^{166}Er(n,n′γ) 1992Be29,1982Bo39,1981Bo40

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109, 1103 (2008)	1-Mar-2008

Others: 2000De59, 1997Ga11, 1997Ga13.

1997Ga11, 1997Ga13: E(n)=1.4 to 3.2 MeV, using nearly monoenergetic neutrons from the ^{3}H(p,n) reaction; 98% enriched ^{166}Er target; HPGE detector (FWHM=2.1 keV At 1332 keV); measured excit (E(n)=1.4-3.1 MeV), γ(θ) (E(n)=2.1 MeV, 10 angles; 2.5 MeV, 11 angles), γγ coin (E(n)=3.2 MeV), $T_{1/2}$ using DSAM; searched for two-phonon γ-vibrational states. See also 2000Ga22.

1992Be29: reactor neutrons; 96.1% ^{166}Er enriched oxide target; Ge detector (FWHM=2.4 keV At 1300 keV); two-crystal Compton polarimeter; measured Eγ, Iγ, γ(θ) (θ=90°, 105°, 115°, 125°, 135°, 142° and 150°), γ linear polarization. see also 1991Be38 and 2000De59. 2000De59 (which supersedes 1999DeZX) reanalyses γ(θ) for six transitions.

1981Bo40: E=reactor spectrum; 96.3% ^{166}Er target; Ge(Li) detector (FWHM=3 keV At Eγ=700); measured Eγ, Iγ. see also 1982Bo39.

For further discussion of band structure, see 2000Gr33.

^{166}Er Levels

The band structure shown here is taken from 1992Be29.

E(level)†	Jπ‡	$T_{1/2}$	Comments
0.0#	0^+	stable	
80.62# *15*	2^+		
265.06# *19*	4^+		
545.46# *24*	6^+		
785.90@ *18*	2^+		
859.35@ *21*	3^+		
911.2# *4*	8^+		
956.45@ *21*	4^+		
1075.55@ *25*	5^+		
1216.0@ *4*	6^+		
1375.9@ *4*	7^+		
1458.1& *3*	2^-		
1459.9a *4*	0^+	0.76 ps *28*	$T_{1/2}$: from DSAM (1997Ga13). band assignment from Adopted Levels.
1513.46& *22*	3^-		
1528.5a *3*	2^+		
1555.6@ *3*	8^+		Jπ and band assignment from Adopted Levels.
1572.31 *3*	4^-		K=4 suggested In 1992Be29.
1596.38& *25*	4^-		
1662.5b *3*	1^-		
1665.6 *4*	5^-		
1674.1? *11*			
1678.4a *6*	4^+		
1692.1 *5*	(5^-)		K=5 suggested In 1992Be29.
1703.0c *6*			
1713.4 *8*	(0^+)	>0.97 ps	$T_{1/2}$: from DSAM (1997Ga13).
1721.8b *6*	3^-		
1760.9 *5*	5^-		
1784.8cf *4*			
1787.2 *11*			

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^{166}Er(n,n′γ) 1992Be29,1982Bo39,1981Bo40 (continued)

^{166}Er Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	Comments
1812.5[d] *4*	1^+		
1827.9 *5*			
1830.6[e] *3*	1^-		
1865.2? *5*			
1897.9[a] *6*	(6^+)		
1904.8? *6*	(2^+)		
1908.3 *5*			
1917.7[e] *4*	3^-		
1934.1 *5*	(0^+)	54 fs *6*	$T_{1/2}$: from DSAM (1997Ga13).
1938.3 *4*	$(3)^+$		
1942.7 *11*	(0^+)	0.24 ps *7*	Jπ: from 1997Ga11. $T_{1/2}$: from DSAM (1997Ga11).
1969.5[c] *4*			
1978.1 *4*	4^+		K=4 suggested In 1992Be29.
2001.4 *6*			
2021.1 *7*	$(2)^-$		
2022.5 *4*	(4^+)		Jπ: from Adopted Levels.
2028.4 *6*	(4^+)	0.22 ps *8*	$T_{1/2}$: from DSAM (1997Ga11).
2031.5? *11*			
2045.5? *11*			level shown As tentative and omitted from Adopted Levels because its existence relies entirely on placement of one multiply-placed transition.
2046.3 *5*	(3^+)		
2082.6 *5*			
2118.1 *9*			
2124.9 *8*			
2132.6 *6*	3^+		
2133.8? *8*	3^+		level shown As tentative and omitted from Adopted Levels because its existence relies entirely on placement of one multiply-placed transition.
2148.7 *5*			
2160.0? *8*			
2172.1 *11*			
2201.8 *8*	1		
2265.6? *11*	(2^-)		
2282.6? *11*	(3)		
2291.9 *11*	3^+		
2415.9 *11*	(3)		
2442.1? *11*	$(3,4)^+$		
2459.0? *10*			Jπ: 1992Be29 suggest J=(2), but this is inconsistent with negative A_2 for 2459γ(θ).
2504.6 *11*	$(3,4)^+$		

[†] From least-squares fit to Eγ, assigning ΔE=1 keV to Eγ data for which the authors gave No uncertainty.
[‡] From 1992Be29, based on deduced band structure and γ(θ) data for interconnecting transitions, except As noted.
[#] Band(A): $K^\pi=0^+$ ground-state band.
[@] Band(B): $K^\pi=2^+$ band.
[&] Band(C): $K^\pi=2^-$ band. Note that, In Adopted Levels, the J=5, 1666 level is assigned to a $K^\pi=4^-$ band which is strongly mixed with the 2^- band.
[a] Band(D): $K^\pi=0^+$ band.
[b] Band(E): $K^\pi=0^-$ band.
[c] Band(F): $K^\pi=0^+$ band. Not adopted. one of the three levels associated with this band In (n,n′γ) (At 1785 keV) is not adopted and the available information concerning the 1703 and 1969 levels is quite limited.
[d] Band(G): $K^\pi=1^+$ band.

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^{166}Er(n,n′γ) 1992Be29,1982Bo39,1981Bo40 (continued)

^{166}Er Levels (continued)

[e] Band(H): $K^{\pi}=1-$? band. Not adopted. The 1918 level is adopted, instead, As the bandhead of a 3^- band, and No band assignment is adopted for the 1^- 1831 level.

[f] The evaluators have not included the 1784.8 level from (n,n′γ). A comparison of branching of 1704γ and 1889γ, placed from 1969 level in ε decay, suggests that this level is being seen in both reactions and that entire Iγ(1704γ) in (n,n′γ) can be assigned to the 1969 level. The 1784γ is placed only from the 1865 level in ε decay with assignment of the 1704γ entirely to the 1969 level; the alternative placement of the 1784γ from a possible 1785 level is less convincing.

γ(^{166}Er)

A_2 and A_4 from γ(θ), and γ linear polarization data (P(γ)), are given in comments on the relevant γ rays.
See 2000De59 and 1999De37 for discussion of relative signs of mixing ratios for low-lying transitions connecting the g.s. band and/or the γ and β bands.

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ	α[b]	Comments
80.6 *2*	200 *80*	80.62	2^+	0.0	0^+				
184.4 *2*	310 *70*	265.06	4^+	80.62	2^+	E2		0.331	Mult.: A_2=+0.17 *9*, A_4=−0.013 *12*, P(γ)=1.48 *+12−6* (1992Be29).
215	<1	1075.55	5^+	859.35	3^+				
260	0.9 *3*	1216.0	6^+	956.45	4^+				
280.5 *2*	42 *5*	545.46	6^+	265.06	4^+	E2		0.0848	Mult.: A_2=+0.278 *15*, A_4=−0.071 *19*, P(γ)=2.1 *+6−2* (1992Be29).
300.5 *4*	1.3 *4*	1375.9	7^+	1075.55	5^+				
312.0	<0.2	1908.3		1596.38	4^-				
[x]321.4 *4*	1.3 *3*								
336.0 *4*	1.4 *3*	1908.3		1572.31	4^-				
339.8	<0.4	1555.6	8^+	1216.0	6^+				
365.7 *3*	3.7 *3*	911.2	8^+	545.46	6^+	E2		0.0385	Mult.: A_2=+0.33 *3*, A_4=−0.05 *4*, P(γ)=3.2 *+999−7* (1992Be29).
[x]385.0 *5*	0.8 *1*								
404.0 *5*	0.6 *1*	1917.7	3^-	1513.46	3^-				
411.5 *5*	0.6 *1*	956.45	4^+	545.46	6^+				
452.0 *5*	0.4 *2*	1827.9		1375.9	7^+				
455.7		2028.4	(4^+)	1572.31	4^-				E_γ: from 1997Ga11. I_γ: see comment on 1243.2γ.
459.7 *3*	2.8 *3*	1917.7	3^-	1458.1	2^-	D+Q			Mult.: A_2=−0.31 *4*, A_4=0.00 *6* (1992Be29). δ: −0.11 *+5−8* or −2.7 *5* (1992Be29).
488.2[e] *5*	1.1 *4*	2001.4		1513.46	3^-				
[x]494.0 *5*	1.4 *7*								
496.5 *5*	3.3 *7*	1572.31	4^-	1075.55	5^+				
520.9[d] *2*	1.5[da] *2*	785.90	2^+	265.06	4^+				
520.9[d] *2*	2.4[da] *5*	1596.38	4^-	1075.55	5^+				
530.5 *3*	10.5 *5*	1075.55	5^+	545.46	6^+	M1+E2	-2×10^1 *+1−11*	0.01418	Mult.: A_2=−0.143 *18*, A_4=+0.04 *3*, P(γ)=0.52 *+15−17* (1992Be29). δ: −21 *+5−111* from γ(θ) (1992Be29).
556.5 *3*	4.8 *8*	1513.46	3^-	956.45	4^+				
569.2 *4*	2.5 *6*	2082.6		1513.46	3^-				
[x]573.2 *3*	4.1 *6*								
594.4 *3*	21 *7*	859.35	3^+	265.06	4^+	D+Q	-5×10^1 *+2−14*		Mult.: A_2=−0.139 *21*, A_4=+0.05 *3* (1992Be29). A_2=−0.136 *20*, A_4=+0.04 *3* (2000De59). δ: −45 *+19−137* from 2000De59; −23 *+7−120* from 1992Be29.
598.7 *4*	9.9 *18*	1458.1	2^-	859.35	3^+	D(+Q)			Mult.: A_2=−0.04 *3*, A_4=0.00 *4* (1992Be29). δ: −0.02 *6* or −5.4 *+13−30* (1992Be29).
616.0 *3*	2.8 *5*	1572.31	4^-	956.45	4^+	D(+Q)			Mult.: A_2=+0.288 *21*, A_4=−0.02 *3*, P(γ)=0.7 *+4−3* (1992Be29). δ: −0.03 *+10−6* or +1.02 *+14−18* (1992Be29).
[x]633.5 *4*	0.9 *5*								

^{166}Er(n,n′γ) 1992Be29,1982Bo39,1981Bo40 (continued)

γ(^{166}Er) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ	α[b]	Comments
640.0 *3*	3.2 *5*	1596.38	4^-	956.45	4^+				
644.4 *5*	0.4 *2*	1555.6	8^+	911.2	8^+				
646.0[@e] *5*	1.2[@] *4*	2160.0?		1513.46	3^-				
654.4 *3*	3.6 *4*	1513.46	3^-	859.35	3^+	D(+Q)			Mult.: A_2=+0.204 *18*, A_4=−0.052 *24* (1992Be29). δ: −0.08 *+9−6* or +1.55 *+21−23* (1992Be29).
[x]668.0 *8*	1.0 *4*								
670.5	<6	1216.0	6^+	545.46	6^+	M1+E2	≥+11	0.00807	Mult.: A_2=−0.209 *18*, A_4=−0.16 *3*, P(γ)=0.31 *+9−12* (1992Be29). δ: +16 +∞−5 (1992Be29).
672.3 *3*	19.6 *15*	1458.1	2^-	785.90	2^+	D(+Q)			Mult.: A_2=+0.171 *12*, A_4=−0.029 *16* (1992Be29). δ: +0.01 *+7−5* or +2.2 *+3−4* (1992Be29).
674.0 *6*	1.6 *8*	1459.9	0^+	785.90	2^+				I_γ: too large by an order of magnitude cf. adopted branching.
691.2 *2*	41 *4*	956.45	4^+	265.06	4^+	D+Q	≥50		Mult.: A_2=−0.180 *10*, A_4=−0.119 *14* (1992Be29, 2000De59), P(γ)=0.39 *+7−11* (1992Be29). 1/δ(D,Q)=0.00 *2* (1992Be29).
705.3 *3*	84 *5*	785.90	2^+	80.62	2^+	D+Q	≥50		Mult.: A_2=−0.051 *9*, A_4=−0.035 *13* (1992Be29, 2000De59), P(γ)=0.73 *+8−10* (1992Be29). 1/δ(D,Q)=0.00 *2* (1992Be29).
711.7	<4	1787.2		1075.55	5^+				
712.9 *3*	12.8 *7*	1572.31	4^-	859.35	3^+				
727.8 *3*	5.4 *5*	1513.46	3^-	785.90	2^+	E1(+M2)	+0.01 *+3−4*	0.00807	Mult.: A_2=−0.181 *16*, A_4=−0.013 *22*, P(γ)=1.5 *+8−5* (1992Be29).
[x]730.4 *7*	1.1 *4*								
736.8 *3*	6.7 *5*	1596.38	4^-	859.35	3^+	E1(+M2)	+0.002 *+19−25*	0.00247	Mult.: A_2=−0.215 *17*, A_4=−0.055 *24*, P(γ)=1.5 *+8−5* (1992Be29).
742.6[c]	<0.7[c]	1528.5	2^+	785.90	2^+				
742.6[c]	<0.7[c]	2201.8	1	1458.1	2^-				
[x]749.5 *8*	0.7 *4*								
752.3 *7*	1.4 *5*	1827.9		1075.55	5^+				
[x]764.0 *8*	0.8 *5*								
[x]771.0 *8*	1.2 *7*								
778.8 *3*	106 *5*	859.35	3^+	80.62	2^+	M1+E2	-8×10^1 *+3−13*	0.00572	Mult.: A_2=+0.054 *8*, A_4=+0.064 *12*, P(γ)=1.32 *+22−15* (1992Be29). A_2=+0.052 *8*, A_4=+0.061 *12* (2000De59). δ: *−75 +26−134* from 2000De59; *−67 +30−44* from 1992Be29.
785.9 *3*	68 *3*	785.90	2^+	0.0	0^+	E2		0.00561	Mult.: A_2=+0.236 *10*, A_4=−0.068 *12* (1992Be29, 2000De59), P(γ)=2.1 *+6−2* (1992Be29).
[x]794.0 *6*	1.0 *5*								
810.3 *3*	35 *2*	1075.55	5^+	265.06	4^+	M1+E2	*−27 +4−6*	0.00525	Mult.: A_2=−0.051 *9*, A_4=+0.151 *12*, P(γ)=1.07 *+16−14* (1992Be29).
819.0	1.6 *5*	1678.4	4^+	859.35	3^+				
830.3 *5*	2.7 *5*	1375.9	7^+	545.46	6^+	D+Q	*−34 +14−51*		Mult.: A_2=−0.084 *21*, A_4=+0.24 *3*, P(γ)=0.9 *+4−3* (1992Be29).
875.6 *3*	18 *1*	956.45	4^+	80.62	2^+	E2		0.00444	Mult.: A_2=+0.305 *10*, A_4=−0.068 *13* (1992Be29, 2000De59), P(γ)=3.6 *+22−6* (1992Be29).

$^{166}_{68}Er_{98}$-5

γ(^{166}Er) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ	α[b]	Comments
[x]879.0 *8*	1.2 *6*								
892	<0.3	1678.4	4^+	785.90	2^+				
927.4		1713.4	(0^+)	785.90	2^+				E_γ: from 1997Ga13. I_γ: see comment on 1632.9γ.
950.9 *3*	2.0 *3*	1216.0	6^+	265.06	4^+	Q			Mult.: A_2=+0.32 *3*, A_4=−0.10 *3* (1992Be29).
[x]1020.5 *8*	1.1 *7*								
1021.0 *8*	0.7 *3*	1978.1	4^+	956.45	4^+				
[x]1070.8 *8*	1.2 *3*								Mult.: A_2=0.00 *6*, A_4=+0.03 *9* (1992Be29).
1079.5[ce] *8*	1.6[c] *7*	1865.2?		785.90	2^+				Mult.: A_2=+0.31 *7*, A_4=−0.02 *10*, P(γ)=2.0 *+12−6* (1992Be29). −0.007<δ(D,Q)<+1.3 (1992Be29), mult=D+Q for doubly-placed G.
1079.5[c] *8*	1.6[c] *7*	1938.3	$(3)^+$	859.35	3^+				Mult.: A_2=+0.31 *7*, A_4=−0.02 *10*, P(γ)=2.0 *+12−6* (1992Be29). −0.007<δ(D,Q)<+1.3 (1992Be29), mult=D+Q for doubly-placed G.
1089[ce]	<0.4[c]	2045.5?		956.45	4^+				see comment on 1089γ from 2046.3 level.
1089[c]	<0.4[c]	2046.3	(3^+)	956.45	4^+				1981Bo40 show two placements for this γ but, based on adopted branching from the 2046 level, all its intensity can Be exhausted by this placement alone.
1119.7[c] *5*	3.9[c] *4*	1665.6	5^-	545.46	6^+				
1119.7[c] *5*	3.9[c] *4*	1978.1	4^+	859.35	3^+				
1126.0 *8*	0.8 *4*	2082.6		956.45	4^+				
1146.0 *10*	1.3 *4*	1692.1	(5^-)	545.46	6^+				
[x]1149 *1*	0.9 *4*								
1152.3 *3*	4.5 *5*	1938.3	$(3)^+$	785.90	2^+	M1(+E2)	+0.01 *+3−4*	0.00438	Mult.: A_2=−0.189 *22*, A_4=−0.01 *3*, P(γ)=0.57 *+28−23* (1992Be29).
[x]1156.3 *5*	1.6 *5*								Mult.: A_2=−0.02 *3*, A_4=+0.01 *5* (1992Be29).
1156.8		1942.7	(0^+)	785.90	2^+				E_γ: from 1997Ga11.
1161.6[c] *8*	1.3[c] *4*	2021.1	$(2)^-$	859.35	3^+				
1161.6[c] *8*	1.3[c] *4*	2118.1		956.45	4^+				
1168.5 *7*	1.3 *4*	2124.9		956.45	4^+				
1168.8		2028.4	(4^+)	859.35	3^+	D+Q	4.5 *10*		E_γ: from 1997Ga11. I_γ: see comment on 1243.2γ. Mult.,δ: from 1997Ga11.
1176	<0.9	2132.6	3^+	956.45	4^+				
1187.0	1.7 *5*	2046.3	(3^+)	859.35	3^+				Mult.: A_2=+0.23 *4*, A_4=+0.04 *6*, P(γ)=2.0 *+12−6* (1992Be29). δ: −0.03 *+12−6* or +1.40 *+23−27* (1992Be29).
1191.0 *7*	1.4 *5*	1978.1	4^+	785.90	2^+	(Q)			Mult.: A_2=+0.27 *4*, A_4=−0.19 *6* (1992Be29).
1192.5 *7*	1.4 *5*	2148.7		956.45	4^+				
1215.5[c] *5*	4.1[c] *5*	1760.9	5^-	545.46	6^+				
1215.5[c] *5*	4.1[c] *5*	2001.4		785.90	2^+				
[x]1217.0 *10*	1.4 *5*								
[x]1233.0 *15*	1.4 *5*								
1235.5 *10*	2.3 *5*	2021.1	$(2)^-$	785.90	2^+	E1(+M2)	+0.04 *+9−6*	0.00098 *12*	Mult.: A_2=+0.188 *23*, A_4=+0.01 *3*, P(γ)=0.64 *+30−24* (1992Be29).
1243.2		2028.4	(4^+)	785.90	2^+				E_γ: from 1997Ga11. I_γ: I(1243γ):I(1169γ):I(456γ)=0.47 *1*:0.46 *1*:0.07 *1* (1997Ga11).

γ(^{166}Er) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ	α[b]	Comments
1248.7 *7*	2.8 *5*	1513.46	3⁻	265.06	4⁺	E1+M2	+0.13 *3*	0.00109 *7*	Mult.: A_2=−0.05 *3*, A_4=0.00 *4*, P(γ)=2.1 *+22−10* (1992Be29).
1261.0[&e] *10*	2.0[&] *10*	2046.3	(3⁺)	785.90	2⁺				
1263.3 *3*	9.9 *6*	1528.5	2⁺	265.06	4⁺	E2		0.00212	Mult.: A_2=+0.092 *11*, A_4=−0.024 *15*, P(γ)=1.2 *+4−3* (1992Be29).
1273	<1.0	2132.6	3⁺	859.35	3⁺				
1353.0 *10*	1.8 *5*	1897.9	(6⁺)	545.46	6⁺				
1374.5[@e] *10*	3.3[@] *5*	2160.0?		785.90	2⁺				
1379.4 *5*	9.7 *6*	1459.9	0⁺	80.62	2⁺				Mult.: P(γ)=0.96 *+21−18* (1992Be29).
[x]1388.8 *10*	1.7 *6*					D+Q			Mult.: A_2=+0.14 *9*, A_4=−0.04 *13* (1992Be29).
[x]1396 *1*	1.2 *6*								
1400.7 *3*	4.1 *6*	1665.6	5⁻	265.06	4⁺	E1(+M2)	+0.025 *+18−26*	8.81×10^{-4} *14*	Mult.: A_2=−0.183 *23*, A_4=−0.02 *3*, P(γ)=1.7 *+11−7* (1992Be29).
1409.0[e] *10*	1.1 *6*	1674.1?		265.06	4⁺				
1413.5 *10*	3.4 *6*	1678.4	4⁺	265.06	4⁺	D+Q	+0.35 *30*		Mult.: A_2=+0.388 *17*, A_4=−0.008 *23*, P(γ)=3.7 *+150−18* (1992Be29). +0.08<δ(D,Q)<+0.65 (1992Be29).
1427.2 *5*	3.4 *6*	1692.1	(5⁻)	265.06	4⁺	E1(+M2)	−0.002 *+22−31*	8.72×10^{-4} *14*	Mult.: A_2=−0.22 *3*, A_4=−0.02 *4*, P(γ)=2.0 *+12−6* (1992Be29).
1432.7 *3*	6.9 *6*	1513.46	3⁻	80.62	2⁺	E1+M2	+0.054 *+19−27*	8.86×10^{-4} *18*	Mult.: A_2=−0.137 *18*, A_4=−0.02 *3*, P(γ)=1.9 *+8−5* (1992Be29).
1448.2 *5*	6.3 *6*	1528.5	2⁺	80.62	2⁺	D+Q	+0.5 *3*		Mult.: A_2=+0.339 *15*, A_4=−0.051 *20*, P(γ)=1.8 *+10−7* (1992Be29). +0.2<δ(D,Q)<+0.8 (1992Be29).
1456.6 *10*	4.7 *7*	1721.8	3⁻	265.06	4⁺	D(+Q)			Mult.: A_2=−0.07 *8*, A_4=−0.12 *11* (1992Be29). δ: −0.01 *10* or −8 *+13−12* (1992Be29).
1475.5 *10*	0.8 *3*	2022.5	(4⁺)	545.46	6⁺				
1486.0[e] *10*	1.2 *3*	2031.5?		545.46	6⁺				
1495.7 *7*	4.3 *7*	1760.9	5⁻	265.06	4⁺	D+Q			Mult.: A_2=+0.300 *20*, A_4=−0.06 *3*, P(γ)=2.0 *+12−6* (1992Be29). δ: +0.41 *+7−4* or +4.2 *8* (1992Be29).
[x]1506.0 *10*	2.4 *7*					D+Q			Mult.: A_2=−0.35 *6*, A_4=−0.11 *9* (1992Be29). δ: −0.15 *+5−10* or −2.4 *+4−5* (1992Be29).
1506.0 *10*	2.4 *7*	2291.9	3⁺	785.90	2⁺	D+Q			Mult.: A_2=−0.35 *6*, A_4=−0.11 *9* (1992Be29). δ: −0.15 *+5−10* or −2.4 *+4−5* (1992Be29). E_γ: presumed to Be the 1505γ mentioned In 1992Be29; unplaced In 1981Bo40.
[x]1515 *1*	0.8 *3*								
1528[e] *1*	1.8 *7*	1528.5	2⁺	0.0	0⁺	Q			Mult.: A_2=+0.16 *3*, A_4=−0.08 *4* (1992Be29).
1581.9 *3*	10.6 *7*	1662.5	1⁻	80.62	2⁺	E1(+M2)		0.0028 *20*	Mult.: A_2=−0.005 *10*, A_4=0.0, P(γ)=1.02 *+28−23* (1992Be29). δ: −0.04 *+8−9* or −3.0 *+7−11* (1992Be29).
1598.2	<0.7	1678.4	4⁺	80.62	2⁺				

γ(^{166}Er) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	δ	α [b]	Comments
[x]1604 *1*	2.3 *7*								
[x]1607 *1*	1.0 *4*								
1622.4 *5*	9.6 *7*	1703.0		80.62	2^+				
1630 *1*	2.0 *7*	2415.9	(3)	785.90	2^+	D+Q	+15 *+31−5*		Mult.: A_2=+0.14 *4*, A_4=−0.04 *5*, P(γ)=1.1 *+11−6* (1992Be29). E_γ: presumed to Be the 1629γ mentioned In 1992Be29; unplaced In 1981Bo40.
1632.7 *7*	2.5 *8*	1897.9	(6^+)	265.06	4^+				Mult.: A_2=0.00 *3*, A_4=−0.04 *4*, P(γ)=0.8 *+7−5* (1992Be29).
1632.9		1713.4	(0^+)	80.62	2^+				E_γ: from 1997Ga13. I_γ: I(1633γ):I(927γ)=0.890 *5*:0.110 *5* (1997Ga13).
1641.2 *7*	6.0 *8*	1721.8	3^-	80.62	2^+	E1(+M2)	+0.01 *+3−4*	8.74×10^{-4} *14*	Mult.: A_2=−0.188 *18*, A_4=0.00 *3*, P(γ)=1.2 *+6−4* (1992Be29).
1653 *1*	1.3 *7*	1917.7	3^-	265.06	4^+				
1662.4 *5*	7.7 *8*	1662.5	1^-	0.0	0^+	E1		8.77×10^{-4}	Mult.: A_2=−0.095 *16*, A_4=0.0, P(γ)=2.2 *+18−8* (1992Be29).
1704.5[c] *5*	3.2[c] *6*	1784.8		80.62	2^+				
1704.5[c] *5*	3.2[c] *6*	1969.5		265.06	4^+				
1731.5 *5*	2.8 *7*	1812.5	1^+	80.62	2^+	D+Q			Mult.: A_2=+0.05 *3*, A_4=0.0 (1992Be29). δ: −1.6<δ(D,Q)<−0.28 (1992Be29).
1750.0 *3*	5.2 *8*	1830.6	1^-	80.62	2^+	D(+Q)			Mult.: A_2=−0.018 *16*, A_4=0.0 (1992Be29). δ(D,Q)=+0.09 *+25−15* or 1/δ=−0.20 *+25−16* (1992Be29).
[x]1756									E_γ: from 1992Be29. Mult.: A_2=+0.26 *4*, A_4=−0.06 *6* (1992Be29).
1757.2 *5*	3.0 *8*	2022.5	(4^+)	265.06	4^+				
[x]1758									Mult.: A_2=+0.11 *4*, A_4=+0.04 *5* (1992Be29).
1781	<2	2046.3	(3^+)	265.06	4^+				
1784.5[c] *5*	6.0[c] *8*	1784.8		0.0	0^+				
1784.5[ce] *5*	6.0[c] *8*	1865.2?		80.62	2^+				
1812.8 *5*	8.5 *8*	1812.5	1^+	0.0	0^+	D			Mult.: A_2=−0.066 *18*, A_4=0.0 (1992Be29).
1817 *1*	1.5 *8*	1897.9	(6^+)	80.62	2^+				
1824.2[e] *5*	5.2 *8*	1904.8?	(2^+)	80.62	2^+	D+Q			Mult.: A_2=+0.053 *16*, A_4=−0.015 *23* (1992Be29). δ: −0.22 *+4−3* or +4.9 *+7−8* (1992Be29). placement from 1992Be29; No other evidence exists for this level or for a 2089 level from which the 1824γ was placed previously.
1830.6 *5*	1.5 *8*	1830.6	1^-	0.0	0^+	D			Mult.: A_2=−0.09 *4*, A_4=0.0 (1992Be29).
[x]1833 *1*	1.1 *5*								
1837	<1	1917.7	3^-	80.62	2^+				
1853.5 *5*	4.0 *8*	1934.1	(0^+)	80.62	2^+				other Eγ: 1853.9 (1997Ga13).
1883.5 *6*	1.5 *5*	2148.7		265.06	4^+				
1888.8 *5*	2.7 *5*	1969.5		80.62	2^+				
1942.5 *5*	4.4 *8*	2022.5	(4^+)	80.62	2^+				
1966.3[&e]	0.9[&] *5*	2046.3	(3^+)	80.62	2^+				
2052.5[c] *10*	2.7[c] *8*	2132.6	3^+	80.62	2^+				Mult.: A_2=+0.02 *3*, A_4=−0.08 *4* (1992Be29) for doubly-placed G. δ: +0.20 *3* or −22 *+8−57* (1992Be29) for doublet.

γ(^{166}Er) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	Comments
2052.5[c] *10*	2.7[c] *8*	2133.8?	3^+	80.62	2^+		see comment on 2052γ from 2132.6 level.
2079	<1	2160.0?		80.62	2^+		
2091.5 *10*	3.2 *8*	2172.1		80.62	2^+		
2120.5 *10*	1.9 *9*	2201.8	1	80.62	2^+	D+Q	Mult.: A_2=−0.05 *4*, A_4=−0.07 *5* (1992Be29). shown As unplaced In 1992Be29.
[x]2134.5 *10*	1.9 *9*					D+Q	Mult.: A_2=−0.15 *3*, A_4=+0.01 *5* (1992Be29). Eγ is consistent with placement from the 2134 level, but multipolarity is inconsistent with that placement if J(2134)=3^+ As proposed In 1992Be29.
2177[e]		2442.1?	$(3,4)^+$	265.06	4^+	D+Q	E_γ: from 1992Be29. Mult.: A_2=+0.06 *5*, A_4=−0.12 *7* (1992Be29). δ: −3.2 *+11−7* or −0.19 *+8−9* (1992Be29) if J(2441)=3; +2.3 *+6−5* or −0.41 *10* (1992Be29) if J(2441)=4.
2185[e]		2265.6?	(2^-)	80.62	2^+	Q(+D)	E_γ: from 1992Be29. Mult.: A_2=−0.06 *6*, A_4=−0.25 *8* (1992Be29). δ: −0.47 *+14−19* or 1/δ=−0.02 *+12−13* (1992Be29).
2202[ce]	1.0[c] *5*	2201.8	1	0.0	0^+		Mult.: A_2=−0.31 *6*, A_4=−0.04 *8* (1992Be29) for doubly-placed G. δ: −0.11 *+5−8* or −2.7 *+5−6* (1992Be29) for doublet.
2202[ce]	1.0[c] *5*	2282.6?	(3)	80.62	2^+		Mult.: A_2=−0.31 *6*, A_4=−0.04 *8* (1992Be29) for doubly-placed G. δ: −0.11 *+5−8* or −2.7 *+5−6* (1992Be29) for DOUBLET..
2424		2504.6	$(3,4)^+$	80.62	2^+		E_γ: from 1992Be29. Mult.: A_2=+0.18 *4*, A_4=−0.05 *6* (1992Be29). δ: δ(D,Q)=+0.36 *+6−4* or +9 *+7−3* (1992Be29) if J(2506 level)=3, but γ(θ) does not rule out stretched Q.
2459[e]		2459.0?		0.0	0^+		E_γ: from 1992Be29. Mult.: A_2=−0.014 *7*, A_4=+0.17 *10* (1992Be29); not consistent with stretched Q.

[†] From 1981Bo40, except As noted.

[‡] Photon intensity normalized to Iγ(847γ,^{56}Fe)=1000 for the equal weight of ^{56}Fe and ^{166}Er. data are from 1981Bo40, except As noted; they are not corrected for the angular distributions of the transitions, but the authors do not expect those corrections to exceed 10-15%.

[#] Based on γ(θ) and linear polarization data from 1992Be29.

[@] γ probably misplaced because, based on adopted branching from the 2160 level, Iγ here is far too large relative to I(2079γ).

[&] Placement shown As tentative and γ omitted from Adopted Gammas because γ is absent In ε decay even though its branching here is too large for transition to have been missed In the ε decay studies.

[a] I(521γ doublet)=3.9 *5*. From adopted I(521γ)/I(705γ)=0.0172 *4* and I(705γ)=84 *5* In (n,n′γ), I(521γ from 786 level)=1.5 *2* leaving Iγ=2.4 *5* to Be placed elsewhere. from adopted I(521γ)/I(736γ)=0.668 *18* and I(736γ)=6.7 *5* In (n,n′γ), one expects I(521γ from 1596 level)=4.5 *8*, leaving No intensity for the proposed placement from the 1978 level. consequently, the evaluator does not include a 521γ from the 1978 level.

[b] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[c] Multiply placed with undivided intensity.

$^{166}_{68}Er_{98}$-9

γ(^{166}Er) (continued)

[d] Multiply placed with intensity suitably divided.
[e] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

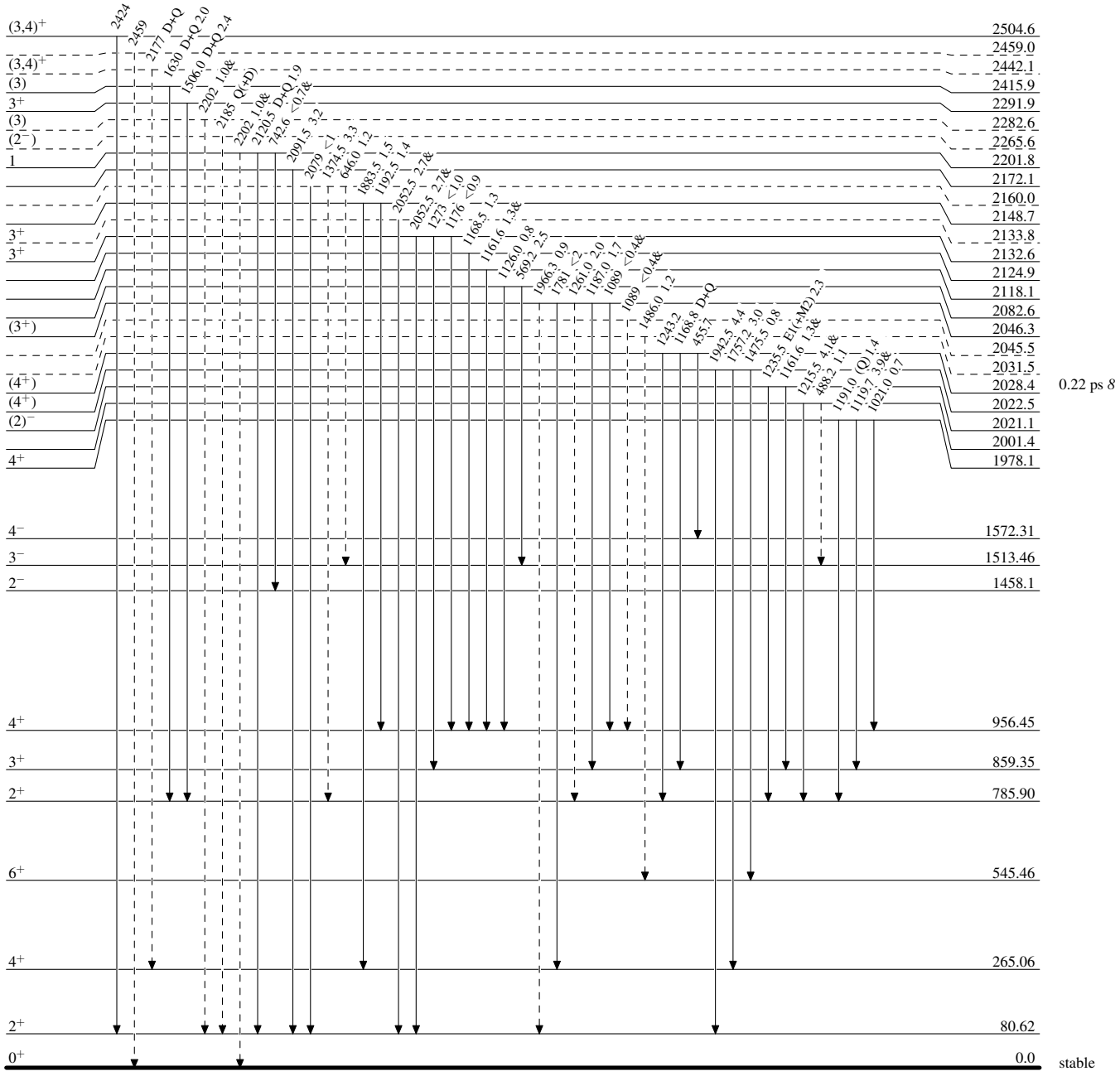
$^{166}_{68}$Er$_{98}$-10

^{166}Er(n,n′γ) 1992Be29,1982Bo39,1981Bo40

Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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)



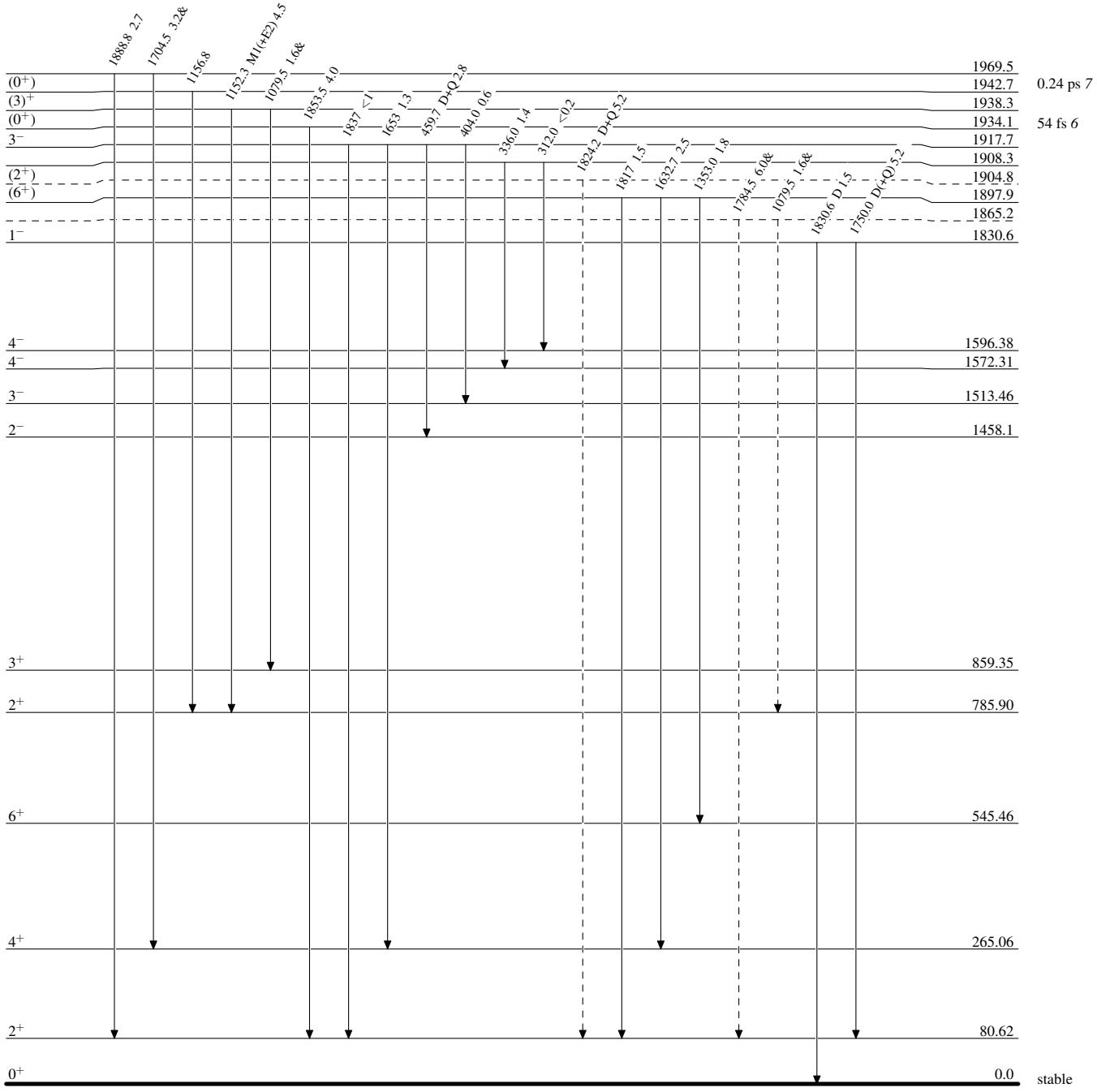
$^{166}_{68}Er_{98}$

^{166}Er(n,n′γ) 1992Be29,1982Bo39,1981Bo40

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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)



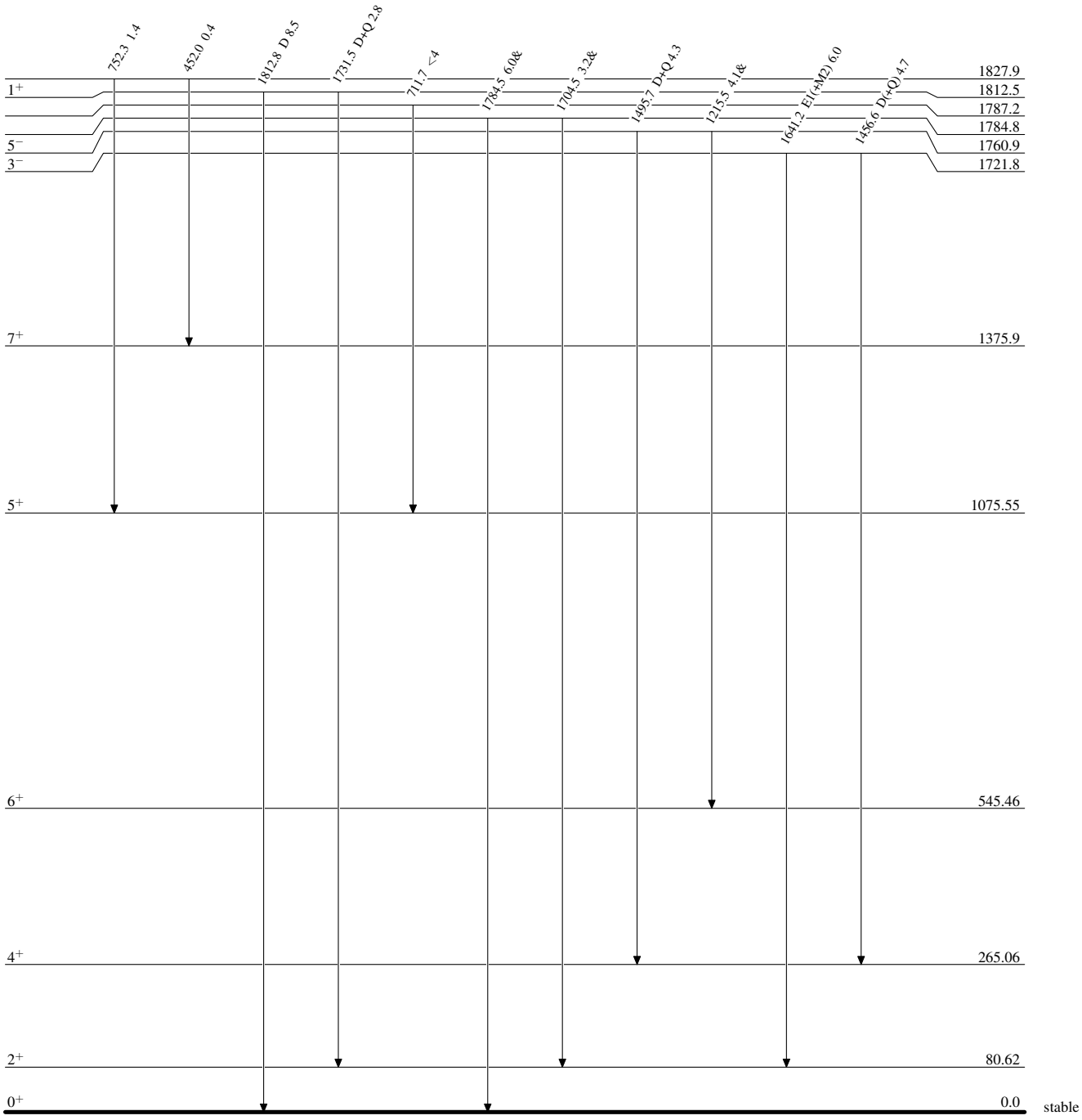
$^{166}_{68}Er_{98}$

^{166}Er(n,n′γ) 1992Be29,1982Bo39,1981Bo40

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



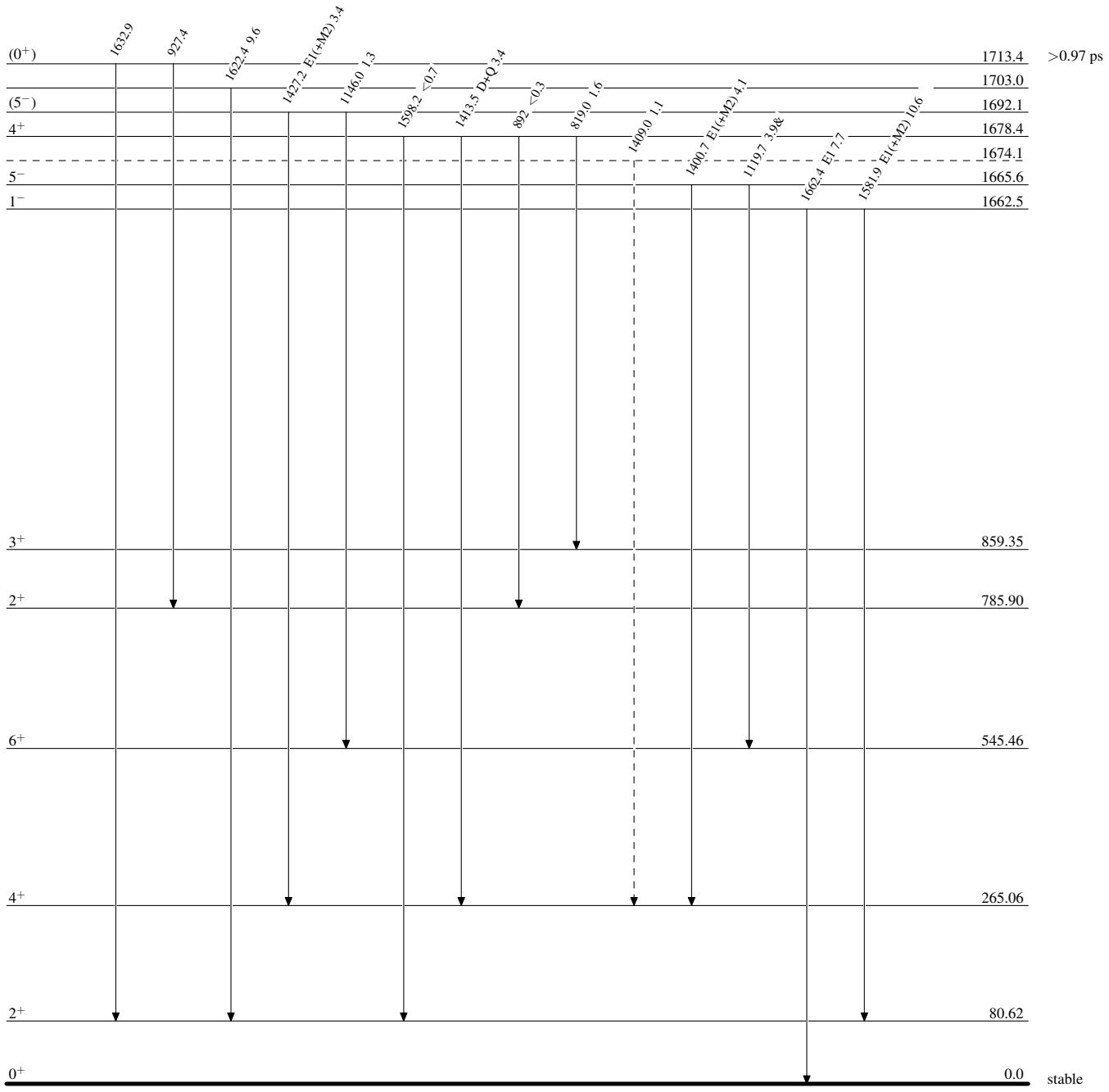
$^{166}_{68}Er_{98}$

^{166}Er(n,n′γ) 1992Be29,1982Bo39,1981Bo40

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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)



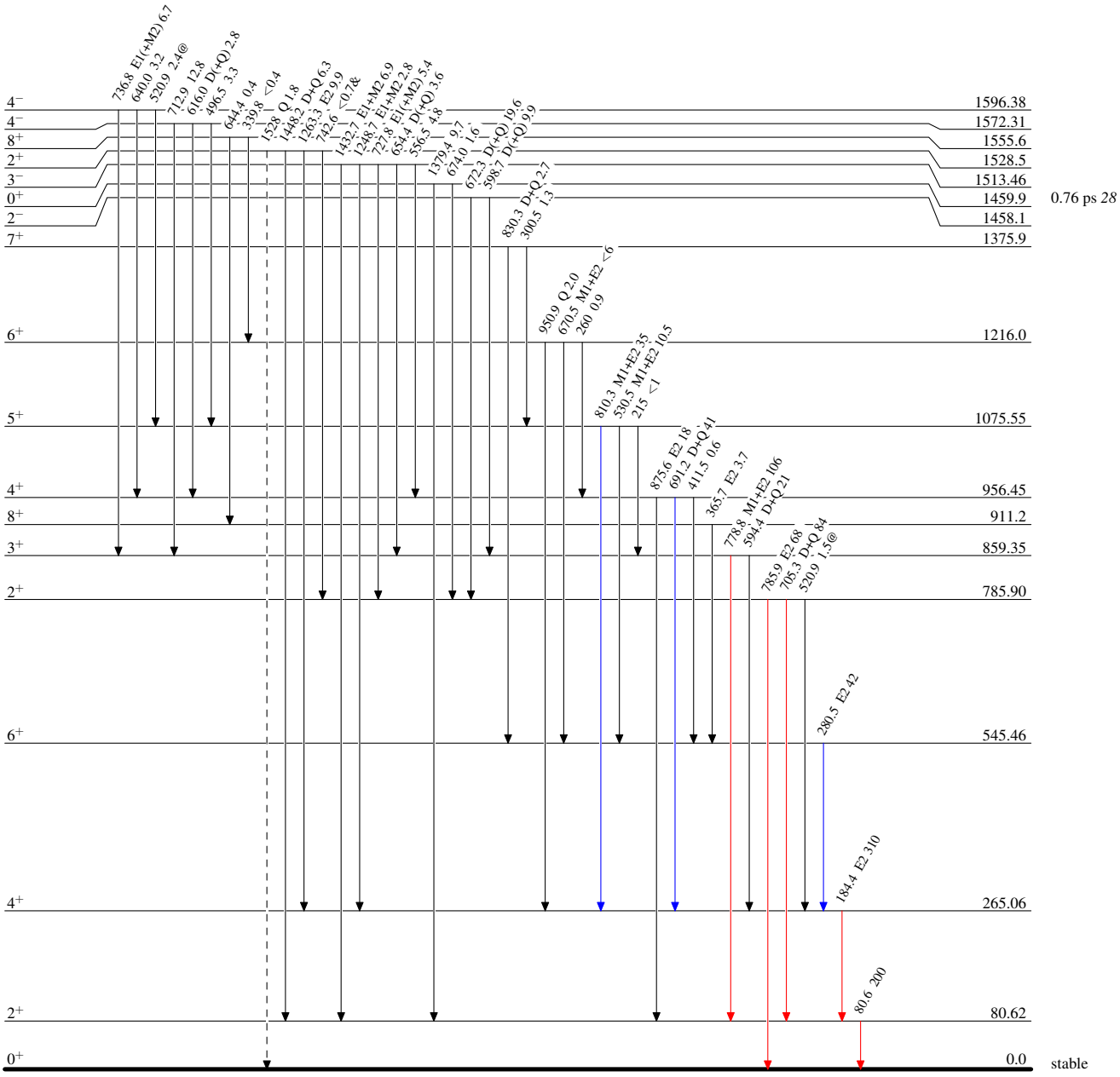
$^{166}_{68}Er_{98}$

^{166}Er(n,n′γ) 1992Be29,1982Bo39,1981Bo40

Level Scheme (continued)

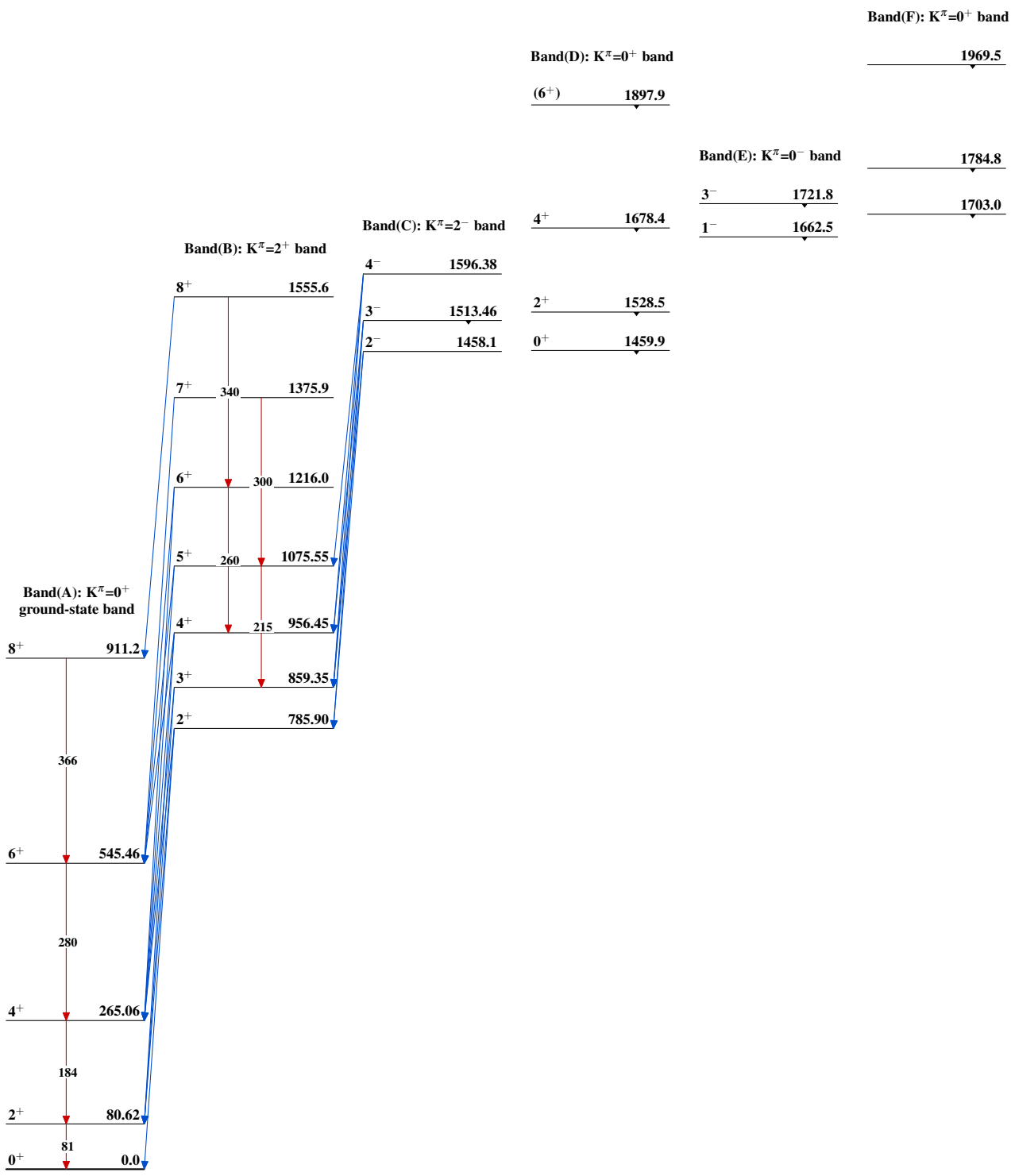
Intensities: Relative I_γ
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

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)



$^{166}_{68}Er_{98}$

^{166}Er(n,n′γ) 1992Be29,1982Bo39,1981Bo40



$^{166}_{68}Er_{98}$

^{166}Er(n,n′γ) 1992Be29,1982Bo39,1981Bo40 (continued)

$^{166}_{68}Er_{98}$