	(Q)	α(K)exp=0.002 *2* γ(θ): A_2=+0.4 *2*, A_4=−0.3 *3*.

[†] From (α,nγ) at E=18.0 MeV (1983Lo08), except as noted. ΔIγ assigned by evaluators on the basis of the authors′ statement that ΔIγ=10% for strong transitions and 30% for the weak transitions.
[‡] From γ(θ) and α(K)exp (1983Lo08) taking into account γ(θ) and lin. polarization data (1979Ir01).
[#] From γ(θ) (1979Ir01); see also 1980Kr22. Phase convention changed to the standard for Nuclear Data Sheets by the evaluators.
[@] From 1978Pa09 and 1979Ir01; Iγ from γ branching.
[&] Observed only in (α,3nγ); 0.3 keV uncertainty assigned to Eγ by evaluators.
[a] Weak.
[b] Doublet, intensity not divided.

^{128}Te(α,nγ), ^{130}Te(α,3nγ) 1983Lo08,1979Ir01

Level Scheme

Intensities: Relative I_γ



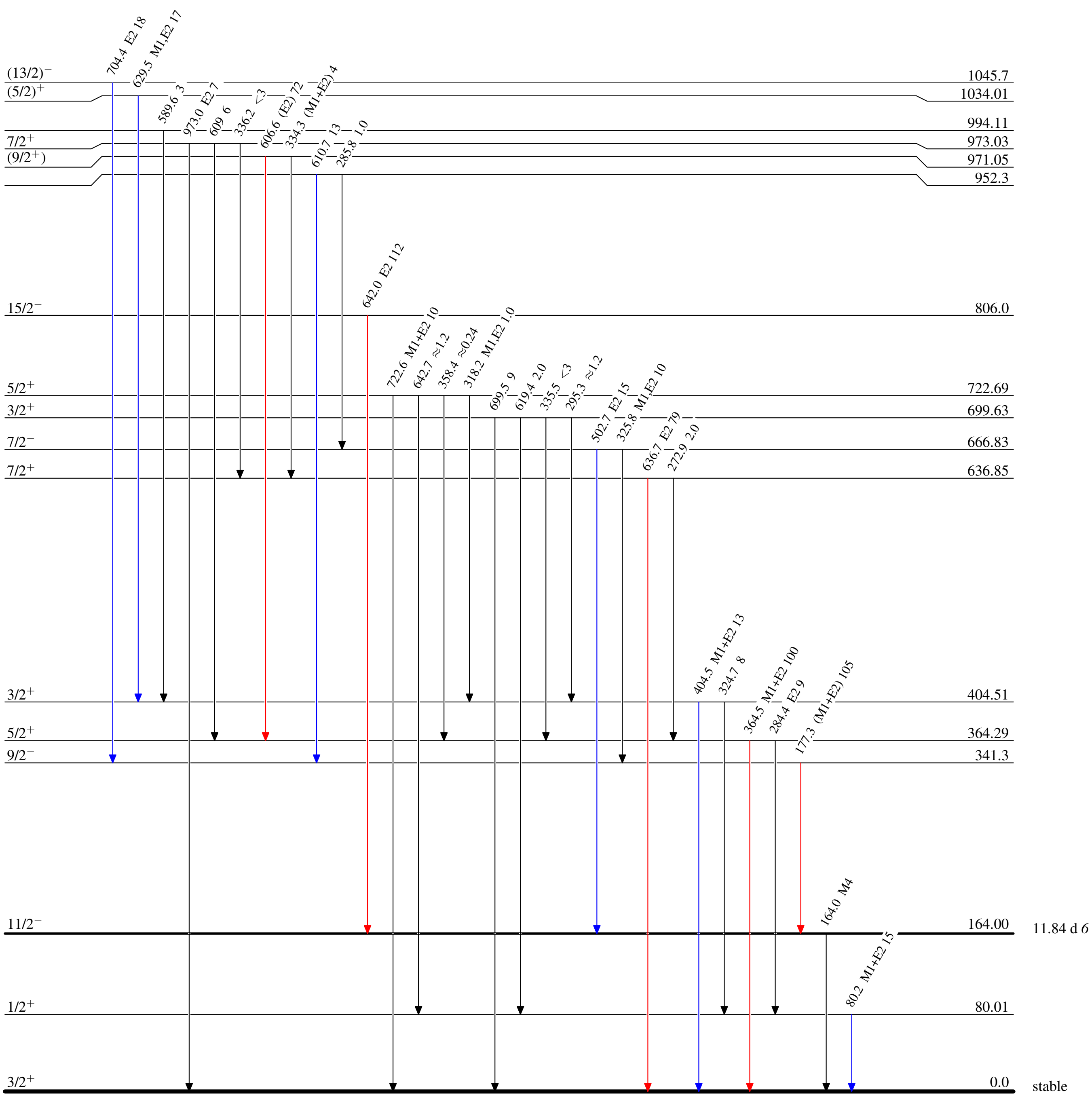
^{128}Te(α,nγ), ^{130}Te(α,3nγ) 1983Lo08,1979Ir01

Level Scheme (continued)

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$



$^{131}_{54}Xe_{77}$