^{166}Ho β^- decay (1132.6 y)

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 213,1 (2026)	1-Jul-2026

Parent: ^{166}Ho: E=5.972 *12*; $J^\pi=7^-$; $T_{1/2}$=1132.6 y *39*; Q(β^-)=1853.8 *8*; %β^- decay=100

^{166}Ho-E,J^π,$T_{1/2}$: from ^{166}Ho Adopted Levels.

^{166}Ho-Q(β^-): from 2021Wa16.

References: 1952Bu18, 1959Bo57, 1962Ge02, 1963Cl02, 1963Ge09, 1963Li04 1965Ga03, 1965Re02, 1967Bu14, 1967Gu04, 1968Ku03, 1969Su07, 1970Re16, 1972Ca42, 1973Ko13, 1973La32, 1974Li11, 1975Ba39, 1975Mo13, 1977Ge12, 1978Sa14, 1981Ka37, 1981Kr12, 1981La27, 1982Bl28, 1982So12, 1985Al22, 1985Ma22, 1986Bo36, 1986Og03, 1988Ad05, 1988Ad12, 1988Ch44, 1988DaZX, 1989Da18, 1990Ha34, 1992Ar06, 1992Wa10, 1992Wa33, 1994Mi22, 1996Al31, 1996Mo11, 2000Hi01, 2002Be04, 2006Ku03, 2018Pe02.

^{166}Er Levels

E(level)[†][‡]	J^π[#]	$T_{1/2}$[#]	Comments
0.0	0^+	stable	
80.572 *4*	2^+	1.84 ns *3*	$T_{1/2}$: from $\gamma\gamma$(t) (1.83 ns *6* (1963Li04); 1.83 ns *5* (1968Ku03)).
264.984 *5*	4^+	118 ps *4*	g=+0.315 *16* (1985Al22) $T_{1/2}$: from $\gamma\gamma$(t) (1986Bo36). Other data: 120 ps *8* (1963Li04), 117 ps *7* (1968Ku03).
545.448 *5*	6^+	15.0 ps *8*	g=+0.258 *11* (1985Al22)
785.933 *12*	2^+	3.12 ps *10*	
859.38 *1*	3^+	4.5 ps *8*	
911.202 *7*	8^+	4.12 ps *15*	g=+0.262 *47* (1985Al22)
956.224 *6*	4^+	3.5 ps *2*	
1075.268 *6*	5^+	2.7 ps *3*	$T_{1/2}$: other: <60 ps from $\gamma\gamma$(t) (1963Li04).
1215.961 *6*	6^+	4.4 ps *3*	g=+0.254 *32* (1985Al22)
1376.027 *6*	7^+	4.9 ps *9*	
1514.00 *25*	3^-		
1527.12? *9*	2^+	49 fs *9*	
1555.736 *11*	8^+	3.7 ps *3*	
1572.172 *8*	$(4)^-$		
1596.227 *8*	$(4)^-$		
1665.787 *7*	$5^{(-)}$		J^π: (1120.330γ)(280.464γ)(θ) A_2=−0.103 *32*, A_4=−0.008 *42* is consistent only with 5(D)6(Q)4 spin sequence (1981La27).
1692.287 *7*	5^-		J^π: (1146.825γ)(280.464γ) A_2=−0.098 *45*, A_4=−0.06 *7*; and (1427.25γ)(184.41γ)(θ) A_2=−0.089 *45*, A_4=0.00 *3*. The two sets A_2, A_4 are consistent only with 5(D+Q)6(Q)4 spin sequence with δ(1146.825γ)=−0.02 *+7−6* or +9 *+9−6* and 5(D+Q)4(Q)2 spin sequence with δ(1427.227γ)=−0.025 *25* (1981La27).
1786.962 *6*	6^-		J^π: (711.681γ)(280.464γ)(θ) A_2=−0.05 *1*, A_4=−0.02 *2* and (1241.500γ)(280.464γ)(θ) A_2=+0.129 *13*, A_4=0.000 *23* are consistent only with J=6 (1981La27).
1827.545 *7*	6^-		

[†] Additional information 1.
[‡] From least-squares fit to Eγ.
[#] From Adopted Levels. Same values adopted from this data set appear in the comments.

β^- radiations

av Eβ: Additional information 2.

Continued on next page (footnotes at end of table)

^{166}Ho β^- decay (1132.6 y) (continued)

β^- radiations (continued)

E(decay)‡	E(level)	Iβ^-†#	Log *ft*	Comments
(32.2 *8*)	1827.545	17.25 *10*	8.43 *3*	av Eβ=8.01 *20*
(72.8 *8*)	1786.962	73.8 *5*	8.87 *2*	av Eβ=18.49 *21*
(167.5 *8*)	1692.287	0.08 *3*	12.39 *16*	av Eβ=52.18 *26*
(304.0 *8*)	1555.736	0.401 *7*	13.06 *1*	av Eβ=85.14 *25*
(483.8 *8*)	1376.027	0.69 *9*	13.49 *6*	av Eβ=143.87 *27*
(643.8 *8*)	1215.961	2.25 *9*	13.39 *2*	av Eβ=200.21 *29*
(948.6 *8*)	911.202	1.16 *3*	14.27 *1*	av Eβ=315.35 *31*
(1314.3 *8*)	545.448	3.28 *14*	14.34 *2*	av Eβ=463.02 *33*

† From level scheme.
‡ For measured values, see 1963Cl02, 1962Ge02, 1959Bo57, 1952Bu18.
# Absolute intensity per 100 decays.

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$

Iγ normalization: The absolute intensity per decay for the 184γ determined from activity measurements is 0.699 *14* (1989Da18), 0.7258 *22* (1994Mi22), 0.7021 *35* (1996Mo11), 0.724 *7* (2000Hi01), 0.726 *5* (2002Be04), and 0.7145 *58* (2018Pe02). No β^- feeding is expected from the $(7)^-$ ^{166}Ho parent to the 0^+ g.s., 2^+ 80.6 level or the 4^+ 265 level. Σ(I(γ+ce) to 265 level) + Σ(I(γ+ce) for crossover transitions to g.s. and 81 level)=100 implies Iγ normalization=0.7316 *33* and Σ(I(γ+ce) to 81 level)+I(γ+ce)(786γ)+I(γ+ce)(859γ)=100 implies Iγ normalization=0.7227 *34*. The evaluator adopts the value 0.725 *2* from the weighted average 0.7272 *45* (unweighted value of the latter two) and absolute values of all except those of 1989Da18 and 1996Mo11, these two values make the set discrepant. However, Σ(I(γ+ce) to g.s.)=100 implies Iγ normalization=0.776 *14* which gives an unphysical intensity imbalance at the 81 level, suggesting that the adopted I(81γ) is too low.

γγ(θ): 1965Re02, 1972Ca42, 1975Ba39, 1981La27, 1981Ka37, 1985Al22.

x-rays: (Iγ relative to Iγ(184.4γ)=100.0).

Energy	1988Ch44	1992Wa33	1996Mo11	2002Be04	x-ray	
48.22	15.1 *3*	15.9 *4*	14.66 *11*	13.74 *21*	Kα$_2$	x ray
49.13	25.4 *4*	26.9 *7*	26.43 *19*	26.9 *4*	Kα$_1$	x ray
55.67	7.86 *12*	7.67 *18*	8.32 *7*	8.03 *12*	Kβ$_1'$	x ray
56.08	1.94 *4*	1.75 *4*	2.20 *3*	2.08 *4*	Kβ$_2'$	x ray

E_γ ‡	I_γ #c	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[b]	Comments
(73.45@ *2*)	0.002@	859.38	3^+	785.933	2^+	M1	6.92 *10*	α(K)=5.80 *8*; α(L)=0.876 *12*; α(M)=0.1944 *27* α(N)=0.0453 *6*; α(O)=0.00655 *9*; α(P)=0.000360 *5*
80.572 *4*	16.55 *22*	80.572	2^+	0.0	0^+	E2	6.78 *9*	α(K)=1.672 *23*; α(L)=3.92 *5*; α(M)=0.954 *13* α(N)=0.2156 *30*; α(O)=0.02509 *35*; α(P)=7.29×10^{-5} *10* %Iγ=12.00 *16* E_γ: weighted average of 80.573 *15* (1970Re16), 80.589 *5* (1975Mo13), 80.572 *15* (1982So12), 80.56 *1* (1986Og03), 80.585 *15* (1988Ad05), 80.566 *3* (1992Wa33), 80.577 *7* (1992Ar06). I_γ: unweighted average of 14.5 *29* (1967Bu14), 14.55 *45* (1967Gu04), 17.1 *5* (1970Re16), 14.5 *5* (1973La32), 16.8 *4* (1974Li11), 16.7 *9* (1977Ge12), 17.5 *5* (1978Sa14), 16.56 *8* (1982Bl28), 17.8 *4* (1982So12), 16.97 *13* (1986Og03), 17.2 *7* (1988Ad05), 17.2 *2* (1988Ch44), 16.59 *31* (1989Da18), 17.6 *4* (1992Ar06), 17.00 *22* (1992Wa10), 16.7 *4* (1992Wa33), 16.05 *11* (1994Mi22), 17.18 *11* (1996Mo11), 16.35 *22* (2000Hi01), 16.09 *14* (2002Be04). This value appears to be too low; intensity balance at the 81 level requires I(γ+ce)(81γ)=Σ(I(γ+ce) to 81 level)=138.3 *5*, so Iγ(81)=17.78 *21* is expected assuming α(E2 theory)=6.78. Weighted average of all is 16.63 *22* with χ^2=7.7 cf. χ^2_{crit}=1.9.
94.674 *3*	0.195 *3*	1786.962	6^-	1692.287	5^-	[M1]	3.33 *5*	α(K)=2.79 *4*; α(L)=0.419 *6*; α(M)=0.0931 *13*

From ENSDF

$^{166}_{68}Er_{98}$-3

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									α(N)=0.02170 *30*; α(O)=0.00314 *4*; α(P)=0.0001724 *24* %Iγ=0.1414 *22* E_γ: weighted average of 94.679 *9* (1992Ar06), 94.672 *2* (1992Wa33), 94.697 *23* (1988Ad05), 94.70 *1* (1986Og03), 94.68 *3* (1982So12), 94.653 *30* (1970Re16). Unweighted average: 94.680 *7*. I_γ: weighted average of 0.16 *3* (1967Bu14), 0.191 *14* (1970Re16), 0.21 *3* (1974Li11), 0.221 *11* (1978Sa14), 0.217 *24* (1981Ka37), 0.22 *1* (1982So12), 0.2 *1* (1986Og03), 0.19 *25* (1988Ad05), 0.23 *3* (1992Ar06), 0.208 *10* (1992Wa10), 0.198 *4* (1992Wa33), 0.198 *5* (1996Mo11), 0.187 *3* (2002Be04).
(96.85[@] *5*)	0.00307[@] *16*	956.224	4^+	859.38	3^+	E2		3.32 *5*	α(K)=1.157 *16*; α(L)=1.657 *24*; α(M)=0.403 *6* α(N)=0.0912 *13*; α(O)=0.01069 *15*; α(P)=4.82×10^{-5} *7* %Iγ=0.0022 *1*
119.041 *3*	0.237 *5*	1075.268	5^+	956.224	4^+	(M1+E2)	+1.94 *+23−21*	1.579 *23*	α(K)=0.855 *33*; α(L)=0.556 *19*; α(M)=0.134 *5* α(N)=0.0304 *11*; α(O)=0.00366 *12*; α(P)=4.19×10^{-5} *25* %Iγ=0.172 *4* E_γ: weighted average of 119.035 *10* (1992Ar06), 119.040 *2* (1992Wa33); 119.09 *4* (1988Ad05); 119.07 *1* (1986Og03), 119.08 *4* (1982So12), 119.04 *3* (1970Re16). I_γ: weighted average of 0.246 *27* (1970Re16), 0.23 *3* (1974Li11), 0.222 *11* (1978Sa14), 0.27 *2* (1982So12), 0.24 *1* (1986Og03), 0.243 *12* (1988Ad05), 0.23 *3* (1992Ar06), 0.236 *5* (1992Wa33), 0.238 *7* (1996Mo11). Others: 0.7 *5* (1967Bu14), 0.576 *14* (2002Be04) − both are doublet. Mult.,δ: D+Q from 119γ-876$\gamma(\theta)$ for intraband γ (1996Al31).
121.175 *3*	0.353 *5*	1786.962	6^-	1665.787	$5^{(-)}$	[E2]		1.443 *20*	α(K)=0.665 *9*; α(L)=0.596 *8*; α(M)=0.1444 *20* α(N)=0.0327 *5*; α(O)=0.00388 *5*; α(P)=2.81×10^{-5} *4* %Iγ=0.256 *4* E_γ: weighted average of 121.175 *10* (1992Ar06), 121.174 *2* (1992Wa33), 121.209 *26* (1988Ad05), 121.20 *1* (1986Og03), 121.161 *30* (1970Re16). Other Eγ: 121.30 *10* (1982So12); statistical outlier. Unweighted average: 121.184 *9*. I_γ: weighted average of 0.36 *4* (1967Bu14), 0.337 *13* (1974Li11), 0.35 *2* (1981Ka37), 0.346 *12* (1982Bl28), 0.38 *3* (1988Ad05), 0.362 *7* (1989Da18), 0.343 *11* (1992Wa10). Others: 0.78 *18* (1967Gu04), 0.54 *5* (1970Re16), 0.45 *2* (1978Sa14), 0.307 *11* (1988Ch44) − all are outliers.

From ENSDF

$^{166}_{68}Er_{98}$-4

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[b]	Comments
135.260 *4*	0.1359 *18*	1827.545	6^-	1692.287	5^-	[E2]	0.971 *14*	α(K)=0.495 *7*; α(L)=0.365 *5*; α(M)=0.0882 *12* α(N)=0.02001 *28*; α(O)=0.002392 *33*; α(P)=2.129×10^{-5} *30* %Iγ=0.0985 *13* E_γ: weighted average of 135.257 *14* (1992Ar06), 135.259 *4* (1992Wa33), 135.275 *26* (1988Ad05), 135.30 *2* (1986Og03), 135.30 *10* (1982So12), 135.238 *35* (1970Re16). Unweighted average is 135.272 *10*. I_γ: weighted average of 0.137 *14* (1970Re16), 0.126 *14* (1978Sa14), 0.217 *14* (1981Ka37), 0.14 *1* (1982So12), 0.14 *1* (1986Og03), 0.128 *5* (1988Ad05), 0.15 *3* (1992Ar06), 0.1358 *28* (1992Wa33), 0.142 *9* (1996Mo11), 0.138 *3* (2002Be04). Other: 0.1 *1* (1967Bu14).
140.692 *6*	0.0584 *10*	1215.961	6^+	1075.268	5^+	[M1,E2]	0.96 *12*	α(K)=0.67 *23*; α(L)=0.22 *9*; α(M)=0.052 *22* α(N)=0.012 *5*; α(O)=0.0015 *5*; α(P)=3.7×10^{-5} *18* %Iγ=0.0423 *7* E_γ: weighted average of 140.702 *20* (1992Ar06), 140.692 *5* (1992Wa33), 140.73 *4* (1988Ad05), 140.72 *2* (1986Og03), 140.81 *10* (1982So12), 140.62 *4* (1970Re16). I_γ: weighted average of 0.059 *14* (1970Re16), 0.059 *9* (1978Sa14), 0.045 *14* (1981Ka37), 0.06 *1* (1982So12), 0.07 *1* (1986Og03), 0.06 *3* (1988Ad05), 0.07 *1* (1992Ar06), 0.0584 *16* (1992Wa33), 0.051 *7* (1996Mo11), 0.0579 *14* (2002Be04),
160.076 *5*	0.139 *2*	1376.027	7^+	1215.961	6^+	[M1,E2]	0.64 *11*	α(K)=0.47 *16*; α(L)=0.13 *4*; α(M)=0.031 *11* α(N)=0.0072 *24*; α(O)=0.00093 *23*; α(P)=2.6×10^{-5} *12* %Iγ=0.1008 *15* E_γ: weighted average of 160.077 *20* (1992Ar06), 160.074 *6* (1992Wa33), 160.09 *3* (1988Ad05), 160.09 *2* (1986Og03), 160.09 *10* (1982So12), 160.06 *5* (1970Re16). Unweighted average is 160.080 *5*. I_γ: weighted average of 0.134 *14* (1970Re16), 0.16 *3* (1974Li11), 0.132 *13* (1981Ka37), 0.14 *1* (1982So12), 0.14 *2* (1986Og03), 0.124 *8* (1988Ad05), 0.14 *3* (1992Ar06), 0.153 *7* (1992Wa10), 0.139 *3* (1992Wa33), 0.14 *11* (1996Mo11). Others: 0.35 *10* (1967Bu14), 0.36 *15* (1973La32), 0.109 *8* (1978Sa14), 0.266 *6* (2002Be04).
161.731[†] *8*	0.151 *4*	1827.545	6^-	1665.787	$5^{(-)}$	[M1,E2]	0.62 *10*	α(K)=0.45 *16*; α(L)=0.13 *4*; α(M)=0.030 *10* α(N)=0.0069 *22*; α(O)=0.00089 *22*; α(P)=2.5×10^{-5} *12* %Iγ=0.1095 *29* E_γ: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=161.758. E_γ: weighted average of 161.707 *14* (1992Ar06), 161.728 *6* (1992Wa33), 161.78 *3* (1988Ad05), 161.78 *2* (1986Og03), 161.75 *8* (1982So12), 161.75 *5* (1970Re16).

From ENSDF

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

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[b]	Comments
								I_γ: weighted average of 0.150 *14* (1970Re16), 0.16 *3* (1974Li11), 0.135 *8* (1978Sa14), 0.133 *13* (1981Ka37), 0.15 *8* (1982So12), 0.15 *2* (1986Og03), 0.140 *6* (1988Ad05), 0.15 *3* (1992Ar06), 0.160 *4* (1992Wa33), 0.158 *8* (1996Mo11),
170.288 *23*	0.0194 *5*	956.224	4^+	785.933	2^+	E2	0.434 *6*	α(K)=0.258 *4*; α(L)=0.1348 *19*; α(M)=0.0323 *5* α(N)=0.00734 *10*; α(O)=0.000894 *13*; α(P)=1.170×10^{-5} *16* %Iγ=0.0141 *4* E_γ: from 1992Wa33. I_γ: weighted average of 0.0192 *11* (1992Wa33) and 0.0195 *6* (2006Ku03, relative to adopted I(810γ)=79.0).
184.411 *3*	100.0 *3*	264.984	4^+	80.572	2^+	E2	0.331 *5*	α(K)=0.2052 *29*; α(L)=0.0964 *14*; α(M)=0.02305 *32* α(N)=0.00524 *7*; α(O)=0.000642 *9*; α(P)=9.48×10^{-6} *13* %Iγ=72.50 *30* E_γ: weighted average of 184.407 *15* (1970Re16), 184.415 *6* (1975Mo13), 184.42 *2* (1982So12), 184.41 *1*(1986Og03), 184.405 *15* (1988Ad05), 184.404 *7* (1992Ar06), 184.412 *3* (1992Wa33). I_γ: from 1994Mi22. Others: 100.0 (1967Bu14), 100.0 *10* (1967Gu04), 100 *5* (1970Re16), 100.0 (1973La32), 100.0 (1974Li11), 100.0 *31* (1977Ge12), 100.0 *20* (1978Sa14), 100.0 *10* (1981Ka37), 100.0 (1982Bl28), 100.0 (1982So12), 100.0 (1986Og03), 100.0 *20* (1988Ad05), 100.0 *10* (1988Ch44), 100.0 *14* (1989Da18), 100.0 (1992Ar06), 100.0 (1992Wa10), 100.0 *16* (1992Wa33), 100.0 *5* (1996Mo11), 100.0 *10* (2000Hi01), 100.0 *6* (2002Be04). Iγ(%)=69.9 *14* (1989Da18); 70.21 *35* (1996Mo11); 72.58 *22* (1994Mi22); 72.4 *7* (2000Hi01); 72.6 *5* (2002Be04); and 71.45 *58* (2018Pe02).
190.762 *15*	0.297 *3*	1786.962	6^-	1596.227	$(4)^-$	[E2]	0.295 *4*	α(K)=0.1860 *26*; α(L)=0.0838 *12*; α(M)=0.02000 *28* α(N)=0.00455 *6*; α(O)=0.000559 *8*; α(P)=8.66×10^{-6} *12* %Iγ=0.2153 *23* E_γ: unweighted average of 190.747 *16* (1992Ar06), 190.746 *3* (1992Wa33), 190.759 *29* (1988Ad05), 190.80 *3* (1986Og03), 190.81 *2* (1982So12), 190.711 *25* (1970Re16). Weighted average is 190.748 *5*. I_γ: weighted average of 0.301 *27* (1970Re16), 0.31 *4* (1974Li11), 0.304 *14* (1978Sa14), 0.305 *16* (1981Ka37), 0.31 *1* (1982So12), 0.291 *9* (1988Ad05), 0.31 *3* (1992Ar06), 0.301 *6* (1996Mo11), 0.292 *4* (2002Be04). Others: 0.33 *2* (1986Og03), 0.273 *6* (1992Wa33).
214.807 *8*	0.601 *7*	1786.962	6^-	1572.172	$(4)^-$	[E2]	0.1988 *28*	α(K)=0.1317 *18*; α(L)=0.0516 *7*; α(M)=0.01226 *17* α(N)=0.00279 *4*; α(O)=0.000347 *5*; α(P)=6.31×10^{-6} *9* %Iγ=0.436 *5*

From ENSDF

$^{166}_{68}Er_{98}$-6

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[b]	Comments
								E_γ: weighted average of 214.79 *3* (1992Ar06), 214.814 *9* (1992Wa33), 214.79 *2* (1986Og03), 214.79 *4* (1982So12), 214.76 *5* (1970Re16). The unweighted average is 214.789 *9*. I_γ: weighted average of 0.586 *20* (1978Sa14), 0.61 *4* (1981Ka37), 0.61 *2* (1982So12), 0.61 *2* (1986Og03), 0.602 *48* (1989Da18), 0.61 *4* (1992Ar06), 0.600 *9* (1996Mo11). Others: 4.15 *6* (1967Gu04), 4.06 *16* (1977Ge12), 4.14 *5* (1988Ad05), 4.145 *33* (2002Be04) – doublet; 0.75 *10* (1970Re16), 0.671 *13* (1992Wa33) – outlier.
215.889 *2*	3.574 *15*	1075.268	5^+	859.38	3^+	[E2]	0.1955 *27*	α(K)=0.1298 *18*; α(L)=0.0506 *7*; α(M)=0.01201 *17* α(N)=0.00274 *4*; α(O)=0.000340 *5*; α(P)=6.23×10^{-6} *9* %Iγ=2.591 *13* E_γ: weighted average of 215.871 *10* (1992Ar06), 215.889 *2* (1992Wa33), 215.90 *1* (1986Og03), 215.91 *4* (1982So12), 215.875 *30* (1970Re16). I_γ: weighted average of 3.55 *27* (1970Re16), 3.54 *10* (1978Sa14), 3.57 *6* (1981Ka37), 3.67 *9* (1982So12), 3.6 *13* (1986Og03), 3.61 *12* (1989Da18), 3.49 *14* (1992Ar06), 3.59 *4* (1992Wa10), 3.60 *6* (1992Wa33), 3.566 *19* (1996Mo11). Others: 3.8 *4* (1967Bu14), 4.04 *4* (1982Bl28), 3.447 *23* (1994Mi22). I$\gamma(119\gamma)$/I$\gamma(215.8\gamma)$=0.063 *5* (1969Su07).
231.318 *8*	0.284 *4*	1827.545	6^-	1596.227	$(4)^-$	[E2]	0.1561 *22*	α(K)=0.1063 *15*; α(L)=0.0384 *5*; α(M)=0.00910 *13* α(N)=0.002075 *29*; α(O)=0.000260 *4*; α(P)=5.18×10^{-6} *7* %Iγ=0.2059 *30* E_γ: weighted average of 231.32 *4* (1992Ar06), 231.320 *10* (1992Wa33), 231.322 *26* (1988Ad05), 231.31 *2* (1986Og03). Other Eγ: 231.39 *3* (1982So12), 231.28 *4* (1970Re16) (statistical outliers). Unweighted average: 231.318 *3*. I_γ: weighted average of 0.3 *2* (1967Bu14), 0.32 *5* (1967Gu04), 0.328 *27* (1970Re16), 0.31 *4* (1974Li11), 0.284 *14* (1978Sa14), 0.289 *12* (1981Ka37), 0.30 *1* (1982So12), 0.33 *3* (1986Og03), 0.289 *9* (1988Ad05), 0.263 *19* (1989Da18), 0.30 *4* (1992Ar06), 0.283 *6* (1992Wa10), 0.260 *5* (1992Wa33), 0.293 *5* (1996Mo11), 0.291 *5* (2002Be04). Other: 0.36 *3* (1973La32).
255.20 *12*	0.0059 *13*	1827.545	6^-	1572.172	$(4)^-$	[E2]	0.1140 *16*	α(K)=0.0800 *11*; α(L)=0.0262 *4*; α(M)=0.00618 *9* α(N)=0.001411 *20*; α(O)=0.0001783 *25*; α(P)=3.99×10^{-6} *6* %Iγ=0.0043 *10* E_γ,I_γ: from 1988Ad05.
259.740 *3*	1.469 *8*	1215.961	6^+	956.224	4^+	[E2]	0.1078 *15*	α(K)=0.0761 *11*; α(L)=0.02449 *34*; α(M)=0.00577 *8* α(N)=0.001318 *18*; α(O)=0.0001668 *23*; α(P)=3.81×10^{-6} *5* %Iγ=1.065 *7* E_γ: weighted average of 259.70 *3* (1992Ar06), 259.741 *3* (1992Wa33), 259.717 *18* (1988Ad05), 259.76 *2* (1986Og03), 259.76 *2* (1982So12), 259.716 *20* (1970Re16). Unweighted average is 259.732 *10*.

From ENSDF

$^{166}_{68}Er_{98}$-7

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									I_γ: weighted average of 1.42 *10* (1967Gu04), 1.50 *8* (1970Re16), 1.52 *5* (1974Li11), 1.45 *4* (1978Sa14), 1.482 *23* (1981Ka37), 1.53 *3* (1982So12), 1.52 *3* (1986Og03), 1.47 *4* (1988Ad05), 1.502 *40* (1989Da18), 1.45 *5* (1992Ar06), 1.529 *34* (1992Wa10), 1.507 *23* (1992Wa33), 1.434 *25* (1994Mi22), 1.480 *9* (1996Mo11), 1.445 *10* (2002Be04), 1.428 *17* (2006Ku03). Others: 1.8 *5* (1967Bu14), 1.77 *12* (1973La32). $I\gamma(140.7\gamma)/I\gamma(259.7\gamma)$=0.037 *9* (1969Su07).
280.464 *2*	40.78 *9*	545.448	6^+	264.984	4^+	E2		0.0849 *12*	α(K)=0.0611 *9*; α(L)=0.01832 *26*; α(M)=0.00430 *6* α(N)=0.000984 *14*; α(O)=0.0001255 *18*; α(P)=3.11×10^{-6} *4* %Iγ=29.57 *11* E_γ: weighted average of 280.456 *20* (1970Re16); 280.46 *2* (1982So12); 280.46 *1* (1986Og03); 280.450 *26* (1988Ad05); 280.450 *8* (1975Mo13); 280.468 *7* (1992Ar06); 280.465 *2* (1992Wa33). I_γ: weighted average of 39.5 *28* (1967Bu14), 40.7 *20* (1970Re16), 39.6 *13* (1974Li11), 40.2 *13* (1977Ge12), 40.8 *12* (1978Sa14), 41.34 *20* (1981Ka37), 41.26 *28* (1982Bl28), 41 *5* (1982So12), 40.6 *5* (1986Og03), 40.4 *13* (1988Ad05), 40.88 *48* (1989Da18), 39.8 *9* (1992Ar06), 41.4 *5* (1992Wa10), 41.8 *6* (1992Wa33), 40.63 *11* (1994Mi22), 40.66 *20* (1996Mo11), 41.02 *41* (2000Hi01), 40.36 *21* (2002Be04). Others: 43.6 *4* (1967Gu04), 38.6 *5* (1973La32).
300.755 *4*	5.10 *4*	1376.027	7^+	1075.268	5^+	E2(+M3)	−0.018 *+15−16*	0.0691 *19*	α(K)=0.0507 *14*; α(L)=0.0143 *4*; α(M)=0.00334 *9* α(N)=0.000765 *21*; α(O)=9.84×10^{-5} *29*; α(P)=2.63×10^{-6} *12* %Iγ=3.698 *31* E_γ: weighted average of 300.731 *9* (1992Ar06), 300.756 *3* (1992Wa33), 300.730 *24* (1988Ad05), 300.77 *1* (1986Og03), 300.77 *2* (1982So12), 300.744 *20* (1970Re16). Unweighted average is 300.750 *7*. I_γ: unweighted average of 4.8 *4* (1967Bu14), 5.45 *5* (1967Gu04), 5.12 *26* (1970Re16), 4.77 *9* (1973La32), 4.92 *12* (1974Li11), 4.97 *16* (1977Ge12), 5.12 *15* (1978Sa14), 5.165 *27* (1981Ka37), 5.22 *4* (1982Bl28), 5.17 *8* (1982So12), 5.11 *8* (1986Og03), 5.04 *16* (1988Ad05), 5.13 *7* (1989Da18), 4.98 *13* (1992Ar06), 5.34 *6* (1992Wa10), 5.29 *8* (1992Wa33), 5.079 *36* (1994Mi22), 5.118 *26* (1996Mo11), 5.004 *28* (2002Be04). Other: $I\gamma(160.1\gamma)/I\gamma(300.75\gamma)$=0.032 *4* (1969Su07). Mult.,δ: from 1985Ma22.
304.91[†] *5*	0.025 *2*	1215.961	6^+	911.202	8^+				%Iγ=0.0181 *15*

From ENSDF

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									E_γ: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=304.758. E_γ: unweighted average of 304.8 *1* (1996Mo11), 305.03 *5* (1992Ar06), 304.86 *7* (1992Wa33), 304.82 *4* (1988Ad05), 305.03 *5* (1986Og03). Data are discrepant. Weighted average is 304.92 *5*. I_γ: unweighted average of 0.023 *3* (1986Og03), 0.030 *3* (1988Ad05), 0.023 *3* (1992Ar06), 0.020 *10* (1992Wa33), 0.026 *6* (1996Mo11), 0.0220 *14* (2002Be04), 0.0310 *12* (2006Ku03). Weighted average of all is 0.027 *2* with χ^2=4.8 cf. χ^2_{crit}=2.6.
339.751 *21*	0.2222 *20*	1555.736	8^+	1215.961	6^+	(E2)		0.0476 *7*	α(K)=0.0358 *5*; α(L)=0.00915 *13*; α(M)=0.002127 *30* α(N)=0.000488 *7*; α(O)=6.35×10^{-5} *9*; α(P)=1.885×10^{-6} *26* %Iγ=0.1611 *15* E_γ: unweighted average of 339.75 *5* (1992Ar06), 339.807 *10* (1992Wa33, misprinted as 338.807 in table 1), 339.788 *25* (1988Ad05), 339.71 *3* (1986Og03), 339.67 *4* (1982So12), 339.78 *8* (1970Re16). Data are discrepant. Weighted average is 339.789 *17*. I_γ: weighted average of 0.232 *27* (1970Re16), 0.23 *4* (1974Li11), 0.234 *15* (1978Sa14), 0.232 *18* (1981Ka37), 0.21 *1* (1982So12), 0.21 *3* (1986Og03), 0.222 *7* (1988Ad05), 0.22 *3* (1992Ar06), 0.221 *5* (1992Wa33), 0.2250 *34* (1996Mo11), 0.215 *6* (2002Be04), 0.223 *4* (2006Ku03).
365.760 *5*	3.401 *23*	911.202	8^+	545.448	6^+	E2		0.0385 *5*	α(K)=0.0293 *4*; α(L)=0.00709 *10*; α(M)=0.001643 *23* α(N)=0.000377 *5*; α(O)=4.95×10^{-5} *7*; α(P)=1.562×10^{-6} *22* %Iγ=2.466 *18* E_γ: weighted average of 365.736 *9* (1992Ar06), 365.765 *4* (1992Wa33) 365.741 *22* (1988Ad05) 365.76 *2* (1986Og03), 365.74 *3* (1982So12), 365.739 *25* (1970Re16), 365.777 *16* (1975Mo13). I_γ: unweighted average of 3.44 *18* (1970Re16), 3.25 *10* (1974Li11), 3.30 *3* (1977Ge12), 3.33 *10* (1978Sa14), 3.445 *24* (1981Ka37), 3.30 *3* (1982Bl28), 3.49 *6* (1982So12), 3.46 *6* (1986Og03), 3.33 *10* (1988Ad05), 3.44 *5* (1989Da18), 3.34 *9* (1992Ar06), 3.589 *45* (1992Wa10), 3.51 *6* (1992Wa33), 3.439 *45* (1994Mi22), 3.404 *17* (1996Mo11), 3.351 *21* (2002Be04). Others: 2.9 *3* (1967Bu14), 3.72 *7* (1967Gu04), 2.93 *6* (1973La32) – outliers.
(410.797[@] *16*)	0.0231[@] *7*	956.224	4^+	545.448	6^+	E2		0.0278 *4*	α(K)=0.02155 *30*; α(L)=0.00481 *7*; α(M)=0.001109 *16* α(N)=0.000255 *4*; α(O)=3.39×10^{-5} *5*; α(P)=1.167×10^{-6} *16*
410.949 *7*	15.56 *6*	1786.962	6^-	1376.027	7^+	E1+M2	−0.010 *5*	0.00873 *12*	α(K)=0.00739 *11*; α(L)=0.001047 *15*; α(M)=0.0002306 *33*

From ENSDF

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

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									α(N)=5.34×10^{-5} *8*; α(O)=7.57×10^{-6} *11*; α(P)=3.92×10^{-7} *6* %Iγ=11.28 *6* E_γ: unweighted average for doublet: 410.950 *8* (1992Ar06), 410.974 *5* (1992Wa33), 410.96 *3* (1988Ad05), 410.95 *1* (1986Og03), 410.92 *2* (1982So12), 410.941 *25* (1970Re16). Weighted average of these data is 410.962 *6*. I_γ: weighted average of 15.8 *12* (1967Bu14), 15.8 *8* (1970Re16), 15.50 *19* (1973La32), 14.8 *3* (1974Li11), 15.27 *16* (1977Ge12), 15.25 *43* (1978Sa14), 15.95 *15* (1981Ka37), 15.65 *10* (1982Bl28), 15.9 *2* (1982So12), 15.5 *4* (1986Og03), 15.3 *4* (1988Ad05), 15.93 *16* (1989Da18), 15.0 *4* (1992Ar06), 16.02 *25* (1992Wa33), 15.42 *6* (1994Mi22), 15.81 *9* (1996Mo11), 15.73 *18* (2000Hi01), 15.39 *8* (2002Be04). Others: 16.8 *2* (1967Gu04), 16.49 *19* (1992Wa10) – outliers. δ: from 1981Kr12. Other δ: −0.27 *18* (1965Re02); 0.23 *2* (1963Ge09).
[x]449.8 *1*	0.066 *10*								%Iγ=0.048 *8* E_γ,I_γ: from 1996Mo11.
451.542[†] *7*	4.06 *3*	1827.545	6$^-$	1376.027	7$^+$	(E1+M2)	−0.0023 *22*	0.00702 *10*	A_2=+0.176 *13*; A_4=0.034 *14* (α_2 and α_4 in 1981Kr12: nes) A_2=+0.213 *10*; A_4=−0.018 *12* (α_2 and α_4 in 1981Kr12: Ho metal) α(K)=0.00595 *8*; α(L)=0.000838 *12*; α(M)=0.0001843 *26* α(N)=4.27×10^{-5} *6*; α(O)=6.07×10^{-6} *9*; α(P)=3.17×10^{-7} *4* %Iγ=2.944 *23* E_γ: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=451.517. E_γ: weighted average of 451.528 *9* (1992Ar06), 451.554 *6* (1992Wa33), 451.531 *26* (1988Ad05), 451.53 *2* (1986Og03), 451.50 *2* (1982So12), 451.524 *25* (1970Re16). I_γ: unweighted average of 4.30 *8* (1967Gu04), 4.18 *20* (1970Re16), 3.84 *13* (1974Li11), 3.99 *4* (1977Ge12), 4.02 *12* (1978Sa14), 4.160 *25* (1981Ka37), 3.85 *5* (1982Bl28), 4.17 *5* (1982So12), 4.04 *11* (1986Og03), 4 *11* (1988Ad05), 4.12 *7* (1989Da18), 3.89 *13* (1992Ar06), 4.24 *6* (1992Wa10), 4.11 *7* (1992Wa33), 4.023 *28* (1994Mi22), 4.062 *37* (1996Mo11), 4.001 *22* (2002Be04 – doublet). Others: 3.5 *7* (1967Bu14), 3.48 *7* (1973La32) – outliers. Mult.: $\gamma(\theta)$ data (1981Kr12) are consistent with D+Q, ΔJ=1. δ: from 1985Ma22. Other δ: −0.17 *13* (1981Kr12).
464.832 *6*	1.66 *2*	1376.027	7$^+$	911.202	8$^+$	E2(+M1)	−63 *+12−19*	0.01989 *28*	α(K)=0.01570 *22*; α(L)=0.00325 *5*; α(M)=0.000744 *10*

From ENSDF

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[b]	Comments
								α(N)=0.0001715 *24*; α(O)=2.304×10^{-5} *32*; α(P)=8.63×10^{-7} *12* %Iγ=1.204 *15* E_γ: weighted average of 464.819 *12* (1992Ar06), 464.839 *7* (1992Wa33), 464.825 *20* (1988Ad05), 464.80 *3* (1982So12), 464.83 *4* (1970Re16). Other: 464.76 *2* (1986Og03), statistical outlier. I_γ: unweighted average of 1.66 *8* (1967Gu04), 1.68 *11* (1970Re16), 1.50 *8* (1974Li11), 1.65 *5* (1978Sa14), 1.699 *21* (1981Ka37), 1.67 *3* (1982So12), 1.73 *7* (1986Og03), 1.59 *4* (1988Ad05), 1.69 *6* (1989Da18), 1.66 *7* (1992Ar06), 1.729 *35* (1992Wa10), 1.73 *3* (1992Wa33), 1.665 *17* (1996Mo11), 1.587 *11* (2002Be04), 1.619 *19* (2006Ku03). Others: 2.0 *4* (1967Bu14), 2.00 *7* (1973La32), 2.027 *30* (1994Mi22). Weighted average of all is 1.66 *3* with χ^2=14.4 cf. χ^2_{crit}=1.6. δ: from 1985Al22. δ data: −80<δ<+30 (1975Ba39); 11 −7+infinity or 0.20 *+14−12* (1981Ka37); (−13 −15+5, neodymium ethyl sulfate; −51 *+21*−Infinity, Ho metal) (1981Kr12); −32 −98+14 (1981La27); −63 *+12−19* (1985Al22); −238 *+152−303* (1985Ma22); −238 +153+320 (1990Ha34; solution includes ∞).
476.378[†] *19*	0.050 *3*	1692.287	5$^-$	1215.961	6$^+$			%Iγ=0.0363 *22* E_γ: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=476.325. E_γ: weighted average of 476.38 *6* (1992Ar06), 476.380 *26* (1992Wa33), 476.37 *4* (1988Ad05), 476.38 *6* (1986Og03). I_γ: weighted average of 0.052 *6* (1986Og03), 0.05 *3* (1988Ad05), 0.052 *7* (1992Ar06), 0.0494 *24* (1992Wa33). Other: 0.4 *2* (1967Bu14),
496.923 *8*	0.173 *3*	1572.172	(4)$^-$	1075.268	5$^+$	(E1)	0.00566 *8*	α(K)=0.00480 *7*; α(L)=0.000672 *9*; α(M)=0.0001478 *21* α(N)=3.43×10^{-5} *5*; α(O)=4.88×10^{-6} *7*; α(P)=2.57×10^{-7} *4* %Iγ=0.1254 *22* E_γ: weighted average of 497.0 *1* (1996Mo11), 496.86 *4* (1992Ar06), 496.929 *10* (1992Wa33), 496.935 *19* (1988Ad05), 496.86 *4* (1986Og03), 496.88 *5* (1982So12). Unweighted average: 496.911 *22*. I_γ: weighted average of 0.18 *3* (1982So12), 0.17 *1* (1986Og03), 0.170 *5* (1988Ad05), 0.17 *3* (1992Ar06), 0.175 *3* (1992Wa33), 0.174 *16* (1996Mo11), 0.168 *6* (2002Be04).
520.94 *3*	0.233[&] *8*	1596.227	(4)$^-$	1075.268	5$^+$			%Iγ=0.169 *6* E_γ: unweighted average of 520.86 *5* (1982So12), 520.85 *5* (1986Og03), 520.99 *4* (1988Ad05), 521.0 *1* (1989Da18), 520.85 *5* (1992Ar06), 521.041 *25* (1992Wa33), 521.0 *1* (1996Mo11). Data are discrepant. Weighted average is 520.97 *3*. Extremely weak component of 521γ from 786 level will have no significant effect on this Eγ.

From ENSDF

$^{166}_{68}Er_{98}$-11

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									I_γ: weighted average of 0.22 *3* (1982So12), 0.21 *1* (1986Og03), 0.20 *3* (1988Ad05), 0.240 *23* (1989Da18), 0.21 *3* (1992Ar06), 0.276 *13* (1992Wa33), 0.212 *13* (1996Mo11), 0.241 *7* (2002Be04).
520.945[a] *15*	0.00041[&] *8*	785.933	2^+	264.984	4^+	E2		0.01481 *21*	α(K)=0.01184 *17*; α(L)=0.002303 *32*; α(M)=0.000525 *7* α(N)=0.0001210 *17*; α(O)=1.643×10^{-5} *23*; α(P)=6.58×10^{-7} *9* %Iγ=3.0×10^{-4} *6*
529.807 *11*	13.09 *10*	1075.268	5^+	545.448	6^+	E2+M1	−25 *+4−5*	0.01422 *20*	α(K)=0.01139 *16*; α(L)=0.002194 *31*; α(M)=0.000499 *7* α(N)=0.0001152 *16*; α(O)=1.567×10^{-5} *22*; α(P)=6.34×10^{-7} *9* %Iγ=9.49 *8* E_γ: weighted average of 529.811 *10* (1992Ar06), 529.835 *18* (1988Ad05), 529.76 *2* (1986Og03), 529.79 *3* (1982So12), 529.81 *3* (1970Re16). I_γ: unweighted average of 13.0 *4* (1967Gu04), 13.9 *7* (1970Re16), 12.4 *3* (1974Li11), 12.78 *13* (1977Ge12), 13.1 *4* (1978Sa14), 13.46 *7* (1981Ka37), 12.48 *10* (1982Bl28), 13.3 *2* (1982So12), 13.18 *34* (1986Og03), 12.83 *29* (1988Ad05), 13.46 *18* (1989Da18), 12.6 *4* (1992Ar06), 13.19 *15* (1992Wa10), 13.38 *5* (1994Mi22), 13.33 *7* (1996Mo11), 13.30 *15* (2000Hi01), 12.88 *7* (2002Be04). Others: 10.3 *10* (1967Bu14), 10.16 *32* (1973La32) − outliers. δ: from 1981La27. Other δ: −85 *+45*−Infinity (1965Re02); −25 *3* (1975Ba39); 158 +infinity−130 (1981Ka37); (−60 −45+19, neodymium ethyl sulfate; −62 −40+17, Ho metal) (1981Kr12); −43 *+5−7* (1990Ha34); .
570.976 *18*	7.45 *8*	1786.962	6^-	1215.961	6^+	E1+M2	+0.06 *3*	0.00443 *32*	α(K)=0.00376 *26*; α(L)=0.00053 *4*; α(M)=0.000116 *10* α(N)=2.70×10^{-5} *23*; α(O)=3.86×10^{-6} *33*; α(P)=2.06×10^{-7} *18* %Iγ=5.40 *6* E_γ: unweighted average of 570.940 *10* (1992Ar06), 571.034 *18* (1988Ad05), 570.94 *2* (1986Og03), 570.97 *3* (1982So12), 570.998 *30* (1970Re16); data are discrepant. Weighted average is 570.962 *18*. I_γ: unweighted average of 6.8 *7* (1967Bu14), 7.08 *14* (1967Gu04), 7.86 *40* (1970Re16), 6.77 *14* (1973La32), 7.04 *14* (1974Li11), 7.45 *8* (1977Ge12), 7.53 *22* (1978Sa14), 7.7 *8* (1981Ka37), 7.22 *6* (1982Bl28), 7.65 *9* (1982So12), 7.64 *20* (1986Og03), 7.42 *18* (1988Ad05), 7.81 *10* (1989Da18), 7.27 *23* (1992Ar06), 7.96 *9* (1992Wa10), 7.5 *7* (1994Mi22), 7.705 *43* (1996Mo11), 7.65 *11* (2000Hi01), 7.47 *4*

From ENSDF

$^{166}_{68}Er_{98}$-12

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									(2002Be04). δ: from 1981Kr12. Other δ: −0.08 *+12−8* (1965Re02). %Iγ=0.0232 *22* E_γ: from 1992Wa33. Other: 590.67 *15* (1988Ad05). I_γ: from 1988Ad05.
590.56 *3*	0.032 *3*	1665.787	$5^{(-)}$	1075.268	5^+				
594.46 *3*	0.783 *6*	859.38	3^+	264.984	4^+	E2+M1	−12 *2*	0.01076 *15*	α(K)=0.00872 *13*; α(L)=0.001586 *22*; α(M)=0.000359 *5* α(N)=8.30×10^{-5} *12*; α(O)=1.140×10^{-5} *16*; α(P)=4.89×10^{-7} *7* %Iγ=0.568 *5* E_γ: unweighted average of 594.536 *24* (1992Ar06), 594.423 *25* (1988Ad05), 594.52 *3* (1986Og03), 594.36 *3* (1982So12), 594.48 *8* (1970Re16). Dataset is discrepant. Weighted average is 594.47 *4*. I_γ: weighted average of 0.74 *10* (1967Gu04), 0.77 *3* (1978Sa14), 0.813 *27* (1981Ka37), 0.77 *2* (1982So12), 0.80 *9* (1986Og03), 0.769 *18* (1988Ad05), 0.803 *32* (1989Da18), 0.78 *7* (1992Ar06), 0.761 *22* (1992Wa10), 0.788 *8* (2002Be04). Others: 1.2 *4* (1967Bu14), 0.96 *5* (1970Re16), 1.28 *18* (1973La32), 0.70 *5* (1974Li11), 0.880 *20* (1996Mo11) − all outliers. δ: from Adopted Gammas. Others: −9 *+5−319* (1975Ba39), −9 *+5*−Infinity (1981La27); (−8 *+3−15*, neodymium ethyl sulfate; −12 −29+5, Ho metal) (1981Kr12); −36 *+32−11* (1990Ha34; sign from table 2, misprinted in table 1).
611.555 *26*	1.905 *22*	1827.545	6^-	1215.961	6^+	(E1+M2)	−0.18 *7*	0.0054 *16*	α(K)=0.0046 *13*; α(L)=6.7×10^{-4} *21*; α(M)=1.5×10^{-4} *5* α(N)=3.5×10^{-5} *11*; α(O)=5.0×10^{-6} *16*; α(P)=2.7×10^{-7} *9* %Iγ=1.381 *17* A_2=−0.471 *45*; A_4=+0.091 *51* (α_2 and α_4 in 1981Kr12: Ho metal) E_γ: unweighted average of 611.620 *17* (1992Ar06), 611.615 *26* (1988Ad05), 611.49 *3* (1986Og03), 611.53 *3* (1982So12), 611.52 *7* (1970Re16). Data are discrepant. Weighted average is 611.583 *26*. I_γ: weighted average of 1.90 *11* (1970Re16), 1.95 *6* (1978Sa14), 2.001 *27* (1981Ka37), 1.86 *4* (1982So12), 1.86 *12* (1986Og03), 1.85 *6* (1988Ad05), 1.95 *10* (1989Da18), 1.86 *11* (1992Ar06), 1.95 *6* (1994Mi22), 1.911 *34* (1996Mo11), 1.850 *22* (2002Be04). Others: 1.4 *10* (1967Bu14), 1.59 *32* (1967Gu04), 1.48 *27* (1973La32), 1.67 *9* (1974Li11), 2.097 *26* (1992Wa10) − all outliers. Mult.: $\gamma(\theta)$ data (1981Kr12) imply D+Q. δ: from 1981Kr12.
615.89 *4*	0.147 *9*	1572.172	$(4)^-$	956.224	4^+	(E1(+M2))		0.0041 *6*	α(K)=0.0035 *5*; α(L)=0.00049 *8*; α(M)=0.000109 *17*

From ENSDF

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									α(N)=2.5×10^{-5} *4*; α(O)=3.6×10^{-6} *6*; α(P)=1.95×10^{-7} *31* %Iγ=0.107 *7* E_γ: weighted average of 616.0 *1* (1996Mo11); 615.84 *9* (1992Ar06), 615.85 *5* (1992Wa33), 616.08 *8* (1988Ad05), 615.84 *5* (1986Og03). Unweighted average is 615.92 *5*. I_γ: unweighted average of 0.163 *7* (1988Ad05), 0.138 *10* (1992Wa33), 0.160 *10* (1996Mo11), 0.128 *6* (2002Be04). Others: 0.044 *13* (1986Og03), 0.044 *13* (1992Ar06). Mult.: from Adopted Gammas.
617.0 *5*	0.031 *9*	1692.287	5$^-$	1075.268	5$^+$				%Iγ=0.023 *7* E_γ,I_γ: from deconvolution of doublet (1988Ad05). See also comments on 615.96γ.
640.015 *9*	0.129 *3*	1596.227	(4)$^-$	956.224	4$^+$				%Iγ=0.0935 *22* E_γ: weighted average of 639.97 *9* (1992Ar06), 640.019 *10* (1992Wa33), 640.003 *24* (1988Ad05), 639.97 *5* (1986Og03); 640.0 *1* (1982So12); unweighted average is 639.992 *10*. Other Eγ: 639.77 *6* (1970Re16); statistical outlier. I_γ: weighted average of 0.122 *16* (1978Sa14), 0.124 *18* (1981Ka37), 0.12 *1* (1982So12), 0.11 *1* (1986Og03), 0.124 *5* (1988Ad05), 0.11 *2* (1992Ar06), 0.137 *3* (1992Wa33), 0.138 *9* (1996Mo11), 0.123 *4* (2002Be04). Other: 0.22 *7* (1970Re16) – outlier.
644.60 *5*	0.210 *9*	1555.736	8$^+$	911.202	8$^+$	E2+M1	+4.9 *+23−11*	0.00918 *27*	α(K)=0.00751 *23*; α(L)=0.001302 *30*; α(M)=0.000293 *7* α(N)=6.79×10^{-5} *15*; α(O)=9.42×10^{-6} *23*; α(P)=4.25×10^{-7} *14* %Iγ=0.152 *7* E_γ: unweighted average of 644.689 *15* (1992Ar06), 644.570 *8* (1992Wa33), 644.598 *26* (1988Ad05), 644.78 *5* (1986Og03), 644.51 *6* (1982So12), 644.45 *10* (1970Re16). Data are discrepant. Weighted average: 644.598 *24*. I_γ: unweighted average of 0.27 *15* (1967Bu14), 0.246 *27* (1970Re16), 0.213 *19* (1978Sa14), 0.222 *24* (1981Ka37), 0.19 *1* (1982So12), 0.23 *6* (1986Og03), 0.186 *5* (1988Ad05), 0.21 *4* (1992Ar06), 0.206 *4* (1992Wa33), 0.189 *11* (1996Mo11), 0.154 *4* (2002Be04), 0.2071 *29* (2006Ku03). Other: 0.31 *3* (1967Gu04). δ: from γ(θ), oriented nuclei (Ho metal) (1990Ha34). Other δ: >2 (1975Ba39); δ≤−1 or δ≥+4 (1981Kr12); δ>+1.4 or δ<−6 (1981La27).
670.516 *14*	7.39 *7*	1215.961	6$^+$	545.448	6$^+$	E2+M1	+10.0 *+16−12*	0.00811 *12*	α(K)=0.00664 *10*; α(L)=0.001147 *16*; α(M)=0.000258 *4* α(N)=5.98×10^{-5} *8*; α(O)=8.29×10^{-6} *12*; α(P)=3.75×10^{-7} *5*

From ENSDF

$^{166}_{68}Er_{98}$-14

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									%Iγ=5.36 *5* E_γ: unweighted average of 670.565 *12* (1992Ar06), 670.525 *21* (1988Ad05), 670.49 *2* (1986Og03), 670.49 *2* (1982So12), 670.51 *4* (1970Re16). Data are discrepant. Weighted average is 670.531 *17*. I_γ: unweighted average of 7.0 *7* (1967Bu14), 7.35 *29* (1967Gu04), 7.88 *40* (1970Re16), 7.01 *25* (1973La32), 6.98 *16* (1974Li11), 7.37 *8* (1977Ge12), 7.37 *21* (1978Sa14), 7.583 *35* (1981Ka37), 7.28 *6* (1982Bl28), 7.53 *9* (1982So12), 7.16 *20* (1986Og03), 7.32 *17* (1988Ad05), 7.60 *9* (1989Da18), 6.98 *22* (1992Ar06), 7.72 *8* (1992Wa10), 7.618 *39* (1994Mi22), 7.563 *43* (1996Mo11), 7.80 *12* (2000Hi01), 7.33 *4* (2002Be04). δ: from 1981Kr12. δ data: (76 +infinity−71 or 1.6 *+11−3* (1981Ka37)); (+10.0 *+16−12*, Ho metal; +9.4 *+29−16*, crystal of neodymium ethyl sulfate) (1981Kr12); +25 *+17−7* (1985Ma22 and 1990Ha34); however, −20 *+9−90* (1975Ba39 and 1981La27).
691.249 *13*	1.840 *14*	956.224	4+	264.984	4+	E2+M1	−3.7 *5*	0.00802 *20*	α(K)=0.00660 *17*; α(L)=0.001105 *23*; α(M)=0.000248 *5* α(N)=5.75×10^{-5} *12*; α(O)=8.03×10^{-6} *17*; α(P)=3.76×10^{-7} *10* %Iγ=1.334 *11* E_γ: weighted average of 691.260 *18* (1988Ad05), 691.24 *3* (1986Og03), 691.24 *3* (1982So12), 691.21 *5* (1970Re16). Other: 691.304 *12* (1992Ar06) − γ fits poorly if considered. I_γ: weighted average of 1.9 *4* (1967Bu14), 1.62 *8* (1967Gu04), 2.09 *11* (1970Re16), 1.85 *9* (1973La32), 1.60 *10* (1974Li11), 1.805 *18* (1977Ge12), 1.87 *6* (1978Sa14), 1.886 *18* (1981Ka37), 1.87 *4* (1982So12), 1.86 *9* (1986Og03), 1.79 *4* (1988Ad05), 1.839 *40* (1989Da18), 1.78 *9* (1992Ar06), 1.87 *4* (1992Wa10), 1.914 *26* (1994Mi22), 1.862 *19* (1996Mo11), 1.804 *14* (2002Be04). δ: from Adopted Gammas. δ from β^- decay: −10 *+4−27* (1975Ba39); 3.8 *+34−12* or 0.61 *+18−14* (1981Ka37); −16 −27+4 (1981La27); −16 +9−Infinity (1981Kr12); +566 −522−616 (1990Ha34; solution includes ∞).
705.4 *4*	0.019 *5*	785.933	2+	80.572	2+	E2+M1	−5 *+3−14*	0.0074 *12*	α(K)=0.0061 *10*; α(L)=0.00103 *12*; α(M)=0.000231 *27* α(N)=5.3×10^{-5} *6*; α(O)=7.5×10^{-6} *10*; α(P)=3.5×10^{-7} *7* %Iγ=0.014 *4* E_γ: unweighted average of 705.09 *7* (1992Ar06), 705.34 *4* (1992Wa33), 706.2 *9* (1988Ad05), 705.09 *7* (1986Og03). Data are discrepant. Without the value from 1992Wa33, it becomes consistent and weighted averaging yields 705.09 *5*.

From ENSDF

$^{166}_{68}Er_{98}$-15

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									I_γ: unweighted average of 0.011 *1* (1982So12), 0.025 *15* (1986Og03), 0.011 *2* (1989Da18), 0.0272 *6* (1992Wa10). Mult.,δ: from Adopted Gammas.
711.681 *6*	74.4 *5*	1786.962	6^-	1075.268	5^+	E1(+M2)	+0.002 *3*	0.00265 *4*	α(K)=0.002251 *32*; α(L)=0.000309 *4*; α(M)=6.77×10^{-5} *9* α(N)=1.573×10^{-5} *22*; α(O)=2.257×10^{-6} *32*; α(P)=1.223×10^{-7} *17* %Iγ=53.9 *4* E_γ: weighted average of 711.680 *8* (1992Ar06), 711.701 *24* (1988Ad05), 711.68 *1* (1986Og03), 711.68 *2* (1982So12), 711.69 *4* (1970Re16). I_γ: unweighted average of 72.5 *60* (1967Bu14), 71.5 *7* (1967Gu04), 71.65 *68* (1973La32), 71.1 *14* (1974Li11), 74.5 *8* (1977Ge12), 74.5 *22* (1978Sa14), 76.47 *27* (1981Ka37), 72.4 *4* (1982Bl28), 75.7 *8* (1982So12), 75.3 *18* (1986Og03), 73.8 *20* (1988Ad05), 76.4 *8* (1989Da18), 72.0 *19* (1992Ar06), 77.5 *6* (1992Wa10), 76.30 *26* (1994Mi22), 76.34 *43* (1996Mo11), 77.3 *7* (2000Hi01), 74.10 *28* (2002Be04). Other: 80.2 *40* (1970Re16). δ: from 1981Kr12. Other δ: −0.024 *29* (1965Re02); +0.01 *2* (1981La27); 0.06 *+11−6* (1963Ge09).
(712.817 *22*)	0.380 *12*	1572.172	$(4)^-$	859.38	3^+	E1		0.00264 *4*	α(K)=0.002243 *31*; α(L)=0.000308 *4*; α(M)=6.75×10^{-5} *9* α(N)=1.568×10^{-5} *22*; α(O)=2.250×10^{-6} *31*; α(P)=1.219×10^{-7} *17* %Iγ=0.276 *9* E_γ: from Adopted Gammas. I_γ: calculated from Iγ(712.89γ):Iγ(496.88γ)=(2.19 *4*):(0.99 *2*) (^{166}Tm ε decay) and I(496.88γ)=0.172 *3*.
736.02 *8*	0.17 *3*	1692.287	5^-	956.224	4^+				%Iγ=0.123 *22* E_γ: from deconvolution of doublet (1988Ad05). I_γ: see comment on 737γ from 1596 level. Doublet intensity has been suitably divided.
736.83 *3*	0.35 *2*	1596.227	$(4)^-$	859.38	3^+	E1		2.47×10^{-3} *4*	α(K)=0.002099 *29*; α(L)=0.000287 *4*; α(M)=6.30×10^{-5} *9* α(N)=1.464×10^{-5} *21*; α(O)=2.102×10^{-6} *29*; α(P)=1.142×10^{-7} *16* %Iγ=0.254 *15* E_γ: from 1988Ad05. Others did not deconvolute observed doublet. Eγ for doublet: 736.70 *7* (1992Ar06), 736.653 *27* (1988Ad05), 736.65 *4* (1986Og03), 736.68 *5* (1982So12), 736.67 *8* (1970Re16); weighted average 736.661 *19*, unweighted average 736.671 *9*. I_γ: from I(640γ) here and I(737γ)/I(640γ)=2.74 *12* in ε

From ENSDF

$^{166}_{68}Er_{98}$-16

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									decay (where the 737γ is not a doublet), I(737γ from 1596 level)=0.351 *18*. From all data in the following, Iγ=0.525 *5* for doublet, so Iγ(737γ from 1692 level) is 0.17 *3*. 0.45 *15* (1967Bu14), 0.50 *5* (1967Gu04), 0.46 *4* (1973La32), 0.45 *5* (1974Li11), 0.506 *24* (1978Sa14), 0.531 *19* (1981Ka37), 0.51 *2* (1982So12), 0.50 *4* (1986Og03), 0.530 *14* (1988Ad05), 0.547 *22* (1989Da18), 0.49 *4* (1992Ar06), 0.510 *12* (1992Wa10), 0.550 *17* (1996Mo11), 0.530 *7* (2002Be04). Other: 0.14 *4* (1970Re16). δ: from Adopted Gammas.
752.313† *12*	16.64 *10*	1827.545	6$^-$	1075.268	5$^+$	E1(+M2)	+0.005 *4*	2.37×10^{-3} *3*	α(K)=0.002015 *28*; α(L)=0.000276 *4*; α(M)=6.04×10^{-5} *8* α(N)=1.404×10^{-5} *20*; α(O)=2.016×10^{-6} *28*; α(P)=1.096×10^{-7} *15* %Iγ=12.06 *8* E_γ: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=752.275. E_γ: weighted average of 752.332 *10* (1992Ar06), 752.281 *19* (1988Ad05), 752.30 *2* (1986Og03), 752.27 *3* (1982So12), 752.27 *4* (1970Re16). I_γ: unweighted average of 16.1 *12* (1967Bu14), 16.06 *40* (1973La32), 15.98 *32* (1974Li11), 16.57 *16* (1977Ge12), 16.6 *5* (1978Sa14), 16.99 *6* (1981Ka37), 16.26 *12* (1982Bl28), 17.0 *2* (1982So12), 17.08 *43* (1986Og03), 16.5 *4* (1988Ad05), 16.98 *22* (1989Da18), 16.2 *5* (1992Ar06), 17.16 *14* (1992Wa10), 16.97 *7* (1994Mi22), 16.98 *9* (1996Mo11), 16.95 *21* (2000Hi01), 16.50 *8* (2002Be04). Others: 15.2 *3* (1967Gu04), 17.9 *10* (1970Re16).
778.818 *12*	4.14 *5*	859.38	3$^+$	80.572	2$^+$	E2+M1	−20 +*2*−*4*	0.00574 *8*	δ: from 1981Kr12. Other δ: 0.00 *2* (1981La27). α(K)=0.00474 *7*; α(L)=0.000777 *11*; α(M)=0.0001742 *24* α(N)=4.04×10^{-5} *6*; α(O)=5.65×10^{-6} *8*; α(P)=2.69×10^{-7} *4* %Iγ=3.00 *4* E_γ: weighted average of 778.818 *18* (1988Ad05), 778.82 *2* (1986Og03), 778.81 *3* (1982So12), 778.82 *4* (1970Re16). Other: 778.862 *12* (1992Ar06) − γ poorly fits if considered. I_γ: unweighted average of 3.8 *3* (1967Bu14), 3.88 *6* (1967Gu04), 4.51 *23* (1970Re16), 3.72 *7* (1973La32), 4.16 *12* (1974Li11), 4.13 *4* (1977Ge12), 4.17 *12*

From ENSDF

$^{166}_{68}Er_{98}$-17

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									(1978Sa14), 4.267 *20* (1981Ka37), 4.00 *3* (1982Bl28), 4.25 *6* (1982So12), 4.22 *14* (1986Og03), 4.13 *10* (1988Ad05), 4.27 *7* (1989Da18), 4.04 *14* (1992Ar06), 4.28 *6* (1992Wa10), 4.257 *25* (1994Mi22), 4.242 *26* (1996Mo11), 4.158 *25* (2002Be04). δ: from 1981Kr12. δ from β^- decay: −18 *+9*−∞ (1975Ba39); (−20 *+2−4* Ho metal; −18 −8+5, neodymium ethyl sulfate) (1981Kr12); −19 *+10*−Infinity (1981La27); −45 *+8−13* (1985Ma22 and 1990Ha34). Note that data from 1981Kr12 and 1990Ha34 do not overlap, however.
785.94 *3*	0.023 *3*	785.933	2^+	0.0	0^+	E2		0.00561 *8*	α(K)=0.00463 *6*; α(L)=0.000759 *11*; α(M)=0.0001700 *24* α(N)=3.94×10^{-5} *6*; α(O)=5.52×10^{-6} *8*; α(P)=2.63×10^{-7} *4* %Iγ=0.0167 *22* E_γ: weighted average of 785.81 *7* (1992Ar06); 785.955 *17* (1992Wa33); 785.90 *7* (1988Ad05); 785.81 *7* (1986Og03). I_γ: unweighted average of 0.019 *4* (1986Og03), 0.023 *3* (1988Ad05), 0.019 *4* (1992Ar06), 0.0312 *10* (1992Wa33).
810.293 *10*	78.9 *6*	1075.268	5^+	264.984	4^+	E2+M1	−21.2 *+18−21*	0.00526 *7*	α(K)=0.00435 *6*; α(L)=0.000705 *10*; α(M)=0.0001578 *22* α(N)=3.66×10^{-5} *5*; α(O)=5.14×10^{-6} *7*; α(P)=2.471×10^{-7} *35* %Iγ=57.2 *5* E_γ: unweighted average of 810.325 *10* (1992Ar06), 810.282 *16* (1988Ad05), 810.27 *1* (1986Og03), 810.28 *2* (1982So12), 810.31 *4* (1970Re16). Data are discrepant; weighted average is 810.294 *13*. I_γ: unweighted average of 76 *8* (1967Bu14), 76.4 *8* (1967Gu04), 85.7 *42* (1970Re16), 76.4 *8* (1973La32), 75.7 *15* (1974Li11), 78.1 *8* (1977Ge12), 78.7 *22* (1978Sa14), 80.39 *30* (1981Ka37), 76.9 *4* (1982Bl28), 80.1 *8* (1982So12), 79.3 *18* (1986Og03), 78.2 *20* (1988Ad05), 80.3 *11* (1989Da18), 76.1 *20* (1992Ar06), 80.8 *6* (1992Wa10), 80.52 *29* (1994Mi22), 80.3 *4* (1996Mo11), 80.4 *7* (2000Hi01), 77.96 *41* (2002Be04), δ: from 1990Ha34. Other δ: −37 *−10+7* (1965Re02); −20 *4* (1975Ba39); 24 *+54−10* (1981Ka37); −20 *+3−4* (1981La27); (−15 *1*, neodymium ethyl sulfate; −21 *2* Ho metal) (1981Kr12); −36 *+7−11* (1985Al22); 1963Ge09.
830.585 *9*	13.29 *9*	1376.027	7^+	545.448	6^+	E2(+M1)	−16.6 *+15−18*	0.00499 *7*	α(K)=0.00414 *6*; α(L)=0.000665 *9*; α(M)=0.0001487 *21* α(N)=3.45×10^{-5} *5*; α(O)=4.85×10^{-6} *7*; α(P)=2.349×10^{-7} *33* %Iγ=9.64 *7* E_γ: weighted average of 830.601 *15* (1992Ar06), 830.583 *18* (1988Ad05), 830.58 *2* (1986Og03), 830.57 *2* (1982So12),

From ENSDF

$^{166}_{68}Er_{98}$-18

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[b]	Comments
								830.56 *4* (1970Re16). I_γ: unweighted average of 12.5 *10* (1967Bu14), 12.9 *3* (1967Gu04), 12.83 *3* (1974Li11), 13.26 *13* (1977Ge12), 13.3 *4* (1978Sa14), 13.57 *6* (1981Ka37), 12.99 *10* (1982Bl28), 13.5 *2* (1982So12), 13.51 *35* (1986Og03), 13.3 *3* (1988Ad05), 13.62 *18* (1989Da18), 12.9 *4* (1992Ar06), 13.87 *18* (1992Wa10), 13.64 *7* (1994Mi22), 13.64 *7* (1996Mo11), 13.49 *17* (2000Hi01), 13.17 *7* (2002Be04). Others: 14.5 *8* (1970Re16), 12.07 *25* (1973La32). δ: from 1981Kr12. Other δ: −70 *−260+30* (1965Re02); −22 *+5−7* (1975Ba39); 63 −44+infinity (1981Ka37); −22 −7+5 (1981La27); (−16.6 −18+15, neodymium ethyl sulfate; −23 *4*, Ho metal) (1981Kr12); −18 *+2−3* (1985Al22); −17.3 *+13−15* (1990Ha34); 1963Ge09.
859.3 *1*	0.049 *10*	859.38	3^+	0.0	0^+			%Iγ=0.036 *+8−7* E_γ: from 1996Mo11. I_γ: weighted average of 0.044 *14* (1996Mo11) and 0.055 *14* (2002Be04). Placement from 1996Mo11.
875.650 *15*	0.998 *6*	956.224	4^+	80.572	2^+	E2	0.00444 *6*	α(K)=0.00369 *5*; α(L)=0.000584 *8*; α(M)=0.0001305 *18* α(N)=3.03×10^{-5} *4*; α(O)=4.27×10^{-6} *6*; α(P)=2.097×10^{-7} *29* %Iγ=0.724 *5* E_γ: weighted average of 875.63 *5* (1992Ar06), 875.658 *21* (1988Ad05), 875.69 *4* (1986Og03), 875.60 *4* (1982So12), 875.64 *5* (1970Re16). I_γ: weighted average of 1.15 *15* (1967Bu14), 0.91 *4* (1967Gu04), 1.08 *8* (1970Re16), 1.14 *7* (1973La32), 1.00 *9* (1974Li11), 0.979 *10* (1977Ge12), 0.99 *3* (1978Sa14), 1.026 *12* (1981Ka37), 0.99 *4* (1982So12), 1.00 *5* (1986Og03), 0.987 *24* (1988Ad05), 1.002 *21* (1989Da18), 0.97 *6* (1992Ar06), 1.003 *21* (1992Wa10), 1.016 *17* (1996Mo11), 0.994 *10* (2002Be04).
950.964 *9*	3.775 *16*	1215.961	6^+	264.984	4^+	E2	0.00373 *5*	α(K)=0.00311 *4*; α(L)=0.000482 *7*; α(M)=0.0001074 *15* α(N)=2.492×10^{-5} *35*; α(O)=3.53×10^{-6} *5*; α(P)=1.771×10^{-7} *25* %Iγ=2.737 *14* E_γ: weighted average of 950.963 *10* (1992Ar06), 950.955 *28* (1988Ad05), 950.97 *3* (1986Og03), 951.00 *4* (1982So12), 950.94 *6* (1970Re16). I_γ: weighted average of 3.6 *6* (1967Bu14), 3.74 *16* (1974Li11), 3.68 *4* (1977Ge12), 3.71 *11* (1978Sa14), 3.800 *18* (1981Ka37), 3.65 *4* (1982Bl28), 3.89 *6* (1982So12), 3.87 *12* (1986Og03), 3.74 *9* (1988Ad05), 3.85 *6* (1989Da18), 3.68 *12* (1992Ar06), 3.90 *5* (1992Wa10), 3.789 *22* (1994Mi22), 3.793 *23* (1996Mo11), 3.709 *26* (2002Be04). Others: 3.16 *12* (1967Gu04), 4.15 *20* (1970Re16), 3.50 *14* (1973La32).
1010.288 *11*	0.1077 *12*	1555.736	8^+	545.448	6^+	E2	0.00329 *5*	α(K)=0.00275 *4*; α(L)=0.000420 *6*; α(M)=9.34×10^{-5} *13* α(N)=2.170×10^{-5} *30*; α(O)=3.08×10^{-6} *4*; α(P)=1.567×10^{-7} *22*

From ENSDF

$^{166}_{68}Er_{98}$-19

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									%Iγ=0.0781 *9* E_γ: weighted average of 1010.27 *6* (1992Ar06), 1010.290 *13* (1992Wa33), 1010.302 *26* (1988Ad05), 1010.27 *6* (1986Og03), 1010.25 *5* (1982So12), 1010.25 *10* (1970Re16). I_γ: weighted average of 0.1 *1* (1967Bu14), 0.11 *3* (1967Gu04), 0.096 *7* (1978Sa14), 0.104 *6* (1981Ka37), 0.11 *1* (1982So12), 0.107 *3* (1988Ad05), 0.11 *2* (1992Ar06), 0.1113 *22* (1992Wa33), 0.107 *6* (1996Mo11), 0.100 *4* (2002Be04), 0.1082 *19* (2006Ku03). Others: 0.123 *14* (1970Re16), 0.13 *3* (1986Og03) – outliers.
1120.330 *11*	0.283 *8*	1665.787	$5^{(-)}$	545.448	6^+				%Iγ=0.205 *6* E_γ: weighted average of 1120.35 *5* (1992Ar06), 1120.329 *14* (1992Wa33), 1120.324 *28* (1988Ad05), 1120.35 *5* (1986Og03), 1120.33 *4* (1982So12), 1120.31 *7* (1970Re16). I_γ: unweighted average of 0.26 *2* (1967Gu04), 0.314 *27* (1970Re16), 0.327 *13* (1978Sa14), 0.28 *5* (1986Og03), 0.268 *6* (1988Ad05), 0.28 *3* (1992Ar06), 0.281 *6* (1992Wa33), 0.278 *10* (1996Mo11), 0.260 *4* (2002Be04). Other: 0.35 *1* (1982So12), 0.30 (1973La32). δ(D,Q)=0.00 *+3–5* (1981La27).
1146.825 *12*	0.280 *2*	1692.287	5^-	545.448	6^+				%Iγ=0.2030 *16* E_γ: weighted average of 1146.81 *9* (1992Ar06), 1146.818 *15* (1992Wa33), 1146.84 *4* (1988Ad05), 1146.83 *5* (1986Og03), 1146.86 *4* (1982So12); 1146.82 *7* (1970Re16). Unweighted average: 1146.830 *7*. I_γ: weighted average of 0.26 *2* (1967Gu04), 0.301 *27* (1970Re16), 0.274 *3* (1977Ge12), 0.271 *13* (1978Sa14), 0.293 *20* (1981Ka37), 0.30 *1* (1982So12), 0.29 *4* (1986Og03), 0.279 *7* (1988Ad05), 0.281 *27* (1989Da18), 0.27 *3* (1992Ar06), 0.29 *6* (1992Wa10), 0.289 *6* (1992Wa33), 0.279 *6* (1996Mo11), 0.278 *7* (2002Be04). Others: 0.38 *6* (1967Bu14), 0.38 *5* (1973La32). δ(D,Q)=−0.02 *+7–6* or +9 *+9–6* (1981La27).
1241.500 *14*	1.15 *2*	1786.962	6^-	545.448	6^+	E1+M2	+0.21 *5*	0.00129 *16*	α(K)=0.00107 *14*; α(L)=0.000147 *21*; α(M)=3.2×10^{-5} *5* α(N)=7.5×10^{-6} *11*; α(O)=1.09×10^{-6} *16*; α(P)=6.1×10^{-8} *9*; α(IPF)=3.83×10^{-5} *9* %Iγ=0.834 *15* E_γ: weighted average of 1241.52 *2* (1992Ar06), 1241.484 *28* (1988Ad05); 1241.47 *4* (1986Og03), 1241.51 *4* (1982So12), 1241.44 *6* (1970Re16). Unweighted average is 1241.485 *14*. I_γ: unweighted average of 1.25 *25* (1967Bu14), 1.06 *4* (1967Gu04), 1.22 *5* (1973La32), 1.17 *12* (1974Li11), 1.098 *13* (1977Ge12), 1.14 *3* (1978Sa14), 1.071 *31* (1981Ka37), 1.21 *4* (1982So12), 1.21 *6*

From ENSDF

$^{166}_{68}Er_{98}$-20

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
									(1986Og03), 1.118 *25* (1988Ad05), 1.116 *32* (1989Da18), 1.14 *5* (1992Ar06), 1.211 *10* (1992Wa10), 1.121 *13* (1996Mo11), 1.099 *12* (2002Be04). Other: 1.37 *7* (1970Re16). δ: from 1981La27. Other δ: −0.09 *6* (1965Re02); +0.21 *12* (1981La27).
1261.98[d] *12*	0.010 *1*	1527.12?	2^+	264.984	4^+				%Iγ=0.0073 *8* E_γ,I_γ: from 1986Og03. Note that adopted Eγ=1263.412 *16* and that adopted Iγ is comparable to that of 1447γ.
1282.058 *15*	0.255 *6*	1827.545	6^-	545.448	6^+	(E1+M2)	0.20 *11*	0.00121 *35*	α(K)=9.8×10^{-4} *30*; α(L)=1.3×10^{-4} *4*; α(M)=3.0×10^{-5} *10* α(N)=6.9×10^{-6} *23*; α(O)=1.00×10^{-6} *34*; α(P)=5.6×10^{-8} *19*; α(IPF)=5.65×10^{-5} *27* %Iγ=0.185 *5* E_γ: weighted average of 1282.06 *6* (1992Ar06), 1282.050 *19* (1992Wa33), 1282.08 *4* (1988Ad05), 1282.06 *6* (1986Og03), 1282.07 *4* (1982So12). Other: 1282.12 *7* (1970Re16) − statistical outlier. I_γ: unweighted average of 0.22 *2* (1967Gu04) 0.24 *5* (1974Li11), 0.241 *4* (1977Ge12), 0.246 *12* (1978Sa14), 0.226 *18* (1981Ka37), 0.29 *1* (1982So12), 0.28 *4* (1986Og03), 0.24 *8* (1988Ad05), 0.271 *18* (1989Da18), 0.27 *3* (1992Ar06), 0.268 *12* (1992Wa10), 0.263 *5* (1992Wa33), 0.2434 *27* (1996Mo11), 0.255 *6* (2002Be04). Others: 0.314 *27* (1970Re16), 0.38 *4* (1973La32). Mult.: from decay scheme. δ: from 1981La27.
1306.74 *24*	0.0076 *14*	1572.172	$(4)^-$	264.984	4^+				%Iγ=0.0055 *10* E_γ: unweighted average of 1306.60 *15* (1992Ar06), 1306.90 *3* (1992Wa33), 1307.30 *8* (1988Ad05) and 1306.16 *15* (1986Og03). (weighted average is 1306.91 *11*.). I_γ: unweighted average of 0.010 *2* (1986Og03), 0.0044 *4* (1988Ad05), 0.010 *2* (1992Ar06), 0.00615 *23* (1992Wa33).
1331.17 *11*	0.0069 *19*	1596.227	$(4)^-$	264.984	4^+				%Iγ=0.0050 *14* E_γ: weighted average of 1331.04 *13* (1992Ar06), 1331.5 *5* (1992Wa33), 1331.45 *14* (1988Ad05), 1331.04 *13* (1986Og03). Unweighted average is 1331.26 *13*. I_γ: unweighted average of 0.010 *1* (1986Og03), 0.0051 *6* (1988Ad05), 0.010 *2* (1992Ar06), 0.0025 *10* (1992Wa33).

From ENSDF

$^{166}_{68}Er_{98}$-21

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
1400.770 *15*	0.696 *5*	1665.787	$5^{(-)}$	264.984	4^+	E1(+M2)	+0.025 *+18−26*	8.81×10^{-4} *14*	α(K)=0.000643 *11*; α(L)=8.56×10^{-5} *15*; α(M)=1.872×10^{-5} *33* α(N)=4.35×10^{-6} *8*; α(O)=6.31×10^{-7} *11*; α(P)=3.54×10^{-8} *6*; α(IPF)=0.0001285 *18* %Iγ=0.505 *4* E_γ: weighted average of 1400.79 *2* (1992Ar06), 1400.75 *4* (1988Ad05); 1400.76 *5* (1986Og03); 1400.73 *4* (1982So12), 1400.72 *8* (1970Re16). Unweighted average is 1400.750 *12*. I_γ: weighted average of 0.72 *2* (1967Gu04), 0.75 *4* (1970Re16), 0.67 *7* (1977Ge12), 0.686 *21* (1978Sa14), 0.702 *27* (1981Ka37), 0.74 *2* (1982So12), 0.76 *4* (1986Og03), 0.672 *16* (1988Ad05), 0.72 *25* (1989Da18), 0.7 *3* (1992Ar06), 0.707 *17* (1992Wa10), 0.689 *6* (1996Mo11), 0.697 *10* (2002Be04). Other: 0.86 *5* (1973La32). δ: from Adopted Gammas. Other δ: +0.05 *+5−7* (1981La27).
1427.227[†] *21*	0.685 *5*	1692.287	5^-	264.984	4^+	E1(+M2)	−0.002 *+22−31*	8.72×10^{-4} *13*	α(K)=0.000620 *10*; α(L)=8.24×10^{-5} *14*; α(M)=1.802×10^{-5} *30* α(N)=4.19×10^{-6} *7*; α(O)=6.07×10^{-7} *10*; α(P)=3.42×10^{-8} *6*; α(IPF)=0.0001465 *21* %Iγ=0.497 *4* E_γ: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=1427.296. E_γ: weighted average of 1427.24 *2* (1992Ar06), 1427.24 *6* (1988Ad05), 1427.17 *5* (1986Og03), 1427.25 *4* (1982So12), 1427.05 *8* (1970Re16). I_γ: weighted average of 0.69 *7* (1967Bu14), 0.69 *2* (1967Gu04), 0.65 *3* (1973La32), 0.666 *10* (1977Ge12), 0.667 *21* (1978Sa14), 0.701 *27* (1981Ka37), 0.72 *2* (1982So12), 0.673 *17* (1988Ad05), 0.708 *18* (1989Da18), 0.68 *3* (1992Ar06), 0.705 *28* (1992Wa10), 0.696 *6* (1996Mo11), 0.664 *10* (2002Be04). Others: 0.81 *4* (1970Re16), 0.77 *4* (1986Og03). Mult.,δ: from Adopted Levels. Other δ: −0.025 *25* (1981La27).
1433.42 *25*	0.00054 *25*	1514.00	3^-	80.572	2^+	E1+M2	+0.054 *+19−27*	8.86×10^{-4} *18*	α(K)=0.000628 *14*; α(L)=8.37×10^{-5} *20*; α(M)=1.83×10^{-5} *4* α(N)=4.26×10^{-6} *10*; α(O)=6.17×10^{-7} *15*;

From ENSDF

^{166}Ho β^- decay (1132.6 y) (continued)

$\gamma(^{166}Er)$ (continued)

E_γ[‡]	I_γ[#c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	Comments
							α(P)=3.47×10^{-8} *8*; α(IPF)=0.0001503 *21* %Iγ=3.9×10^{-4} *18* E_γ,I_γ: from 1992Wa33.
1446.72[d] *13*	≤0.01	1527.12?	2$^+$	80.572	2$^+$	M1+E2+E0	%Iγ≤0.003 E_γ: from 1986Og03. Other: 1446.7 *2* (1992Ar06). I_γ: from 1992Ar06 and 1986Og03.
1521.86 *5*	0.0224 *8*	1786.962	6$^-$	264.984	4$^+$		%Iγ=0.0162 *6* E_γ: from 1992Wa33; measured using 50 mm thick Pb filter. I_γ: from 1992Wa33. Other: 0.018 *5* (1988Ad12).
1562.31 *14*	0.0047 *4*	1827.545	6$^-$	264.984	4$^+$		%Iγ=0.00341 *29* E_γ: from 1992Wa33; measured with 50 mm thick Pb filter. I_γ: from 0.0047 *4* (1992Wa33). Other: 0.0040 *11* (1988Ad12).

† Poor fit; uncertainty multiplied by a factor in the fitting.

‡ From 1970Re16 (semi γ), 1982So12 (semi γ), 1986Og03 (HPGe γ), 1988Ad05 (Ge(Li) anti-compt), 1992Ar06 (HPGe, LEPS), 1992Wa33 (HPGe), 1996Mo11, 1975Mo13, 1973La32, 1967Bu14, 1967Gu04. Specific details in the comments.

Relative to I(184γ)=100 from the available data listed in the comments. 1970Re16, 1989Da18, 1994Mi22, 1996Mo11, 2000Hi01 (preliminary), 2002Be04, and 2006Ku03 report %Iγ data − these are converted relative to I(184γ)=100 and considered in averaging. 2018Pe02 data are also %Iγ, however, the reported uncertainties are inconsistent with authors note that the efficiency curve uncertainty is 0.6-2.0%, when the reported uncertainty for more than 60% are less than 0.6%. 2018Pe02 data are not considered in averaging. 1977Ge12, 1981Ka37, and 1989Da18 report their data relative to I(810γ) =100; values have been scaled so I(184γ)=100. Other: 1965Re02 (NaI(Tl)).

@ Eγ and branching assumed from Adopted Gammas.

& The recommended I(521γ)=0.227 *6* is for a doublet. Based on I(786γ+705γ)=0.045 *9* here and the adopted 786 level branching of I(521γ)/I(786γ+705γ)=0.00911 *25*, I(521γ from 786 level)=0.00041 *8* is expected in this decay. This represents a negligible fraction of the doublet intensity, so I(521γ from 1596 level)=0.227 *6* is adopted.

[a] From Adopted Gammas.

[b] Additional information 3.

[c] For absolute intensity per 100 decays, multiply by 0.725 *2*.

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

[x] γ ray not placed in level scheme.

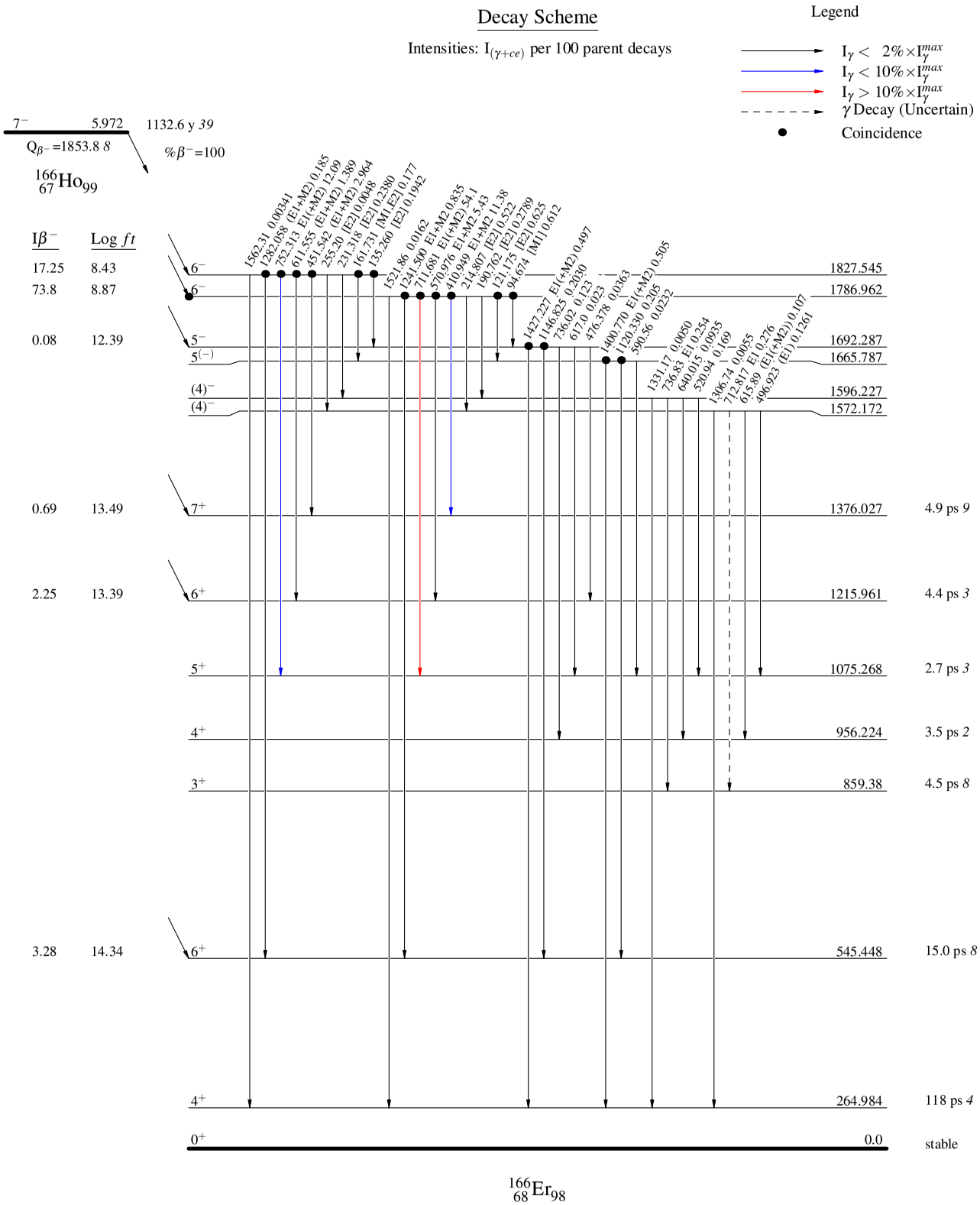
From ENSDF

$^{166}_{68}Er_{98}$-23

^{166}Ho β^- decay (1132.6 y)

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{166}Ho β^- decay (1132.6 y)

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

