^{170}Er(p,2nγ), (d,3nγ) 1973FuZF,1974Ba66

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109, 2033 (2008)	15-Jun-2008

1973FuZF: E(p)=10 MeV; measured Eγ, Iγ, γγ coin.

1974Ba66: E(p)=14-20 MeV; E(d)=17-26 MeV; isotope-separated erbium targets enriched to 96% in ^{170}Er, Ge(Li) detectors; measured Eγ, Iγ (θ=125°, E(p)=16 MeV and ED=23 MeV), γγ coin, γ(θ) (E(p)=16 MeV); interpreted levels in terms of a model coupling a particle to a rotor with a variable moment of inertia.

The level scheme and all data are from 1974Ba66, unless noted to the contrary.

^{169}Tm Levels

E(level)†	Jπ‡	Comments
0.0@	1/2+	
8.42@ 5	3/2+	
118.17@ 5	5/2+	
138.94@ 5	7/2+	
316.14& 6	7/2+	
332.07@ 6	9/2+	
341.95a 5	1/2−	
344.99a 6	5/2−	
367.65@ 7	11/2+	
379.25b 6	7/2−	
430.13a 7	9/2−	
433.48& 7	9/2+	
472.85b 8	9/2−	
474.74a 11	3/2−	
570.65c 12	3/2+	
575.35& 7	11/2+	
588.16b 9	11/2−	
602.75a 16	13/2−	
633.10c 15	5/2+	
637.17@ 15	13/2+	
646.58a 11	7/2−	
690.99@ 20	15/2+	
718.66c 13	7/2+	
725.41b 10	13/2−	
741.08& 20	13/2+	
781.60 15	5/2(+)	note that branching from 10 MeV (p,2nγ) (1973FuZF) disagrees with adopted branching.
832.21c 15	9/2+	
865.7a 4	17/2−	
883.73b 16	15/2−	
884.38a 14	11/2−	
929.32& 20	15/2+	
963.6c 5	(11/2+)	
1028.18@ 24	17/2+	branching from this level In (p,2nγ) and (d,3nγ) is inconsistent with adopted branching.
1039.81 16	(5/2)#	
1058.55 21	(1/2)#	
1063.52b 18	17/2−	
1104.0@ 3	19/2+	

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^{170}Er(p,2nγ), (d,3nγ) 1973FuZF,1974Ba66 (continued)

^{169}Tm Levels (continued)

E(level)[†]	Jπ[‡]	Comments
1112.6? *5*	(9/2)[#]	Level established by 682γ to 430.1 level (1973FuZF). 1974Ba66 use same transition to establish the 1548.4 level (deexcitation to 865.9 level). It is not clear which assignment is correct.
1135.89 *21*	(7/2)[#]	
1140.7[&] *3*	17/2$^+$	
1188.6[a] *3*	15/2$^-$	
1217.9[a] *5*	21/2$^-$	
1223.02 *15*	(3/2)[#]	
1262.43[b] *22*	19/2$^-$	
1300.6[c] *6*	15/2$^+$	
1372.0[&] *6*	19/2$^+$	
1482.93[b] *23*	21/2$^-$	
1497.9[@] *4*	21/2$^+$	
1548.2?[a] *7*	19/2$^-$	See comment with 1112.6 level.
1598.3?[@] *3*	23/2$^+$	
1625.1[&] *6*	21/2$^+$	
1657.9[a] *5*	25/2$^-$	
1716.9[b] *3*	23/2$^-$	

[†] From least-squares fit to Eγ, omitting multiply-placed and tentatively-placed transitions whenever possible.
[‡] From 1974Ba66, based on coincidence data, rotational structure, and γ-ray angular distributions, except where noted (inferred multipolarities not reported). Except for values indicated here As 'not adopted', these are consistent with adopted values apart from the inclusion of parentheses In Adopted Levels In some cases.
[#] From 1973FuZF. not adopted because of insufficient supporting information.
[@] Band(A): 1/2[411] band.
[&] Band(B): 7/2[404] band.
[a] Band(C): 1/2[541] band.
[b] Band(D): 7/2[523] band.
[c] Band(E): 3/2[411] band + K-2 γ vibration built on 1/2[411].

γ(^{169}Tm)

Assignment to ^{169}Tm is uncertain for many of the unplaced transitions.

Eγ[†]	Iγ[‡]	Ei(level)	J_i^π	Ef	J_f^π	Mult.[#]	Comments
(8.40 *7*)		8.42	3/2$^+$	0.0	1/2$^+$		Eγ: from energy difference for 118γ and 110γ.
(20.75)		138.94	7/2$^+$	118.17	5/2$^+$		Eγ: rounded-off value from Adopted Gammas.
63.09[@] *5*	170 *17*	379.25	7/2$^-$	316.14	7/2$^+$		
[x]72.0 *5*	2.3 *12*						
[x]74.9 *5*	6[a] *3*						
[x]80.5 *2*	22.1[a] *22*						Iγ=1.7 in 16 MeV (p,2nγ) (1974Ba66).
84.9[d] *5*	9 *5*	430.13	9/2$^-$	344.99	5/2$^-$		Assignment tentative (major component is from ^{170}Er(d,4nγ)).
[x]90.8 *5*	6 *3*						
93.60[@] *5*	53 *5*	472.85	9/2$^-$	379.25	7/2$^-$	D+Q	Iγ=26.3, A_2=+0.01 *3*, A_4=0.00 *5* in 16 MeV (p,2nγ) (1974Ba66).

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^{170}Er(p,2nγ), (d,3nγ) 1973FuZF,1974Ba66 (continued)

γ(^{169}Tm) (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	Comments
x101.0 5	5.2 26						
x106.0 5	6 3						
x106.5 5							Iγ=2.3 in 16 MeV (p,2nγ) (1974Ba66).
109.77@ 5	126& 13	118.17	5/2+	8.42	3/2+	D+Q	Iγ=100, A_2=−0.03 1, A_4=−0.02 2 in 16 MeV (p,2nγ) (1974Ba66).
115.32@ 5	60 6	588.16	11/2−	472.85	9/2−	D+Q	Iγ=22.7, A_2=+0.03 3, A_4=0.00 5 in 16 MeV (p,2nγ) (1974Ba66).
117.32@ 5	28 7	433.48	9/2+	316.14	7/2+		I_γ: from Iγ=39 4 for (117γ+118γ) and deduced Iγ(118γ)=11 6 (see comment on 118γ from 118 level). Iγ=22.2, A_2=+0.13 3, A_4=+0.04 5 in 16 MeV (p,2nγ) (1974Ba66).
118.17@ 5	11 6	118.17	5/2+	0.0	1/2+		I_γ: deduced from Iγ(110γ) and I(110γ):I(118γ)=100:8.5 in (p,2nγ) E(p)=16 MeV (1974Ba66). Iγ=8.5, A_2=+0.18 10 in 16 MeV (p,2nγ) (1974Ba66).
x122.4 5							Iγ=1.4 in 16 MeV (p,2nγ) (1974Ba66).
x124.1 5	9 5						
130.51@ 5	150 15	138.94	7/2+	8.42	3/2+		Iγ=150, A_2=+0.11 1, A_4=0.00 2 in 16 MeV (p,2nγ) (1974Ba66).
137.26@ 5	50 5	725.41	13/2−	588.16	11/2−	D+Q	Iγ=12.1, A_2=+0.10 2, A_4=−0.03 4 in 16 MeV (p,2nγ) (1974Ba66).
141.85@ 5	12.5 13	575.35	11/2+	433.48	9/2+		Iγ=8.3, A_2=+0.24 6 in 16 MeV (p,2nγ) (1974Ba66).
x144.3 2	35 4						I_γ: includes component from ^{170}Er(d,2nγ) (1974Ba66). Iγ=4.9, A_2=+0.08 4 in 16 MeV (p,2nγ) (1974Ba66).
158.3 2	30 3	883.73	15/2−	725.41	13/2−	D(+Q)	Iγ=5.8, A_2=−0.40 20 in 16 MeV (p,2nγ) (1974Ba66).
x161.9 5	1.8 9						
165.8 2	33 3	741.08	13/2+	575.35	11/2+		Iγ=4.5, A_2=+0.20 5 in 16 MeV (p,2nγ) (1974Ba66).
x169.6 2	13.6 14						
171.6 5	1.6 8	646.58	7/2−	474.74	3/2−		I_γ: deduced from Iγ(528.4γ) and relative branchings from 646.6 level for E(p)=16 MeV. Iγ=1.4 in 16 MeV (p,2nγ) (1974Ba66).
172.7 5	12 6	602.75	13/2−	430.13	9/2−		I_γ: deduced from Iγ(235.1γ) and I(173γ):I(235γ)=2.9:18.4 in (p,2nγ) E(p)=16 MeV (1974Ba66).
175.0 5	13 7	865.7	17/2−	690.99	15/2+		Iγ=2.2 in 16 MeV (p,2nγ) (1974Ba66). I_γ: deduced from Iγ=25.2 25 for 172.7γ+175.0γ, and Iγ(172.7γ)=12 6.
177.18@ 5	117 12	316.14	7/2+	138.94	7/2+	D+Q	Iγ=53, A_2=−0.02 3, A_4=−0.04 5 in 16 MeV (p,2nγ) (1974Ba66).
179.6 2	19.5 20	1063.52	17/2−	883.73	15/2−		
x181.4 2	165 17						I_γ: partly, if not entirely, from inelastic scattering. Iγ=9.2, A_2=+0.17 4 in 16 MeV (p,2nγ) (1974Ba66).
x184.2 2	15.3& 15					D(+Q)	Iγ=1.0, A_2=−0.10 20 in 16 MeV (p,2nγ) (1974Ba66).
188.7 5	7 4	929.32	15/2+	741.08	13/2+		Iγ=1.2 in 16 MeV (p,2nγ) (1974Ba66).
193.12@ 5	51 5	332.07	9/2+	138.94	7/2+	D+Q	Iγ=24.3, A_2=−0.07 2, A_4=+0.02 4 in 16 MeV (p,2nγ) (1974Ba66).
197.97@ 5	185 19	316.14	7/2+	118.17	5/2+	D+Q	Iγ=84, A_2=+0.03 2, A_4=+0.04 3 in 16 MeV (p,2nγ) (1974Ba66). I_γ: deduced from Iγ(177γ) and I(177γ):I(198.0γ)=53:84 in (p,2nγ) E(p)=16 MeV (1974Ba66); consistent with adopted branching. See also the comment on the 198.3γ from 1262 level.
198.3d 5	0& 23	1262.43	19/2−	1063.52	17/2−		I_γ: existence questionable (Iγ=185 13 for 198.0γ+198.3γ, and Iγ(198.0γ)=185 19).

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^{170}Er(p,2nγ), (d,3nγ) 1973FuZF,1974Ba66 (continued)

γ(^{169}Tm) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
206.07[@] 5	4.5 23	344.99	5/2$^-$	138.94	7/2$^+$		Iγ=5.7 in 16 MeV (p,2nγ) (1974Ba66), 13 In 10 MeV (p,2nγ) (1973FuZF).
208.8 5	6 3	588.16	11/2$^-$	379.25	7/2$^-$		
210.94[b@] 5	3.4[b] 17	781.60	5/2$^{(+)}$	570.65	3/2$^+$		1974Ba66 assign transition to 1140.7 deexcitation only.
210.94[b@] 5	3.4[b] 17	1140.7	17/2$^+$	929.32	15/2$^+$		
213.91[@] 5	22 4	332.07	9/2$^+$	118.17	5/2$^+$		I_γ: from Iγ(193γ) and I(193γ):I(241γ)=24.3:10.6 in (p,2nγ) E(p)=16 MeV (1974Ba66); consistent with result from 1973FuZF. Iγ=29 3 in (d,3nγ) may include component from (d,4nγ). Iγ=10.6, A_2=+0.20 3 in 16 MeV (p,2nγ) (1974Ba66).
216.4[@] 2	0.84	646.58	7/2$^-$	430.13	9/2$^-$		I_γ: deduced from Iγ(528.4γ) and relative branchings from 646.6 level in 1973FuZF.
[x]219.2 5	6 3						
220.5 2	13.9 14	1482.93	21/2$^-$	1262.43	19/2$^-$		
226.79[@] 5	0.34 17	344.99	5/2$^-$	118.17	5/2$^+$		I_γ: deduced from Iγ(206.1γ) and adopted branching from 345.0 level. Iγ=4.6 in 16 MeV (p,2nγ) (1974Ba66), 2.6 In 10 MeV (p,2nγ) (1973FuZF).
228.71[@] 5	169 17	367.65	11/2$^+$	138.94	7/2$^+$	Q	I_γ: deduced from Iγ=169 17 for 226.8γ and 228.7γ combined, and Iγ(226.8γ)=0.30 15. Iγ=59, A_2=+0.22 2, A_4=−0.04 3 in 16 MeV (p,2nγ) (1974Ba66).
233[d]		1716.9	23/2$^-$	1482.93	21/2$^-$		Observed only in coincidence data.
235.1 2	77 8	602.75	13/2$^-$	367.65	11/2$^+$	D(+Q)	A_2=−0.14 3, A_4=−0.01 5 in 16 MeV (p,2nγ) (1974Ba66).
240.4[@d] 2		379.25	7/2$^-$	138.94	7/2$^+$		I_γ: weak.
[x]242.9 5	3.6 18						
252.5 2	14.5 15	725.41	13/2$^-$	472.85	9/2$^-$		Iγ=3.9, A_2=+0.31 12 in 16 MeV (p,2nγ) (1974Ba66).
[x]258.4 5	38 8						I_γ: deduced from Iγ=50 5 for 258.4γ and 259.2γ combined, and Iγ(259.2γ)=12 6. A_2=+0.21 9 for doublet in 16 MeV (p,2nγ) (1974Ba66).
259.23[@] 5	12 6	575.35	11/2$^+$	316.14	7/2$^+$		I_γ: deduced from Iγ(141.8γ) and I(142γ):I(259γ) in (p,2nγ) E(p)=16 MeV (1974Ba66). Iγ=7.8, A_2=+0.21 9 in 16 MeV (p,2nγ) (1974Ba66).
261.10[@] 5	5 3	379.25	7/2$^-$	118.17	5/2$^+$		I_γ: deduced from Iγ(63.1γ) and I(261γ):I(63γ)=3.2:83.0 in (p,2nγ) E(p)=16 MeV (1974Ba66). A_2=+0.21 9 for doublet in 16 MeV (p,2nγ) (1974Ba66).
262.7 5	32 5	865.7	17/2$^-$	602.75	13/2$^-$		Iγ=3.2 in 16 MeV (p,2nγ) (1974Ba66); A_2=+0.21 9 for doublet. I_γ: deduced from Iγ=37 4 for 261.1γ and 262.7γ combined, and Iγ(261.1γ)=5 3.
[x]267.2 5	4.2 21						
269.4[@] 2	22.1 22	637.17	13/2$^+$	367.65	11/2$^+$	D+Q	Iγ=6.8, A_2=−0.37 10 in 16 MeV (p,2nγ) (1974Ba66).
281.7[@d] 2		884.38	11/2$^-$	602.75	13/2$^-$		Iγ=1.0 In 10 MeV (p,2nγ) (1973FuZF).
291.21[@] 5	44 4	430.13	9/2$^-$	138.94	7/2$^+$	D(+Q)	Iγ=29.0, A_2=−0.05 6, A_4=−0.04 11 in 16 MeV (p,2nγ) (1974Ba66).

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^{170}Er(p,2nγ), (d,3nγ) 1973FuZF,1974Ba66 (continued)

γ(^{169}Tm) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
295.4 *2*	21.2[&] *22*	883.73	15/2$^-$	588.16	11/2$^-$		Iγ=2.8, A_2=+0.1 *3* in 16 MeV (p,2nγ) (1974Ba66).
301.6[@] *2*	0.94	646.58	7/2$^-$	344.99	5/2$^-$		I_γ: deduced from Iγ(528.4γ) and relative branchings from 646.6 level in 1973FuZF.
305.2 *2*	21.9 *22*	637.17	13/2$^+$	332.07	9/2$^+$		Iγ=7.4, A_2=+0.36 *10* in 16 MeV (p,2nγ) (1974Ba66).
307.74[c@] *5*	53[c&] *6*	316.14	7/2$^+$	8.42	3/2$^+$		I_γ: deduced from Iγ(177.2γ) and adopted branching from 316.1 level. Iγ=25.1, A_2=+0.09 *6*, A_4=−0.03 *10* in 16 MeV (p,2nγ) (1974Ba66) for doublet.
307.74[c@] *5*	10[c&] *9*	741.08	13/2$^+$	433.48	9/2$^+$		Iγ=25.1, A_2=+0.09 *6*, A_4=−0.03 *10* for multiplet in 16 MeV (p,2nγ) (1974Ba66); this includes component from (p,p′γ). I_γ: upper limit deduced from Iγ=63 *6* for both placements of 307.7γ plus contaminant, assuming Iγ=53 *6* for 316 level placement.
[x]310.5 *5*	9 *4*						
314.6[@] *2*	3.7	646.58	7/2$^-$	332.07	9/2$^+$		I_γ: deduced from Iγ(528.4γ) and relative branchings from 646.6 level in 1973FuZF.
323.4 *2*	66 *7*	690.99	15/2$^+$	367.65	11/2$^+$		Iγ=12.3, A_2=+0.27 *5* in 16 MeV (p,2nγ) (1974Ba66).
333.53[@] *5*	6 *3*	341.95	1/2$^-$	8.42	3/2$^+$	D	Iγ=7.6, A_2=−0.18 *13* in 16 MeV (p,2nγ) (1974Ba66).
336.60[c@] *5*	13[c] *6*	344.99	5/2$^-$	8.42	3/2$^+$		I_γ: deduced from Iγ(206.1γ) and adopted branching from 345.0 level. Iγ=24.2 for doublet in 16 MeV (p,2nγ) (1974Ba66), 55 In 10 MeV (p,2nγ) (1973FuZF).
336.60[c@] *5*	17[c] *7*	1028.18	17/2$^+$	690.99	15/2$^+$		I_γ: deduced from Iγ=30 *3* for both placements of 336.6γ and Iγ=13 *6* for 345.0 level placement. Iγ=24.2, A_2=−0.04 *10*, A_4=−0.04 *20* for doublet in 16 MeV (p,2nγ) (1974Ba66).
338.3 *2*	21.7 *22*	1063.52	17/2$^-$	725.41	13/2$^-$		
341.95[@] *5*	3.3 *17*	341.95	1/2$^-$	0.0	1/2$^+$		Iγ=3.4, A_2=+0.25 *20* in 16 MeV (p,2nγ) (1974Ba66).
352.2 *2*	28 *3*	1217.9	21/2$^-$	865.7	17/2$^-$		
353.9 *2*	18.7 *19*	929.32	15/2$^+$	575.35	11/2$^+$		Iγ=4.0 in 16 MeV (p,2nγ) (1974Ba66).
356.7[@] *2*	4.6 *23*	474.74	3/2$^-$	118.17	5/2$^+$		Iγ=6.6 in 16 MeV (p,2nγ) (1974Ba66).
[x]370.0 *5*	3.8 *19*						
378.7 *2*	12.4 *13*	1262.43	19/2$^-$	883.73	15/2$^-$		
386.7[@] *2*		718.66	7/2$^+$	332.07	9/2$^+$		
[x]387.8 *5*	3.8 *19*						
391.0 *2*	14.9 *15*	1028.18	17/2$^+$	637.17	13/2$^+$		Iγ=2.5 in 16 MeV (p,2nγ) (1974Ba66).
394.0 *5*	4.5 *23*	1497.9	21/2$^+$	1104.0	19/2$^+$		
[x]395.9 *5*	1.7 *9*						
399.6 *2*	13.0 *13*	1140.7	17/2$^+$	741.08	13/2$^+$		Iγ=2.8 in 16 MeV (p,2nγ) (1974Ba66).
[x]402.0 *5*	1.7 *9*						
[x]407.5 *5*	3.1 *16*						
[x]409.8 *5*	1.5 *8*						
413.0 *2*	29 *3*	1104.0	19/2$^+$	690.99	15/2$^+$		Iγ=2.8 in 16 MeV (p,2nγ) (1974Ba66).
419.4 *2*	10.7 *11*	1482.93	21/2$^-$	1063.52	17/2$^-$		
[x]423.1 *5*	2.0 *10*						
440.0 *2*	11.3 *12*	1657.9	25/2$^-$	1217.9	21/2$^-$		
442.7 *5*	8 *4*	1372.0	19/2$^+$	929.32	15/2$^+$		
452.7[@] *2*	1.7	570.65	3/2$^+$	118.17	5/2$^+$		I_γ: deduced from Iγ(562.1γ+570.5γ) and relative branchings from 570.6 level in 1973FuZF.
454.5[b] *2*	11.0[b] *11*	884.38	11/2$^-$	430.13	9/2$^-$		Iγ=0.6 In 10 MeV (p,2nγ) (1973FuZF).
454.5[b] *2*	11.0[b] *11*	1716.9	23/2$^-$	1262.43	19/2$^-$		
[x]461.7 *5*	3.4 *17*						

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^{170}Er(p,2nγ), (d,3nγ) 1973FuZF,1974Ba66 (continued)

γ(^{169}Tm) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
464.8[cd] 5	4.4[c] 22	781.60	5/2(+)	316.14	7/2+	I_γ: doubly placed by 1973FuZF, but unplaced by 1974Ba66 (who report neither the 782 level nor the 832 level); total Iγ attributed to 781.6 level placement because Iγ data for other γ's suggest 1974Ba66 excite only 782 level.
464.8[cd] 5	[c]	832.21	9/2+	367.65	11/2+	I_γ: see comment on 465γ from 782 level. Iγ=1.4 In 10 MeV (p,2nγ) (1973FuZF).
466.2[@] 2	0.7 4	474.74	3/2−	8.42	3/2+	I_γ: deduced from I(356.7γ+474.8γ), and relative branchings from 474.7 level in ^{169}Yb ε decay (32.018 d). Iγ=5.2 in 16 MeV (p,2nγ) (1974Ba66).
469.6 5	9 5	1497.9	21/2+	1028.18	17/2+	
474.8[@] 2	7 4	474.74	3/2−	0.0	1/2+	Iγ=9.0 in 16 MeV (p,2nγ) (1974Ba66).
[x]477.7 5	3.5 18					
484.4 5	4.4 22	1625.1	21/2+	1140.7	17/2+	
[x]492.1 5	6 3					
494.2[c@] 2	2.5[c] 13	633.10	5/2+	138.94	7/2+	I_γ: deduced from Iγ(514.9γ) and relative branchings from 633.0 level in ^{169}Yb ε decay (32.018 d); 1974Ba66 assign transition to 1598.3 level only.
494.2[c@d] 2	9.5[c] 18	1598.3?	23/2+	1104.0	19/2+	I_γ: upper limit deduced from Iγ=12.0 12 for both placements of 494.2γ plus possible component from ^{170}Er(d,2nγ), assuming Iγ=2.5 13 for 633.0 level placement. Assignment to 1598 level is tentative.
[x]496.8 5	2.6 13					
500.0[@] 2		832.21	9/2+	332.07	9/2+	Iγ=2.5 In 10 MeV (p,2nγ) (1973FuZF).
507.8[d] 5	7 4	646.58	7/2−	138.94	7/2+	
514.9[@] 2	7 4	633.10	5/2+	118.17	5/2+	
[x]521.9 5	2.4 12					
[x]524.7 5	6 3					
528.4[@] 2	16.7 17	646.58	7/2−	118.17	5/2+	Iγ=14.6 in 16 MeV (p,2nγ) (1974Ba66).
[x]533.5 5	3.8 19					
[x]549.5 5	3.0 15					
552.0[bd] 2	19.7[b] 20	884.38	11/2−	332.07	9/2+	Iγ=2.8 In 10 MeV (p,2nγ) (1973FuZF).
552.0[bd] 2	19.7[b] 20	1188.6	15/2−	637.17	13/2+	
[x]556.8 5	2.1 11					
562.1[@] 2	11.5 12	570.65	3/2+	8.42	3/2+	Iγ=10.0 in 16 MeV (p,2nγ) (1974Ba66).
565.2[@] 2		1039.81	(5/2)	474.74	3/2−	Iγ(565.2γ)/Iγ(694.7γ)=0.37 In 10 MeV (p,2nγ) (1973FuZF).
[x]568.6 5	8 4					
570.5[@] 2	9 5	570.65	3/2+	0.0	1/2+	Iγ=7.0 in 16 MeV (p,2nγ) (1974Ba66).
579.7[@] 2	10 5	718.66	7/2+	138.94	7/2+	Iγ=7.0 in 16 MeV (p,2nγ) (1974Ba66).
585.9 2	10.4 11	1188.6	15/2−	602.75	13/2−	
[x]590.1 5	6 3					
595.9 5	3.2	963.6	(11/2+)	367.65	11/2+	Iγ=9.0 in 16 MeV (p,2nγ) (1974Ba66). I_γ: deduced from Iγ(632.3γ) and relative branchings from 964.0 level in 1973FuZF.
600.4[@] 2	6.7	718.66	7/2+	118.17	5/2+	I_γ: deduced from Iγ(579.7γ) and relative branchings from 718.6 level in 1973FuZF.
609.6 5	3.7 19	1300.6	15/2+	690.99	15/2+	
[x]618.4 5	5.2 26					
624.7[@] 2	8 5	633.10	5/2+	8.42	3/2+	I_γ: deduced from Iγ(514.9γ) and relative branchings from 633.0 level in ^{169}Yb ε decay (32.018 d).
[x]627.5 5	3.5 18					
632.3[cd] 5	[c]	633.10	5/2+	0.0	1/2+	I_γ: all intensity is attributed to 964.0 level placement (Iγ, as

Continued on next page (footnotes at end of table)

^{170}Er(p,2nγ), (d,3nγ) 1973FuZF,1974Ba66 (continued)

γ(^{169}Tm) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
						deduced from Iγ(514.9γ) and relative branchings from 633.0 level, is negligible).
632.3[c] 5	2.3[c] 12	963.6	(11/2$^+$)	332.07	9/2$^+$	
[x]642.7 5	7 3					
[x]646.7 5	4.0 20					
[x]650.9 5	4.8 24					
[x]654.8 5	3.8 19					
663.5[@] 2		781.60	5/2$^{(+)}$	118.17	5/2$^+$	1974Ba66 report transition with Eγ=662.6, but assign it to another isotope. Iγ=4 In 10 MeV (p,2nγ) (1973FuZF).
[x]670.3 5	4.5 23					
[x]677.0 5	2.9 15					
682.5[d] 5	4.2 21	1112.6?	(9/2)	430.13	9/2$^-$	I_γ: value can be attributed to 1112.6 level or 1548.4 level placement, but not both (see comment with 1113 level).
682.5[d] 5	4.2 21	1548.2?	19/2$^-$	865.7	17/2$^-$	
693.4[@] 2		832.21	9/2$^+$	138.94	7/2$^+$	Iγ=6 In 10 MeV (p,2nγ) (1973FuZF).
694.7[@] 2		1039.81	(5/2)	344.99	5/2$^-$	
[x]711.4 5	3.4 17					
716.6[@] 2		1058.55	(1/2)	341.95	1/2$^-$	
773.1[@] 2		781.60	5/2$^{(+)}$	8.42	3/2$^+$	Iγ=6.6 In 10 MeV (p,2nγ) (1973FuZF).
781.0[@d] 2		781.60	5/2$^{(+)}$	0.0	1/2$^+$	Iγ=4 In 10 MeV (p,2nγ) (1973FuZF).
790.9[@] 2		1135.89	(7/2)	344.99	5/2$^-$	
877.9[@] 2		1223.02	(3/2)	344.99	5/2$^-$	Iγ(877.9γ)/Iγ(881.2γ)=1.33 In 10 MeV (p,2nγ) (1973FuZF).
881.2[@] 2		1223.02	(3/2)	341.95	1/2$^-$	

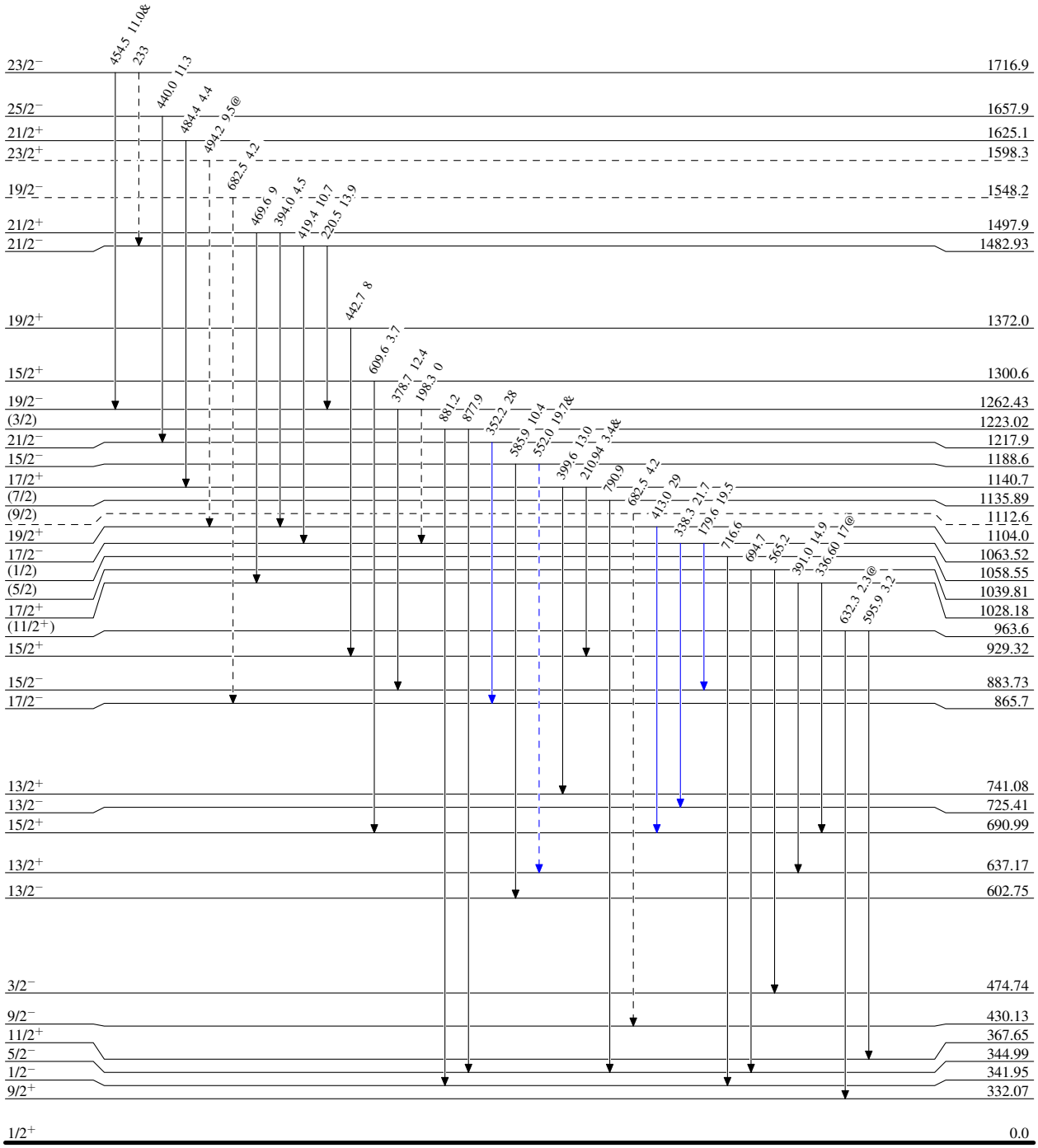
[†] From 1974Ba66, except where noted. ΔE=0.2 keV for strong, well-resolved peaks, and 0.5 keV for weak peaks (taken by evaluator to be those with Iγ≤10; guidelines taken partially from a similar work by the same authors (1977Ba40)).
[‡] Arbitrary units for E(d)=23 MeV, θ=125°. ΔIγ=10% for strong, well resolved peaks, and 50% for weak peaks (taken by evaluator to be those with Iγ≤10; guidelines partially from a similar work by the same authors (1977Ba40)). Some additional branching information is included in 1973FuZF.
[#] From γ(θ).
[@] From 1973FuZF; uncertainties not stated, but estimated by evaluator from implied precision of authors' energies.
[&] Includes component from radioactive decay of irradiated target.
[a] Includes possible component from ^{170}Er(d,4nγ).
[b] Multiply placed with undivided intensity.
[c] Multiply placed with intensity suitably divided.
[d] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{170}Er(p,2nγ), (d,3nγ) 1973FuZF,1974Ba66

Level Scheme

Intensities: Relative Iγ for E(d)=23 MeV, θ=125°
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

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)



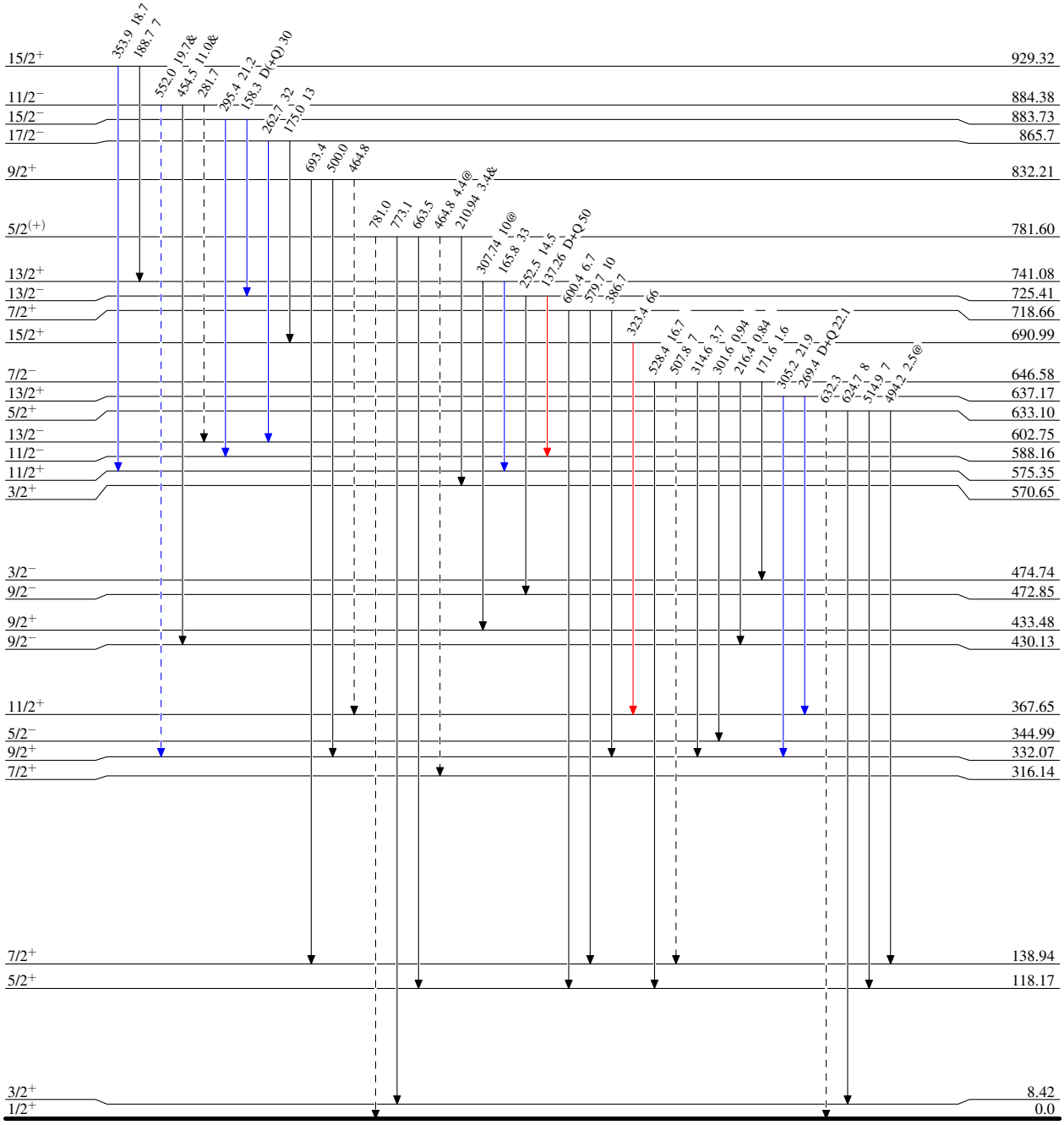
$^{169}_{69}Tm_{100}$

^{170}Er(p,2nγ), (d,3nγ) 1973FuZF,1974Ba66

Level Scheme (continued)

Intensities: Relative Iγ for E(d)=23 MeV, θ=125°
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

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)



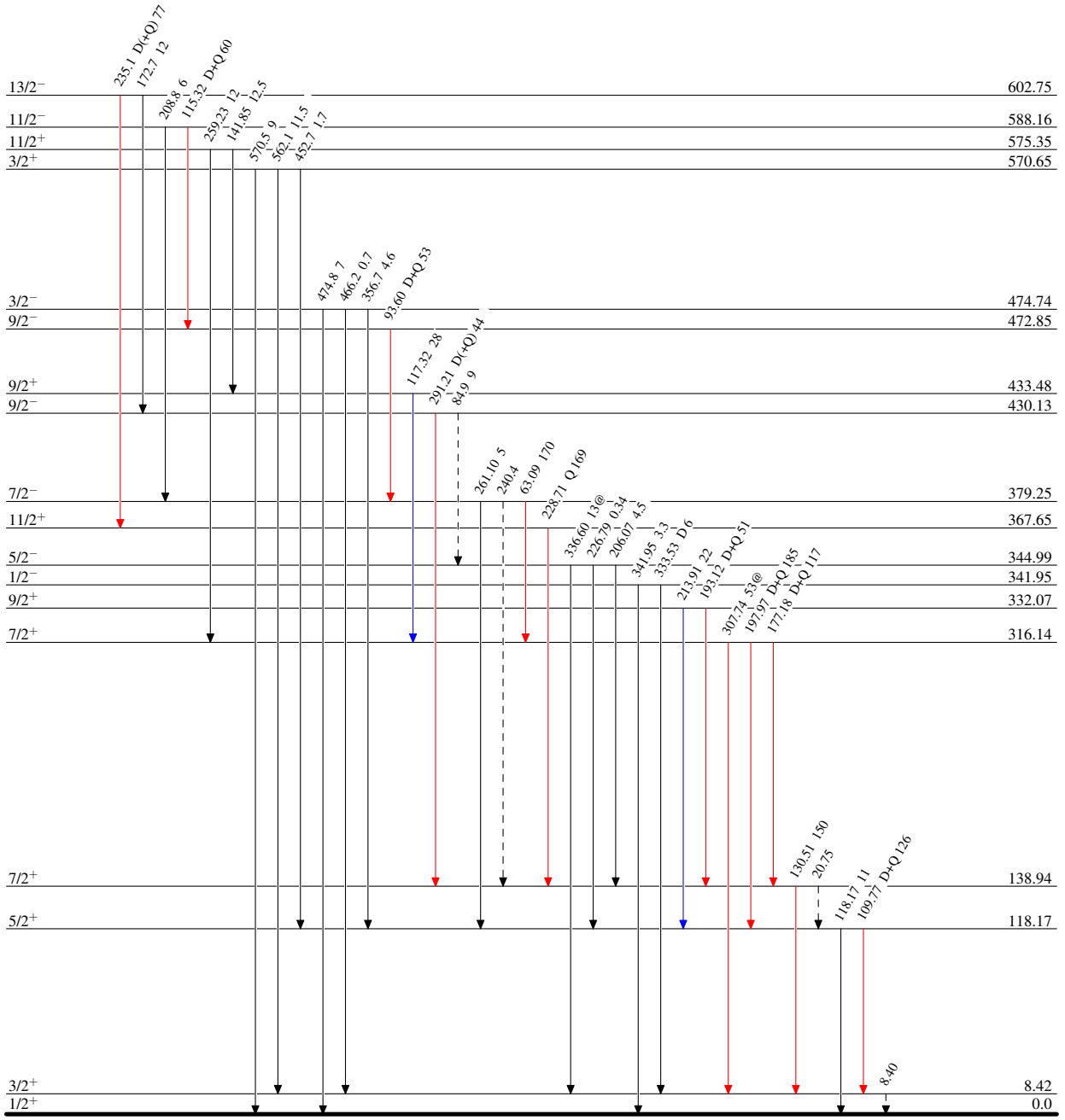
$^{169}_{69}Tm_{100}$

^{170}Er(p,2nγ), (d,3nγ) 1973FuZF,1974Ba66

Level Scheme (continued)

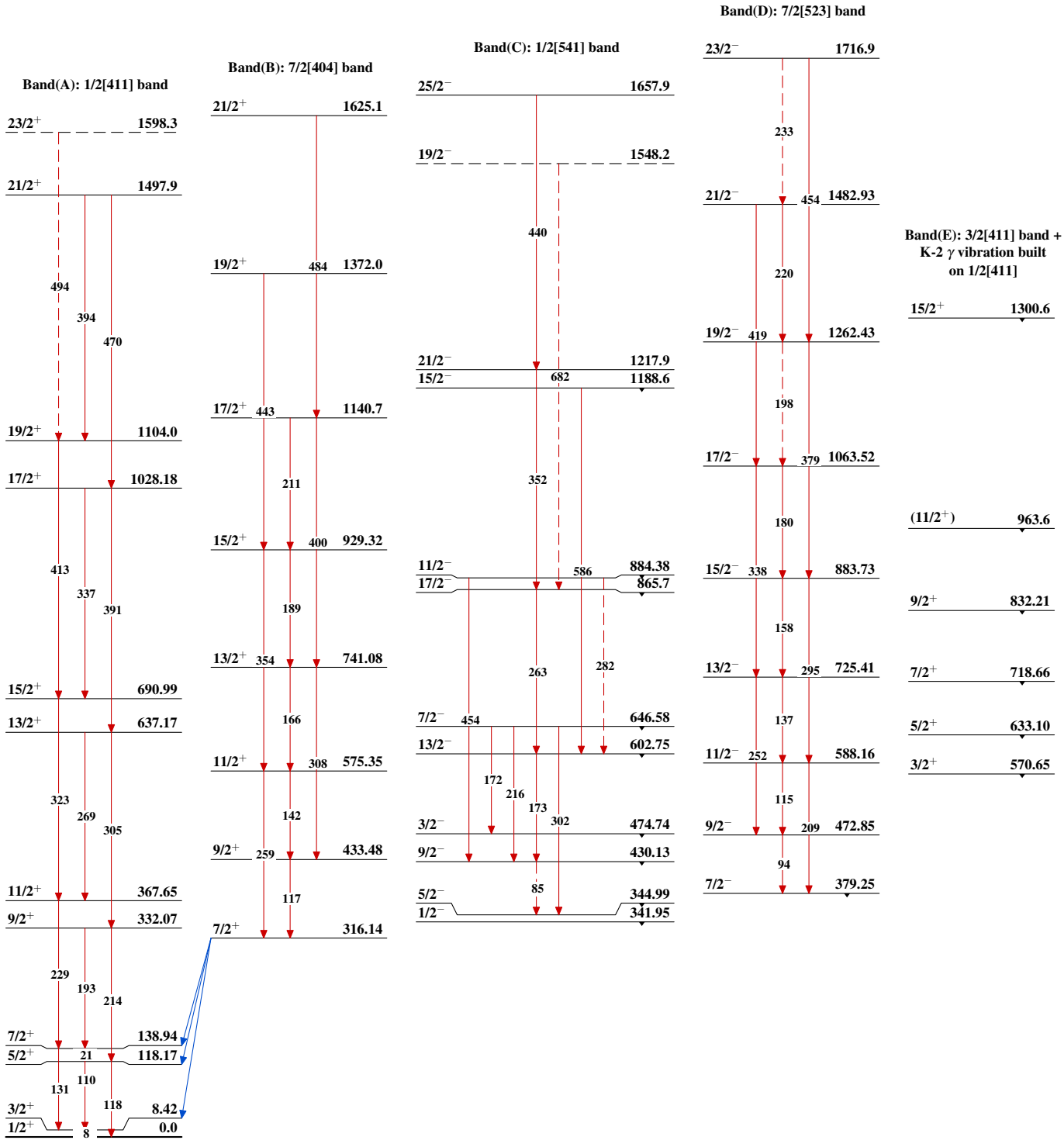
Intensities: Relative Iγ for E(d)=23 MeV, θ=125°
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

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)



$^{169}_{69}Tm_{100}$

^{170}Er(p,2nγ), (d,3nγ) 1973FuZF,1974Ba66



$^{169}_{69}Tm_{100}$