$^{166}_{67}\mathrm{Ho}_{99}$

1 Decay Scheme

Ho-166 decays by beta minus emission to excited states of Er-166.
L'holmium 166 se désintègre uniquement par émission bêta moins vers les états excités d'erbium 166.

2 Nuclear Data

$T_{1/2}(^{166}\mathrm{Ho}\ )$: 26,795 (29) h
$Q^-(^{166}\mathrm{Ho}\ )$: 1854,5 (9) keV

2.1 β^- Transitions

	Energy keV	Probability × 100	Nature	lg ft
$\beta^-_{0,8}$	24,1 (9)	0,0353 (11)		5
$\beta^-_{0,7}$	41,7 (9)	0,00010 (3)	1st forbidden	12,1
$\beta^-_{0,6}$	192,0 (9)	0,304 (7)	Allowed	6,9
$\beta^-_{0,5}$	326,2 (9)	0,00276 (22)	Unique 1st forbidden	9,5
$\beta^-_{0,4}$	394,5 (9)	0,955 (16)	1st forbidden	7,4
$\beta^-_{0,3}$	1068,6 (9)	0,0072 (21)	Unique 1st forbidden	11,6
$\beta^-_{0,1}$	1773,9 (9)	50,5 (15)	Unique 1st forbidden	9
$\beta^-_{0,0}$	1854,5 (9)	48,2 (15)	1st forbidden	8,1

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L (10^{-2})	α_M (10^{-2})	α_T
$\gamma_{1,0}$(Er)	80,5725 (13)	51,7 (11)	E2	1,65 (5)	401 (8)	97,8 (20)	6,90 (14)
$\gamma_{2,1}$(Er)	184,4107 (21)	0,0020 (9)	E2	0,205 (6)	9,84 (30)	2,36 (7)	0,333 (10)
$\gamma_{3,2}$(Er)	520,80 (7)	0,00036 (2)	E2	0,01192 (36)	0,234 (7)	0,0535 (16)	0,0149 (5)
$\gamma_{4,3}$(Er)	674,25 (7)	0,0200 (17)	E2	0,00653 (20)	0,1138 (34)	0,0257 (8)	0,00799 (24)

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L (10^{-2})	α_M (10^{-2})	α_T
$\gamma_{3,1}$(Er)	705,21 (7)	0,0147 (12)	E2+M1	0,00591 (18)	0,1012 (30)	0,0228 (7)	0,00721 (22)
$\gamma_{3,0}$(Er)	785,78 (7)	0,0121 (3)	E2	0,00467 (14)	0,0769 (23)	0,0173 (5)	0,00566 (17)
$\gamma_{5,2}$(Er)	1263,25 (15)	0,00155 (9)	E2(+M3)	0,0018 (2)	0,03 (1)	0,0058 (2)	0,0021 (2)
$\gamma_{4,1}$(Er)	1379,452 (10)	0,935 (35)	E2	0,00151 (5)	0,022 (1)	0,0048 (2)	0,00179 (5)
$\gamma_{5,1}$(Er)	1447,66 (15)	0,00105 (10)	E2(+E0)	0,00138 (4)	0,0198 (6)	0,0044 (2)	0,00163 (5)
$\gamma_{4,0}$(Er)	1460,025 (10)	0,0003	E0	0,3			
$\gamma_{5,0}$(Er)	1528,23 (15)	0,00014 (5)	E2	0,00125 (4)	0,0178 (5)		0,00147 (4)
$\gamma_{6,1}$(Er)	1581,860 (15)	0,186 (4)	E1+(M2)	0,0006 (1)			
$\gamma_{6,0}$(Er)	1662,433 (15)	0,118 (5)	E1	0,000484 (15)			
$\gamma_{7,1}$(Er)	1732,2 (5)	0,000046 (20)	M1(+E2)	0,0015 (2)			
$\gamma_{8,1}$(Er)	1749,846 (24)	0,0272 (10)	E1(+M2)	0,0005 (2)			
$\gamma_{7,0}$(Er)	1812,8 (5)	0,000056 (19)	E1(+M2)	0,0004 (2)			
$\gamma_{8,0}$(Er)	1830,419 (24)	0,0081 (2)	E1	0,000413 (12)			

3 Atomic Data

3.1 Er

ω_K : 0,942 (4)
$\bar{\omega}_L$: 0,216 (9)
n_{KL} : 0,838 (4)

3.1.1 X Radiations

		Energy keV		Relative probability
X_K				
	Kα_2	48,2215		56,34
	Kα_1	49,1282		100
	Kβ_3	55,495	}	
	Kβ_1	55,682	}	
	Kβ_5''	56,04	}	32,5
	Kβ_2	57,21	}	
	Kβ_4	57,313	}	8,45
	$KO_{2,3}$	57,456	}	
X_L				
	Lℓ	6,14		
	Lα	6,9 – 6,95		
	Lη	7,05		
	Lβ	7,75 – 8,34		
	Lγ	8,81 – 9,43		

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	37,78 – 40,55	100
KLX	45,52 – 49,10	52,4
KXY	53,07 – 57,84	6,86
Auger L	3,9 – 7,6	

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
e_{AL}	(Er)	3,9 - 7,6	28,0 (6)
e_{AK}	(Er)		0,63 (5)
	KLL	37,78 - 40,55 }	
	KLX	45,52 - 49,10 }	
	KXY	53,07 - 57,84 }	
$ec_{1,0\ T}$	(Er)	23,09 - 80,54	45,2 (15)
$ec_{1,0\ K}$	(Er)	23,090 (2)	10,81 (35)
$ec_{1,0\ L}$	(Er)	70,82 - 72,22	26,3 (8)
$ec_{1,0\ M}$	(Er)	78,37 - 79,16	6,41 (21)
$ec_{1,0\ N}$	(Er)	80,12 - 80,57	1,493 (49)
$\beta^-_{0,8}$	max:	24,1 (9)	0,0353 (11)
$\beta^-_{0,8}$	avg:	7,1 (10)	
$\beta^-_{0,7}$	max:	41,7 (9)	0,00010 (3)
$\beta^-_{0,7}$	avg:	13 (2)	
$\beta^-_{0,6}$	max:	192,0 (9)	0,304 (7)
$\beta^-_{0,6}$	avg:	52 (1)	
$\beta^-_{0,5}$	max:	326,2 (9)	0,00276 (22)
$\beta^-_{0,5}$	avg:	93 (3)	
$\beta^-_{0,4}$	max:	394,5 (9)	0,955 (16)
$\beta^-_{0,4}$	avg:	115 (3)	
$\beta^-_{0,3}$	max:	1068,6 (9)	0,0072 (21)
$\beta^-_{0,3}$	avg:	356 (9)	
$\beta^-_{0,1}$	max:	1773,9 (9)	50,5 (15)
$\beta^-_{0,1}$	avg:	651,1 (6)	
$\beta^-_{0,0}$	max:	1854,5 (9)	48,2 (15)
$\beta^-_{0,0}$	avg:	693,8 (6)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV		Photons per 100 disint.	
XL	(Er)	6,14 — 9,43		7,91 (18)	
XKα_2	(Er)	48,2215		2,91 (10)	} Kα
XKα_1	(Er)	49,1282		5,16 (17)	}
XKβ_3	(Er)	55,495	}		
XKβ_1	(Er)	55,682	}	1,68 (6)	K$'\beta_1$
XKβ''_5	(Er)	56,04	}		
XKβ_2	(Er)	57,21	}		
XKβ_4	(Er)	57,313	}	0,436 (18)	K$'\beta_2$
XKO$_{2,3}$	(Er)	57,456	}		

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}$(Er)	80,5725 (13)	6,55 (8)
$\gamma_{2,1}$(Er)	184,4107 (11)	0,0015 (7)
$\gamma_{3,2}$(Er)	520,80 (7)	0,00035 (2)
$\gamma_{4,3}$(Er)	674,24 (7)	0,0198 (17)
$\gamma_{3,1}$(Er)	705,21 (7)	0,0146 (12)
$\gamma_{3,0}$(Er)	785,78 (7)	0,0120 (3)
$\gamma_{5,2}$(Er)	1263,24 (15)	0,00155 (9)
$\gamma_{4,1}$(Er)	1379,446 (10)	0,933 (35)
$\gamma_{5,1}$(Er)	1447,66 (15)	0,00105 (10)
$\gamma_{4,0}$(Er)	1460,018 (10)	0,0002
$\gamma_{5,0}$(Er)	1528,23 (15)	0,00014 (5)
$\gamma_{6,1}$(Er)	1581,852 (15)	0,186 (4)
$\gamma_{6,0}$(Er)	1662,424 (15)	0,118 (5)
$\gamma_{7,1}$(Er)	1732,2 (5)	0,000046 (20)
$\gamma_{8,1}$(Er)	1749,837 (14)	0,0272 (10)
$\gamma_{7,0}$(Er)	1812,8 (5)	0,000056 (19)
$\gamma_{8,0}$(Er)	1830,408 (24)	0,0081 (2)

6 Main Production Modes

Ho − 165 (E = thermal)(n,γ)Ho − 166

Ho − 165(d,p)Ho − 166

Ho − 165(d,pg)Ho − 166

Er − 167(t)Ho − 166

Dy − 166 decay, $T_{1/2}$ = 81,6 h()

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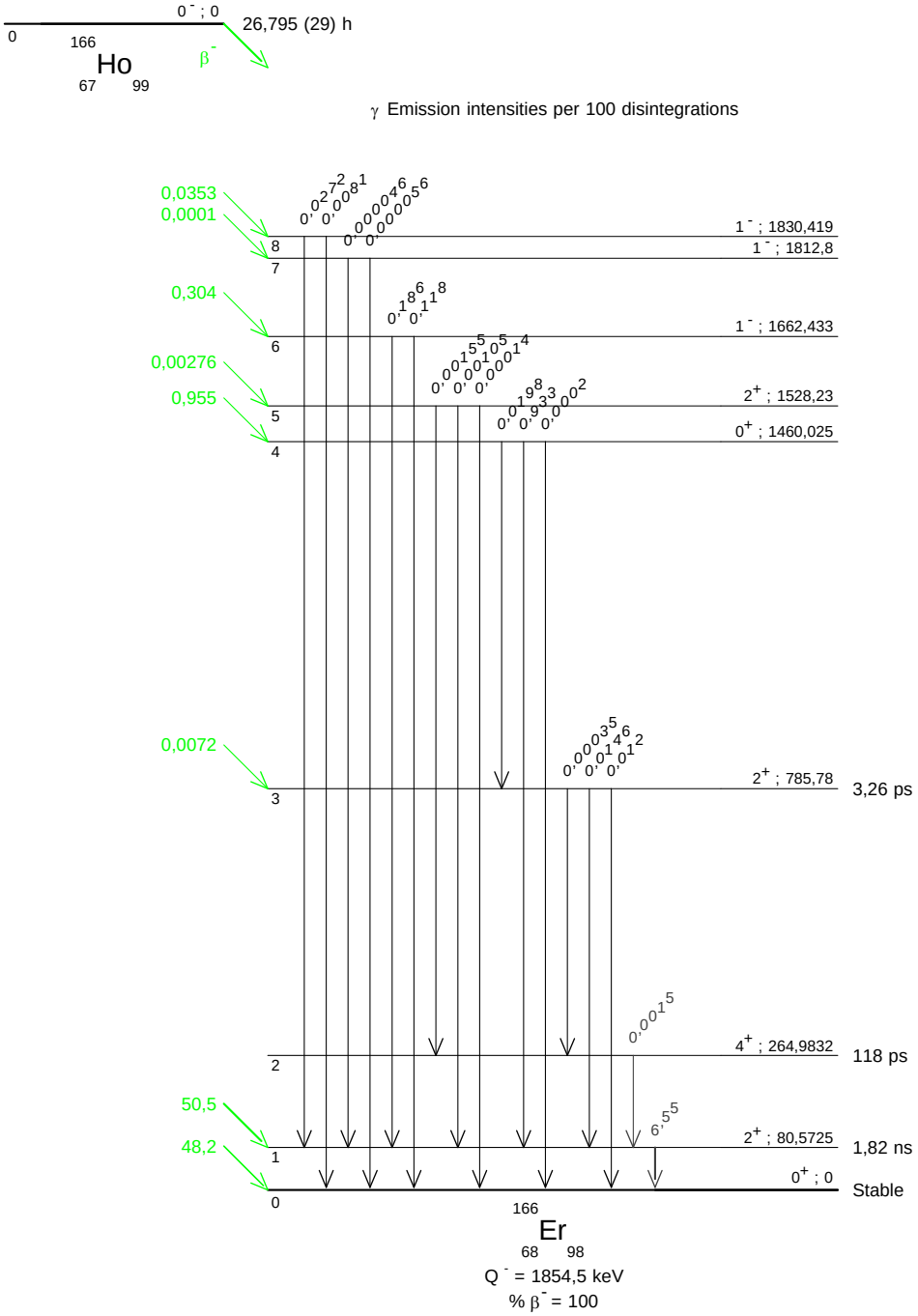
0 - ; 0
26,795 (29) h
0
166
Ho
67 99
β -
γ Emission intensities per 100 disintegrations
0,0353
0,0001
1 - ; 1830,419
8
1 - ; 1812,8
7
0,304
1 - ; 1662,433
6
0,00276
0,955
2+ ; 1528,23
5
0+ ; 1460,025
4
0,0072
2+ ; 785,78
3,26 ps
3
4+ ; 264,9832
118 ps
2
50,5
48,2
2+ ; 80,5725
1,82 ns
1
0+ ; 0
Stable
0
166
Er
68 98
Q - = 1854,5 keV
% β- = 100