T. Tachibana, M. Uno, M. Yamada, and S. Yamada Masses

† Nuclide is unstable to one-particle emission
‡ Nuclide is unstable to two-particle, but not one particle emission

Isotope	Mass Excess
^{2}H	13.110
^{3}H	14.500
^{4}H	26.320 †
^{5}H	32.200 ‡
^{6}H	43.220 †
^{3}He	14.360
^{4}He	0.050
^{5}He	13.650 †
^{6}He	17.210 ‡
^{7}He	27.440 †
^{8}He	30.750
^{9}He	42.500 †
^{10}He	50.670 †
^{11}He	65.460 †
^{12}He	75.040 †
^{13}He	89.340 †
^{14}He	98.930 †
^{4}Li	26.550 †
^{5}Li	13.970 †
^{6}Li	11.630
^{7}Li	14.730
^{8}Li	21.660
^{9}Li	24.220
^{10}Li	32.560 †
^{11}Li	39.670
^{12}Li	51.150 †
^{13}Li	59.850 †
^{14}Li	71.240 †
^{15}Li	80.160 †
^{5}Be	33.470 ‡
^{6}Be	18.450 ‡
^{7}Be	15.580
^{8}Be	6.280
^{9}Be	12.540
^{10}Be	12.020
^{11}Be	19.590
^{12}Be	23.550
^{13}Be	34.200 †
^{14}Be	39.970 ‡
^{15}Be	50.700 †
^{16}Be	56.990 ‡
^{17}Be	68.300 †
^{18}Be	75.130 ‡
^{19}Be	87.800 †
^{20}Be	97.620 †
^{21}Be	111.510 †
^{22}Be	122.200 †
^{6}B	45.740 †
^{7}B	29.780 †
^{8}B	23.560 †
^{9}B	13.570 †
^{10}B	9.440
^{11}B	8.260
^{12}B	12.810
^{13}B	16.000
^{14}B	23.770
^{15}B	28.840
^{16}B	36.950 †
^{17}B	42.680
^{18}B	51.580 †
^{19}B	57.960
^{20}B	68.390 †
^{21}B	77.760 †
^{22}B	89.570 †
^{23}B	99.900 †
^{7}C	54.840 †
^{8}C	35.160 ‡
^{9}C	28.070

Isotope	Mass Excess
^{10}C	14.930
^{11}C	10.090
^{13}C	3.840
^{14}C	4.140
^{15}C	11.220
^{16}C	13.600
^{17}C	21.130
^{18}C	24.380
^{19}C	32.780 †
^{20}C	36.860
^{21}C	46.840 †
^{22}C	54.070 ‡
^{23}C	65.500 †
^{24}C	73.830 †
^{25}C	85.920 †
^{26}C	94.560 †
^{10}N	38.830 †
^{11}N	24.850 †
^{12}N	16.930
^{13}N	6.110
^{14}N	2.030
^{15}N	1.550
^{16}N	5.860
^{17}N	7.560
^{18}N	12.570
^{19}N	15.240
^{20}N	21.330
^{21}N	24.920
^{22}N	32.730
^{23}N	39.490
^{24}N	48.880 †
^{25}N	56.810 ‡
^{26}N	67.000 †
^{27}N	75.310 †
^{28}N	87.400 †
^{29}N	96.930 †
^{10}O	59.970 †
^{11}O	48.210 †
^{12}O	31.020 ‡
^{13}O	22.290
^{14}O	8.560
^{15}O	3.710
^{16}O	-3.950
^{17}O	-0.400
^{18}O	-1.340
^{19}O	3.050
^{20}O	3.300
^{21}O	8.840
^{22}O	10.220
^{23}O	17.530
^{24}O	22.160
^{25}O	31.110 †
^{26}O	37.040
^{27}O	46.860 †
^{28}O	53.320 ‡
^{29}O	65.050 †
^{30}O	72.840 ‡
^{31}O	84.080 †
^{32}O	91.830 ‡
^{33}O	102.850 †
^{34}O	111.060 †
^{12}F	62.850 †
^{13}F	44.750 †
^{14}F	33.050 †
^{15}F	18.600 †
^{16}F	10.970
^{17}F	2.510
^{18}F	-0.440
^{19}F	-2.110
^{20}F	-0.170

Isotope	Mass Excess
^{21}F	-0.510
^{22}F	2.780
^{23}F	3.660
^{24}F	8.850
^{25}F	12.960
^{26}F	19.900
^{27}F	25.380
^{28}F	33.320
^{29}F	39.400
^{30}F	49.320 †
^{31}F	56.760 ‡
^{32}F	66.360 †
^{33}F	73.830 ‡
^{34}F	83.330 †
^{35}F	91.310 ‡
^{36}F	101.180 †
^{37}F	109.420 †
^{38}F	120.950 †
^{39}F	131.780 †
^{13}Ne	75.090 †
^{14}Ne	53.980 †
^{15}Ne	41.520 †
^{16}Ne	24.340 ‡
^{17}Ne	15.990
^{18}Ne	4.870
^{19}Ne	1.170
^{20}Ne	-6.410
^{21}Ne	-5.100
^{22}Ne	-7.750
^{23}Ne	-5.010
^{24}Ne	-6.280
^{25}Ne	-1.590
^{26}Ne	0.450
^{27}Ne	6.930
^{28}Ne	10.460
^{29}Ne	18.000
^{30}Ne	22.270
^{31}Ne	31.800 †
^{32}Ne	37.520
^{33}Ne	46.800 †
^{34}Ne	52.680
^{35}Ne	61.930 †
^{36}Ne	68.410
^{37}Ne	78.060 †
^{38}Ne	84.870 ‡
^{39}Ne	96.190 †
^{40}Ne	105.630 †
^{41}Ne	117.990 †
^{42}Ne	128.040 †
^{16}Na	53.400 †
^{17}Na	35.600 †
^{18}Na	24.700 †
^{19}Na	12.900 †
^{20}Na	6.750
^{21}Na	-1.480
^{22}Na	-5.550
^{23}Na	-8.760
^{24}Na	-8.160
^{25}Na	-9.920
^{26}Na	-7.260
^{27}Na	-5.700
^{28}Na	-1.140
^{29}Na	1.960
^{30}Na	7.690
^{31}Na	11.580
^{32}Na	19.380
^{33}Na	24.760
^{34}Na	32.440
^{35}Na	38.030
^{36}Na	45.770
^{37}Na	51.990

Isotope	Mass Excess
^{38}Na	60.210 †
^{39}Na	66.810
^{40}Na	76.750 †
^{41}Na	85.970 †
^{42}Na	97.000 †
^{43}Na	106.860 †
^{16}Mg	79.060 †
^{17}Mg	63.270 †
^{18}Mg	42.920 †
^{19}Mg	31.410 ‡
^{20}Mg	17.160
^{21}Mg	10.390
^{22}Mg	-0.160
^{23}Mg	-4.800
^{24}Mg	-13.020
^{25}Mg	-12.950
^{26}Mg	-16.770
^{27}Mg	-14.580
^{28}Mg	-15.000
^{29}Mg	-10.870
^{30}Mg	-9.630
^{31}Mg	-4.300
^{32}Mg	-2.150
^{33}Mg	5.290
^{34}Mg	9.010
^{35}Mg	16.360
^{36}Mg	20.390
^{37}Mg	27.850
^{38}Mg	32.580
^{39}Mg	40.560
^{40}Mg	45.750
^{41}Mg	55.460 †
^{42}Mg	63.320 ‡
^{43}Mg	74.140 †
^{44}Mg	82.700 †
^{45}Mg	94.300 †
^{46}Mg	103.020 †
^{47}Mg	115.110 †
^{48}Mg	124.040 †
^{49}Mg	136.500 †
^{50}Mg	145.620 †
^{20}Al	42.020 †
^{21}Al	27.170 †
^{22}Al	18.120 †
^{23}Al	7.010
^{24}Al	0.210
^{25}Al	-8.550
^{26}Al	-13.100
^{27}Al	-17.410
^{28}Al	-17.170
^{29}Al	-18.050
^{30}Al	-15.760
^{31}Al	-14.950
^{32}Al	-11.360
^{33}Al	-9.590
^{34}Al	-3.820
^{35}Al	-0.440
^{36}Al	5.340
^{37}Al	9.060
^{38}Al	15.030
^{39}Al	19.490
^{40}Al	26.060
^{41}Al	31.010
^{42}Al	39.360 †
^{43}Al	46.980
^{44}Al	56.510 †
^{45}Al	64.860 †
^{46}Al	75.210 †
^{47}Al	83.750 †
^{48}Al	94.650 †
^{49}Al	103.420 †

Isotope	Mass Excess
^{50}Al	114.740 †
^{51}Al	123.710 †
^{52}Al	135.160 †
^{53}Al	144.680 †
^{20}Si	64.950 †
^{21}Si	50.540 †
^{22}Si	33.430 ‡
^{23}Si	23.840
^{24}Si	10.540
^{25}Si	3.240
^{26}Si	-7.590
^{27}Si	-12.640
^{28}Si	-21.320
^{29}Si	-21.540
^{30}Si	-24.290
^{31}Si	-22.430
^{32}Si	-23.390
^{33}Si	-20.190
^{34}Si	-20.110
^{35}Si	-14.690
^{36}Si	-12.920
^{37}Si	-7.460
^{38}Si	-5.280
^{39}Si	0.410
^{40}Si	3.410
^{41}Si	9.690
^{42}Si	13.210
^{43}Si	21.320 †
^{44}Si	27.640
^{45}Si	36.960 †
^{46}Si	44.050 ‡
^{47}Si	54.220 †
^{48}Si	61.540 ‡
^{49}Si	72.270 †
^{50}Si	79.870 ‡
^{51}Si	91.040 †
^{52}Si	98.890 ‡
^{53}Si	110.200 †
^{54}Si	118.640 †
^{55}Si	130.350 †
^{56}Si	138.940 †
^{57}Si	150.890 †
^{58}Si	159.380 †
^{59}Si	171.190 †
^{60}Si	179.950 †
^{61}Si	191.820 †
^{62}Si	200.680 †
^{63}Si	212.440 †
^{64}Si	221.390 †
^{22}P	63.200 †
^{23}P	45.560 †
^{24}P	33.830 †
^{25}P	20.020 †
^{26}P	10.670 †
^{27}P	-0.650
^{28}P	-7.640
^{29}P	-16.790
^{30}P	-21.100
^{31}P	-24.300
^{32}P	-24.220
^{33}P	-25.600
^{34}P	-24.080
^{35}P	-24.390
^{36}P	-20.590
^{37}P	-19.170
^{38}P	-15.240
^{39}P	-13.370
^{40}P	-9.140
^{41}P	-6.430
^{42}P	-1.540
^{43}P	1.690

Isotope	Mass Excess
^{44}P	8.460
^{45}P	14.570
^{46}P	22.610
^{47}P	29.480
^{48}P	38.410 †
^{49}P	45.530
^{50}P	55.080 †
^{51}P	62.500 ‡
^{52}P	72.530 †
^{53}P	80.230 ‡
^{54}P	90.450 †
^{55}P	98.740 †
^{56}P	109.410 †
^{57}P	117.870 †
^{58}P	128.810 †
^{59}P	137.190 †
^{60}P	148.030 †
^{61}P	156.690 †
^{62}P	167.620 †
^{63}P	176.370 †
^{64}P	187.200 †
^{65}P	196.010 †
^{66}P	208.640 †
^{67}P	220.770 †
^{23}S	75.520 †
^{24}S	55.690 †
^{25}S	43.400 †
^{26}S	27.480 †
^{27}S	17.630
^{28}S	4.330
^{29}S	-3.140
^{30}S	-14.160
^{31}S	-18.930
^{32}S	-26.070
^{33}S	-26.440
^{34}S	-29.590
^{35}S	-28.480
^{36}S	-30.450
^{37}S	-27.060
^{38}S	-27.230
^{39}S	-23.640
^{40}S	-23.270
^{41}S	-19.340
^{42}S	-18.050
^{43}S	-13.410
^{44}S	-11.490
^{45}S	-4.980
^{46}S	-0.270
^{47}S	7.500
^{48}S	13.070
^{49}S	21.750 †
^{50}S	27.640
^{51}S	36.970 †
^{52}S	43.220
^{53}S	53.050 †
^{54}S	59.620 ‡
^{55}S	69.660 †
^{56}S	76.880 ‡
^{57}S	87.380 †
^{58}S	94.810 ‡
^{59}S	105.610 †
^{60}S	113.010 ‡
^{61}S	123.730 †
^{62}S	131.450 ‡
^{63}S	142.290 †
^{64}S	150.150 ‡
^{65}S	160.950 †
^{66}S	169.000 ‡
^{67}S	181.500 †
^{68}S	192.620 †
^{26}Cl	56.070 †

Isotope	Mass Excess
^{27}Cl	39.670 †
^{28}Cl	27.870 †
^{29}Cl	14.100 †
^{30}Cl	4.780 †
^{31}Cl	-6.660 †
^{32}Cl	-13.230
^{33}Cl	-20.820
^{34}Cl	-24.870
^{35}Cl	-28.440
^{36}Cl	-28.990
^{37}Cl	-31.340
^{38}Cl	-29.530
^{39}Cl	-30.080
^{40}Cl	-27.990
^{41}Cl	-27.930
^{42}Cl	-25.420
^{43}Cl	-24.420
^{44}Cl	-21.130
^{45}Cl	-19.450
^{46}Cl	-14.260
^{47}Cl	-9.840
^{48}Cl	-3.350
^{49}Cl	1.960
^{50}Cl	9.420
^{51}Cl	15.080
^{52}Cl	23.220 †
^{53}Cl	29.270
^{54}Cl	37.960 †
^{55}Cl	44.350
^{56}Cl	53.310 †
^{57}Cl	60.360
^{58}Cl	69.810 †
^{59}Cl	77.100 ‡
^{60}Cl	86.890 †
^{61}Cl	94.170 ‡
^{62}Cl	103.930 †
^{63}Cl	111.540 ‡
^{64}Cl	121.450 †
^{65}Cl	129.230 ‡
^{66}Cl	139.140 †
^{67}Cl	147.140 ‡
^{68}Cl	158.740 †
^{69}Cl	169.730 †
^{27}Ar	67.380 †
^{28}Ar	49.000 †
^{29}Ar	36.750 †
^{30}Ar	21.110 ‡
^{31}Ar	11.350
^{32}Ar	-1.870
^{33}Ar	-8.870
^{34}Ar	-18.220
^{35}Ar	-22.700
^{36}Ar	-29.810
^{37}Ar	-30.740
^{38}Ar	-34.700
^{39}Ar	-33.290
^{40}Ar	-35.390
^{41}Ar	-33.630
^{42}Ar	-35.030
^{43}Ar	-32.810
^{44}Ar	-33.200
^{45}Ar	-30.180
^{46}Ar	-29.820
^{47}Ar	-24.910
^{48}Ar	-21.810
^{49}Ar	-15.570
^{50}Ar	-11.540
^{51}Ar	-4.320
^{52}Ar	0.130
^{53}Ar	8.040
^{54}Ar	12.920
^{55}Ar	21.400 †
^{56}Ar	26.690
^{57}Ar	35.450 †
^{58}Ar	41.430

Isotope	Mass Excess
^{59}Ar	50.720 †
^{60}Ar	56.980
^{61}Ar	66.620 †
^{62}Ar	72.930
^{63}Ar	82.560 †
^{64}Ar	89.220 ‡
^{65}Ar	99.020 †
^{66}Ar	105.890 ‡
^{67}Ar	115.720 †
^{68}Ar	122.850 ‡
^{69}Ar	134.340 †
^{70}Ar	144.420 †
^{71}Ar	156.570 †
^{72}Ar	166.660 †
^{30}K	48.590 †
^{31}K	32.540 †
^{32}K	21.020 †
^{33}K	7.400 †
^{34}K	-1.300 †
^{35}K	-11.070
^{36}K	-17.190
^{37}K	-24.700
^{38}K	-28.960
^{39}K	-33.280
^{40}K	-33.410
^{41}K	-35.860
^{42}K	-35.560
^{43}K	-37.270
^{44}K	-36.430
^{45}K	-37.120
^{46}K	-35.410
^{47}K	-35.320
^{48}K	-31.700
^{49}K	-28.870
^{50}K	-23.880
^{51}K	-20.100
^{52}K	-14.090
^{53}K	-9.870
^{54}K	-3.120
^{55}K	1.560
^{56}K	8.920
^{57}K	14.020
^{58}K	21.710
^{59}K	27.520
^{60}K	35.770 †
^{61}K	41.880
^{62}K	50.510 †
^{63}K	56.690
^{64}K	65.350 †
^{65}K	71.890
^{66}K	80.760 †
^{67}K	87.530
^{68}K	96.450 †
^{69}K	103.490
^{70}K	114.090 †
^{71}K	124.060 †
^{72}K	135.350 †
^{73}K	145.340 †
^{31}Ca	58.700 †
^{32}Ca	40.880 †
^{33}Ca	28.970 †
^{34}Ca	13.640 ‡
^{35}Ca	4.550
^{36}Ca	-6.880
^{37}Ca	-13.390
^{38}Ca	-22.490
^{39}Ca	-27.120
^{40}Ca	-34.640
^{41}Ca	-35.120
^{42}Ca	-39.040
^{43}Ca	-39.070
^{44}Ca	-42.200
^{45}Ca	-41.660
^{46}Ca	-43.700

Isotope	Mass Excess
^{47}Ca	-42.280
^{48}Ca	-43.500
^{49}Ca	-40.130
^{50}Ca	-38.580
^{51}Ca	-33.840
^{52}Ca	-31.280
^{53}Ca	-25.510
^{54}Ca	-22.460
^{55}Ca	-15.930
^{56}Ca	-12.380
^{57}Ca	-5.230
^{58}Ca	-1.220
^{59}Ca	6.290
^{60}Ca	11.040
^{61}Ca	19.120 †
^{62}Ca	24.210
^{63}Ca	32.690 †
^{64}Ca	37.880
^{65}Ca	46.400 †
^{66}Ca	51.990
^{67}Ca	60.730 †
^{68}Ca	66.580
^{69}Ca	75.380 †
^{70}Ca	81.530
^{71}Ca	92.020 †
^{72}Ca	101.100 †
^{73}Ca	112.290 †
^{74}Ca	121.440 †
^{75}Ca	132.960 †
^{76}Ca	142.440 †
^{33}Sc	54.820 †
^{34}Sc	41.250 †
^{35}Sc	25.550 †
^{36}Sc	14.830 †
^{37}Sc	2.990 †
^{38}Sc	-5.110 †
^{39}Sc	-14.610 †
^{40}Sc	-20.780
^{41}Sc	-28.660
^{42}Sc	-32.260
^{43}Sc	-36.560
^{44}Sc	-38.000
^{45}Sc	-41.420
^{46}Sc	-42.200
^{47}Sc	-44.530
^{48}Sc	-44.390
^{49}Sc	-45.860
^{50}Sc	-43.770
^{51}Sc	-42.500
^{52}Sc	-39.010
^{53}Sc	-36.720
^{54}Sc	-32.150
^{55}Sc	-29.360
^{56}Sc	-24.010
^{57}Sc	-20.690
^{58}Sc	-14.670
^{59}Sc	-10.850
^{60}Sc	-4.420
^{61}Sc	0.150
^{62}Sc	7.180
^{63}Sc	12.120
^{64}Sc	19.600
^{65}Sc	24.690
^{66}Sc	32.260
^{67}Sc	37.740
^{68}Sc	45.570
^{69}Sc	51.300
^{70}Sc	59.230
^{71}Sc	65.270
^{72}Sc	74.880 †
^{73}Sc	83.820 †
^{74}Sc	94.140 †
^{75}Sc	103.150 †
^{76}Sc	113.830 †
^{77}Sc	123.180 †

Isotope	Mass Excess
^{78}Sc	134.450 †
^{79}Sc	144.030 †
^{34}Ti	65.400 †
^{35}Ti	51.470 †
^{36}Ti	34.160 †
^{37}Ti	23.070 †
^{38}Ti	9.630 ‡
^{39}Ti	1.160
^{40}Ti	-9.890
^{41}Ti	-16.410
^{42}Ti	-25.780
^{43}Ti	-29.760
^{44}Ti	-37.000
^{45}Ti	-38.760
^{46}Ti	-43.560
^{47}Ti	-44.610
^{48}Ti	-48.250
^{49}Ti	-48.390
^{50}Ti	-51.130
^{51}Ti	-49.310
^{52}Ti	-49.290
^{53}Ti	-46.060
^{54}Ti	-44.980
^{55}Ti	-40.670
^{56}Ti	-39.050
^{57}Ti	-33.930
^{58}Ti	-31.740
^{59}Ti	-25.940
^{60}Ti	-23.200
^{61}Ti	-16.970
^{62}Ti	-13.440
^{63}Ti	-6.600
^{64}Ti	-2.650
^{65}Ti	4.660
^{66}Ti	8.790
^{67}Ti	16.220
^{68}Ti	20.770
^{69}Ti	28.460
^{70}Ti	33.290
^{71}Ti	41.090
^{72}Ti	46.260
^{73}Ti	55.730 †
^{74}Ti	63.790 ‡
^{75}Ti	73.990 †
^{76}Ti	82.140 †
^{77}Ti	92.710 †
^{78}Ti	101.230 †
^{79}Ti	112.380 †
^{80}Ti	121.150 †
^{81}Ti	132.590 †
^{82}Ti	141.400 †
^{83}Ti	152.830 †
^{84}Ti	161.690 †
^{85}Ti	173.230 †
^{86}Ti	182.230 †
^{37}V	46.510 †
^{38}V	33.870 †
^{39}V	20.080 †
^{40}V	10.110 †
^{41}V	-1.280 †
^{42}V	-9.250
^{43}V	-18.950
^{44}V	-24.320
^{45}V	-31.870
^{46}V	-36.430
^{47}V	-41.540
^{48}V	-43.920
^{49}V	-47.850
^{50}V	-49.240
^{51}V	-52.250
^{52}V	-51.660
^{53}V	-51.900
^{54}V	-49.850
^{55}V	-49.020

Isotope	Mass Excess
^{56}V	-45.850
^{57}V	-44.450
^{58}V	-40.440
^{59}V	-38.450
^{60}V	-33.720
^{61}V	-31.180
^{62}V	-25.980
^{63}V	-22.640
^{64}V	-16.800
^{65}V	-13.030
^{66}V	-6.700
^{67}V	-2.740
^{68}V	3.740
^{69}V	8.140
^{70}V	14.910
^{71}V	19.600
^{72}V	26.510
^{73}V	31.560
^{74}V	40.160 †
^{75}V	48.090 ‡
^{76}V	57.450 †
^{77}V	65.490 ‡
^{78}V	75.230 †
^{79}V	83.650 †
^{80}V	94.010 †
^{81}V	102.690 †
^{82}V	113.370 †
^{83}V	122.090 †
^{84}V	132.780 †
^{85}V	141.550 †
^{86}V	152.370 †
^{87}V	161.290 †
^{88}V	172.390 †
^{89}V	181.570 †
^{38}Cr	56.320 †
^{39}Cr	43.340 †
^{40}Cr	28.040 †
^{41}Cr	17.740 †
^{42}Cr	4.870 ‡
^{43}Cr	-3.430
^{44}Cr	-14.540
^{45}Cr	-20.230
^{46}Cr	-29.160
^{47}Cr	-34.020
^{48}Cr	-41.840
^{49}Cr	-44.510
^{50}Cr	-49.730
^{51}Cr	-51.400
^{52}Cr	-55.650
^{53}Cr	-55.310
^{54}Cr	-56.770
^{55}Cr	-54.970
^{56}Cr	-55.310
^{57}Cr	-52.370
^{58}Cr	-52.100
^{59}Cr	-48.310
^{60}Cr	-47.410
^{61}Cr	-42.880
^{62}Cr	-41.400
^{63}Cr	-36.400
^{64}Cr	-34.080
^{65}Cr	-28.430
^{66}Cr	-25.650
^{67}Cr	-19.490
^{68}Cr	-16.500
^{69}Cr	-10.180
^{70}Cr	-6.720
^{71}Cr	-0.100
^{72}Cr	3.690
^{73}Cr	10.470
^{74}Cr	14.640
^{75}Cr	23.110 †
^{76}Cr	30.180
^{77}Cr	39.410 †
^{78}Cr	46.610 ‡

Isotope	Mass Excess
^{79}Cr	56.240 †
^{80}Cr	63.840 ‡
^{81}Cr	74.100 †
^{82}Cr	81.990 ‡
^{83}Cr	92.570 †
^{84}Cr	100.520 ‡
^{85}Cr	111.120 †
^{86}Cr	119.150 ‡
^{87}Cr	129.880 †
^{88}Cr	138.070 †
^{89}Cr	149.090 †
^{90}Cr	157.550 †
^{91}Cr	168.790 †
^{92}Cr	177.350 †
^{93}Cr	188.690 †
^{94}Cr	197.390 †
^{95}Cr	208.830 †
^{96}Cr	217.680 †
^{97}Cr	229.210 †
^{98}Cr	238.050 †
^{99}Cr	249.510 †
^{100}Cr	258.630 †
^{41}Mn	39.640 †
^{42}Mn	27.910 †
^{43}Mn	14.740 †
^{44}Mn	5.050 †
^{45}Mn	-6.370 †
^{46}Mn	-13.380
^{47}Mn	-22.580
^{48}Mn	-28.760
^{49}Mn	-36.880
^{50}Mn	-42.170
^{51}Mn	-47.670
^{52}Mn	-50.580
^{53}Mn	-55.100
^{54}Mn	-55.960
^{55}Mn	-57.650
^{56}Mn	-57.000
^{57}Mn	-57.570
^{58}Mn	-55.740
^{59}Mn	-55.670
^{60}Mn	-52.940
^{61}Mn	-52.240
^{62}Mn	-48.750
^{63}Mn	-47.470
^{64}Mn	-43.480
^{65}Mn	-41.350
^{66}Mn	-36.670
^{67}Mn	-34.090
^{68}Mn	-28.880
^{69}Mn	-26.080
^{70}Mn	-20.710
^{71}Mn	-17.430
^{72}Mn	-11.720
^{73}Mn	-8.090
^{74}Mn	-2.210
^{75}Mn	1.790
^{76}Mn	9.410
^{77}Mn	16.380
^{78}Mn	24.790 †
^{79}Mn	31.890
^{80}Mn	40.720 †
^{81}Mn	48.220 ‡
^{82}Mn	57.720 †
^{83}Mn	65.530 ‡
^{84}Mn	75.360 †
^{85}Mn	83.230 ‡
^{86}Mn	93.090 †
^{87}Mn	101.030 ‡
^{88}Mn	111.030 †
^{89}Mn	119.140 †
^{90}Mn	129.450 †
^{91}Mn	137.830 †
^{92}Mn	148.380 †
^{93}Mn	156.860 †

Isotope	Mass Excess
^{94}Mn	167.520 †
^{95}Mn	176.140 †
^{96}Mn	186.920 †
^{97}Mn	195.690 †
^{98}Mn	206.560 †
^{99}Mn	215.330 †
^{100}Mn	226.140 †
^{101}Mn	235.190 †
^{102}Mn	246.200 †
^{103}Mn	255.540 †
^{41}Fe	66.070 †
^{42}Fe	49.020 †
^{43}Fe	36.980 †
^{44}Fe	22.410 †
^{45}Fe	12.410 †
^{46}Fe	-0.380
^{47}Fe	-7.680
^{48}Fe	-18.210
^{49}Fe	-24.680
^{50}Fe	-34.090
^{51}Fe	-39.660
^{52}Fe	-47.680
^{53}Fe	-50.860
^{54}Fe	-56.620
^{55}Fe	-57.740
^{56}Fe	-60.580
^{57}Fe	-60.170
^{58}Fe	-61.860
^{59}Fe	-60.260
^{60}Fe	-61.300
^{61}Fe	-58.770
^{62}Fe	-59.140
^{63}Fe	-55.850
^{64}Fe	-55.600
^{65}Fe	-51.810
^{66}Fe	-50.690
^{67}Fe	-46.190
^{68}Fe	-44.590
^{69}Fe	-39.560
^{70}Fe	-37.720
^{71}Fe	-32.510
^{72}Fe	-30.150
^{73}Fe	-24.600
^{74}Fe	-21.890
^{75}Fe	-16.190
^{76}Fe	-13.150
^{77}Fe	-5.630
^{78}Fe	0.550
^{79}Fe	8.860 †
^{80}Fe	15.150
^{81}Fe	23.870 †
^{82}Fe	30.570
^{83}Fe	39.960 †
^{84}Fe	46.990 ‡
^{85}Fe	56.730 †
^{86}Fe	63.830 ‡
^{87}Fe	73.600 †
^{88}Fe	80.790 ‡
^{89}Fe	90.710 †
^{90}Fe	98.080 ‡
^{91}Fe	108.310 †
^{92}Fe	115.980 ‡
^{93}Fe	126.450 †
^{94}Fe	134.240 ‡
^{95}Fe	144.830 †
^{96}Fe	152.770 ‡
^{97}Fe	163.480 †
^{98}Fe	171.580 †
^{99}Fe	182.390 †
^{100}Fe	190.510 †
^{101}Fe	201.250 †
^{102}Fe	209.660 †
^{103}Fe	220.610 †
^{104}Fe	229.310 †
^{105}Fe	240.450 †

Isotope	Mass Excess
^{106}Fe	249.360 †
^{107}Fe	260.450 †
^{108}Fe	269.580 †
^{44}Co	48.850 †
^{45}Co	33.990 †
^{46}Co	22.660 †
^{47}Co	9.580 †
^{48}Co	0.970 †
^{49}Co	-9.850 †
^{50}Co	-17.580
^{51}Co	-27.270
^{52}Co	-34.070
^{53}Co	-42.360
^{54}Co	-48.000
^{55}Co	-54.100
^{56}Co	-56.390
^{57}Co	-59.400
^{58}Co	-60.090
^{59}Co	-61.990
^{60}Co	-61.470
^{61}Co	-62.730
^{62}Co	-61.270
^{63}Co	-61.850
^{64}Co	-59.570
^{65}Co	-59.530
^{66}Co	-56.730
^{67}Co	-55.800
^{68}Co	-52.270
^{69}Co	-50.860
^{70}Co	-46.770
^{71}Co	-45.110
^{72}Co	-40.820
^{73}Co	-38.630
^{74}Co	-33.990
^{75}Co	-31.490
^{76}Co	-26.760
^{77}Co	-24.050
^{78}Co	-17.330
^{79}Co	-11.120
^{80}Co	-3.570
^{81}Co	2.640
^{82}Co	10.580
^{83}Co	17.180
^{84}Co	25.790 †
^{85}Co	32.720
^{86}Co	41.710 †
^{87}Co	48.710
^{88}Co	57.740 †
^{89}Co	64.830
^{90}Co	74.030 †
^{91}Co	81.310 ‡
^{92}Co	90.830 †
^{93}Co	98.420 ‡
^{94}Co	108.190 †
^{95}Co	115.900 ‡
^{96}Co	125.810 †
^{97}Co	133.670 ‡
^{98}Co	143.720 †
^{99}Co	151.750 ‡
^{100}Co	161.900 †
^{101}Co	169.940 ‡
^{102}Co	180.040 †
^{103}Co	188.390 †
^{104}Co	198.710 †
^{105}Co	207.320 †
^{106}Co	217.810 †
^{107}Co	226.580 †
^{108}Co	236.960 †
^{109}Co	245.920 †
^{110}Co	258.450 †
^{111}Co	269.860 †
^{45}Ni	59.230 †
^{46}Ni	43.030 †
^{47}Ni	31.420 †

Isotope	Mass Excess
^{48}Ni	17.030 †
^{49}Ni	8.140 ‡
^{50}Ni	-3.960
^{51}Ni	-11.970
^{52}Ni	-22.890
^{53}Ni	-29.960
^{54}Ni	-39.470
^{55}Ni	-45.440
^{56}Ni	-54.030
^{57}Ni	-56.570
^{58}Ni	-60.590
^{59}Ni	-61.480
^{60}Ni	-64.440
^{61}Ni	-64.140
^{62}Ni	-66.480
^{63}Ni	-65.230
^{64}Ni	-66.860
^{65}Ni	-64.780
^{66}Ni	-65.760
^{67}Ni	-63.150
^{68}Ni	-63.210
^{69}Ni	-59.860
^{70}Ni	-59.410
^{71}Ni	-55.490
^{72}Ni	-54.770
^{73}Ni	-50.650
^{74}Ni	-49.370
^{75}Ni	-44.900
^{76}Ni	-43.400
^{77}Ni	-38.980
^{78}Ni	-37.360
^{79}Ni	-30.730
^{80}Ni	-25.140
^{81}Ni	-17.620
^{82}Ni	-12.120
^{83}Ni	-4.270
^{84}Ni	1.550
^{85}Ni	10.050 †
^{86}Ni	16.210
^{87}Ni	25.100 †
^{88}Ni	31.350
^{89}Ni	40.280 †
^{90}Ni	46.640
^{91}Ni	55.740 †
^{92}Ni	62.290
^{93}Ni	71.730 †
^{94}Ni	78.610 ‡
^{95}Ni	88.290 †
^{96}Ni	95.310 ‡
^{97}Ni	105.140 †
^{98}Ni	112.330 ‡
^{99}Ni	122.300 †
^{100}Ni	129.660 ‡
^{101}Ni	139.750 †
^{102}Ni	147.130 ‡
^{103}Ni	157.170 †
^{104}Ni	164.870 ‡
^{105}Ni	175.100 †
^{106}Ni	183.030 ‡
^{107}Ni	193.400 †
^{108}Ni	201.410 ‡
^{109}Ni	211.590 †
^{110}Ni	219.790 †
^{111}Ni	232.430 †
^{112}Ni	243.440 †
^{49}Cu	29.350 †
^{50}Cu	19.170 †
^{51}Cu	6.790 †
^{52}Cu	-2.450 †
^{53}Cu	-13.650 †
^{54}Cu	-21.910 †
^{55}Cu	-31.680 †
^{56}Cu	-38.780
^{57}Cu	-47.560
^{58}Cu	-52.380

Isotope	Mass Excess
^{59}Cu	-56.710
^{60}Cu	-58.720
^{61}Cu	-61.950
^{62}Cu	-62.740
^{63}Cu	-65.310
^{64}Cu	-65.120
^{65}Cu	-66.960
^{66}Cu	-65.910
^{67}Cu	-67.090
^{68}Cu	-65.480
^{69}Cu	-65.730
^{70}Cu	-63.350
^{71}Cu	-63.080
^{72}Cu	-60.100
^{73}Cu	-59.550
^{74}Cu	-56.330
^{75}Cu	-55.210
^{76}Cu	-51.620
^{77}Cu	-50.230
^{78}Cu	-46.600
^{79}Cu	-45.060
^{80}Cu	-39.290
^{81}Cu	-33.920
^{82}Cu	-27.260
^{83}Cu	-21.940
^{84}Cu	-14.910
^{85}Cu	-9.230
^{86}Cu	-1.520
^{87}Cu	4.510
^{88}Cu	12.620 †
^{89}Cu	18.760
^{90}Cu	26.930 †
^{91}Cu	33.180
^{92}Cu	41.540 †
^{93}Cu	48.010
^{94}Cu	56.720 †
^{95}Cu	63.510
^{96}Cu	72.500 †
^{97}Cu	79.440
^{98}Cu	88.590 †
^{99}Cu	95.700 ‡
^{100}Cu	105.010 †
^{101}Cu	112.300 ‡
^{102}Cu	121.740 †
^{103}Cu	129.060 ‡
^{104}Cu	138.470 †
^{105}Cu	146.120 ‡
^{106}Cu	155.740 †
^{107}Cu	163.630 ‡
^{108}Cu	173.420 †
^{109}Cu	181.430 ‡
^{110}Cu	191.060 †
^{111}Cu	199.260 †
^{112}Cu	211.260 †
^{113}Cu	222.160 †
^{50}Zn	40.190 †
^{51}Zn	29.700 †
^{52}Zn	16.050 †
^{53}Zn	6.520 †
^{54}Zn	-5.890 †
^{55}Zn	-14.400 †
^{56}Zn	-25.330
^{57}Zn	-32.590
^{58}Zn	-42.340
^{59}Zn	-47.400
^{60}Zn	-54.140
^{61}Zn	-56.470
^{62}Zn	-60.880
^{63}Zn	-61.940
^{64}Zn	-65.590
^{65}Zn	-65.640
^{66}Zn	-68.530
^{67}Zn	-67.720
^{68}Zn	-69.910
^{69}Zn	-68.520

Isotope	Mass Excess
^{70}Zn	-69.750
^{71}Zn	-67.580
^{72}Zn	-68.240
^{73}Zn	-65.460
^{74}Zn	-65.800
^{75}Zn	-62.760
^{76}Zn	-62.510
^{77}Zn	-59.050
^{78}Zn	-58.380
^{79}Zn	-54.690
^{80}Zn	-53.610
^{81}Zn	-48.090
^{82}Zn	-43.910
^{83}Zn	-37.550
^{84}Zn	-33.190
^{85}Zn	-26.350
^{86}Zn	-21.520
^{87}Zn	-13.970
^{88}Zn	-8.740
^{89}Zn	-0.800
^{90}Zn	4.550
^{91}Zn	12.580
^{92}Zn	18.080
^{93}Zn	26.320 †
^{94}Zn	32.060
^{95}Zn	40.660 †
^{96}Zn	46.750
^{97}Zn	55.630 †
^{98}Zn	61.890
^{99}Zn	70.950 †
^{100}Zn	77.410
^{101}Zn	86.640 †
^{102}Zn	93.310
^{103}Zn	102.680 †
^{104}Zn	109.390
^{105}Zn	118.740 †
^{106}Zn	125.780 ‡
^{107}Zn	135.370 †
^{108}Zn	142.740 ‡
^{109}Zn	152.550 †
^{110}Zn	160.160 ‡
^{111}Zn	169.960 †
^{112}Zn	177.830 ‡
^{113}Zn	189.520 †
^{114}Zn	199.550 †
^{115}Zn	211.470 †
^{116}Zn	221.680 †
^{54}Ga	17.720 †
^{55}Ga	5.060 †
^{56}Ga	-4.610 †
^{57}Ga	-15.780 †
^{58}Ga	-24.150 †
^{59}Ga	-34.110 †
^{60}Ga	-40.280
^{61}Ga	-47.300
^{62}Ga	-51.790
^{63}Ga	-56.450
^{64}Ga	-58.580
^{65}Ga	-62.460
^{66}Ga	-63.560
^{67}Ga	-66.670
^{68}Ga	-66.890
^{69}Ga	-69.270
^{70}Ga	-68.870
^{71}Ga	-70.290
^{72}Ga	-69.080
^{73}Ga	-69.920
^{74}Ga	-68.060
^{75}Ga	-68.550
^{76}Ga	-66.390
^{77}Ga	-66.300
^{78}Ga	-63.700
^{79}Ga	-63.160
^{80}Ga	-60.280
^{81}Ga	-59.270

Isotope	Mass Excess
^{82}Ga	-54.610
^{83}Ga	-50.640
^{84}Ga	-45.130
^{85}Ga	-40.930
^{86}Ga	-34.910
^{87}Ga	-30.220
^{88}Ga	-23.470
^{89}Ga	-18.390
^{90}Ga	-11.240
^{91}Ga	-6.010
^{92}Ga	1.260
^{93}Ga	6.650
^{94}Ga	14.150
^{95}Ga	19.800
^{96}Ga	27.670
^{97}Ga	33.670
^{98}Ga	41.850 †
^{99}Ga	48.040
^{100}Ga	56.410 †
^{101}Ga	62.810
^{102}Ga	71.370 †
^{103}Ga	77.980
^{104}Ga	86.710 †
^{105}Ga	93.370
^{106}Ga	102.090 †
^{107}Ga	109.080
^{108}Ga	118.060 †
^{109}Ga	125.380 ‡
^{110}Ga	134.610 †
^{111}Ga	142.190 ‡
^{112}Ga	151.430 †
^{113}Ga	159.300 ‡
^{114}Ga	170.350 †
^{115}Ga	180.270 †
^{116}Ga	191.580 †
^{117}Ga	201.710 †
^{53}Ge	54.000 †
^{54}Ge	38.830 †
^{55}Ge	27.850 †
^{56}Ge	14.040 †
^{57}Ge	4.160 †
^{58}Ge	-8.150 †
^{59}Ge	-16.740 †
^{60}Ge	-27.780
^{61}Ge	-34.200
^{62}Ge	-42.350
^{63}Ge	-47.080
^{64}Ge	-53.880
^{65}Ge	-56.250
^{66}Ge	-61.210
^{67}Ge	-62.580
^{68}Ge	-66.710
^{69}Ge	-67.190
^{70}Ge	-70.550
^{71}Ge	-70.360
^{72}Ge	-72.740
^{73}Ge	-71.740
^{74}Ge	-73.490
^{75}Ge	-71.820
^{76}Ge	-73.160
^{77}Ge	-71.160
^{78}Ge	-71.910
^{79}Ge	-69.460
^{80}Ge	-69.750
^{81}Ge	-66.990
^{82}Ge	-66.760
^{83}Ge	-62.280
^{84}Ge	-59.190
^{85}Ge	-53.850
^{86}Ge	-50.490
^{87}Ge	-44.630
^{88}Ge	-40.750
^{89}Ge	-34.180
^{90}Ge	-29.920
^{91}Ge	-22.950

Isotope	Mass Excess
^{92}Ge	-18.500
^{93}Ge	-11.390
^{94}Ge	-6.730
^{95}Ge	0.640
^{96}Ge	5.580
^{97}Ge	13.330
^{98}Ge	18.640
^{99}Ge	26.700
^{100}Ge	32.230
^{101}Ge	40.500 †
^{102}Ge	46.260
^{103}Ge	54.740 †
^{104}Ge	60.740
^{105}Ge	69.390 †
^{106}Ge	75.470
^{107}Ge	84.140 †
^{108}Ge	90.530
^{109}Ge	99.450 †
^{110}Ge	106.180
^{111}Ge	115.350 †
^{112}Ge	122.360 ‡
^{113}Ge	131.570 †
^{114}Ge	138.880 ‡
^{115}Ge	149.830 †
^{116}Ge	159.130 †
^{117}Ge	170.340 †
^{118}Ge	179.870 †
^{59}As	3.110 †
^{60}As	-6.560 †
^{61}As	-17.840 †
^{62}As	-25.330 †
^{63}As	-33.740 †
^{64}As	-39.540 †
^{65}As	-46.580 †
^{66}As	-51.030
^{67}As	-56.240
^{68}As	-58.660
^{69}As	-63.020
^{70}As	-64.520
^{71}As	-68.070
^{72}As	-68.860
^{73}As	-71.440
^{74}As	-71.390
^{75}As	-73.290
^{76}As	-72.540
^{77}As	-73.990
^{78}As	-72.840
^{79}As	-73.710
^{80}As	-72.110
^{81}As	-72.530
^{82}As	-70.610
^{83}As	-70.520
^{84}As	-66.860
^{85}As	-63.940
^{86}As	-59.420
^{87}As	-56.220
^{88}As	-51.160
^{89}As	-47.450
^{90}As	-41.700
^{91}As	-37.610
^{92}As	-31.460
^{93}As	-27.160
^{94}As	-20.840
^{95}As	-16.300
^{96}As	-9.690
^{97}As	-4.840
^{98}As	2.180
^{99}As	7.410
^{100}As	14.750
^{101}As	20.230
^{102}As	27.830
^{103}As	33.550
^{104}As	41.380
^{105}As	47.340
^{106}As	55.370

Isotope	Mass Excess
^{107}As	61.420
^{108}As	69.490
^{109}As	75.840
^{110}As	84.150 †
^{111}As	90.820
^{112}As	99.400 †
^{113}As	106.350
^{114}As	114.970 †
^{115}As	122.220
^{116}As	132.580 †
^{117}As	141.800 †
^{118}As	152.430 †
^{119}As	161.880 †
^{58}Se	36.680 †
^{59}Se	25.550 †
^{60}Se	11.960 †
^{61}Se	2.100 †
^{62}Se	-10.260 †
^{63}Se	-17.990 †
^{64}Se	-27.470 ‡
^{65}Se	-33.500
^{66}Se	-41.630
^{67}Se	-46.330
^{68}Se	-53.550
^{69}Se	-56.230
^{70}Se	-61.600
^{71}Se	-63.360
^{72}Se	-67.850
^{73}Se	-68.870
^{74}Se	-72.370
^{75}Se	-72.530
^{76}Se	-75.310
^{77}Se	-74.750
^{78}Se	-77.030
^{79}Se	-76.030
^{80}Se	-77.710
^{81}Se	-76.250
^{82}Se	-77.510
^{83}Se	-75.740
^{84}Se	-76.480
^{85}Se	-72.980
^{86}Se	-70.880
^{87}Se	-66.510
^{88}Se	-64.110
^{89}Se	-59.200
^{90}Se	-56.310
^{91}Se	-50.750
^{92}Se	-47.470
^{93}Se	-41.530
^{94}Se	-38.020
^{95}Se	-31.890
^{96}Se	-28.080
^{97}Se	-21.640
^{98}Se	-17.470
^{99}Se	-10.620
^{100}Se	-6.040
^{101}Se	1.160
^{102}Se	6.030
^{103}Se	13.520
^{104}Se	18.660
^{105}Se	26.410
^{106}Se	31.800
^{107}Se	39.760
^{108}Se	45.240
^{109}Se	53.250
^{110}Se	59.010
^{111}Se	67.260 †
^{112}Se	73.320
^{113}Se	81.820 †
^{114}Se	88.180
^{115}Se	96.740 †
^{116}Se	103.400
^{117}Se	113.680 †
^{118}Se	122.320 †
^{119}Se	132.880 †

Isotope	Mass Excess
^{120}Se	141.750 †
^{121}Se	152.740 †
^{122}Se	161.620 †
^{123}Se	172.660 †
^{124}Se	181.530 †
^{125}Se	192.350 †
^{126}Se	201.450 †
^{63}Br	0.880 †
^{64}Br	-7.910 †
^{65}Br	-17.620 †
^{66}Br	-24.700 †
^{67}Br	-33.090 †
^{68}Br	-38.830 †
^{69}Br	-46.290
^{70}Br	-50.930
^{71}Br	-56.510
^{72}Br	-59.280
^{73}Br	-63.960
^{74}Br	-65.940
^{75}Br	-69.620
^{76}Br	-70.720
^{77}Br	-73.650
^{78}Br	-73.980
^{79}Br	-76.360
^{80}Br	-76.200
^{81}Br	-78.010
^{82}Br	-77.370
^{83}Br	-78.770
^{84}Br	-77.820
^{85}Br	-78.710
^{86}Br	-76.020
^{87}Br	-74.090
^{88}Br	-70.520
^{89}Br	-68.270
^{90}Br	-64.160
^{91}Br	-61.430
^{92}Br	-56.670
^{93}Br	-53.570
^{94}Br	-48.470
^{95}Br	-45.130
^{96}Br	-39.810
^{97}Br	-36.120
^{98}Br	-30.450
^{99}Br	-26.360
^{100}Br	-20.270
^{101}Br	-15.760
^{102}Br	-9.290
^{103}Br	-4.430
^{104}Br	2.370
^{105}Br	7.520
^{106}Br	14.630
^{107}Br	20.010
^{108}Br	27.360
^{109}Br	32.820
^{110}Br	40.230
^{111}Br	45.950
^{112}Br	53.590
^{113}Br	59.580
^{114}Br	67.490
^{115}Br	73.770
^{116}Br	81.740
^{117}Br	88.340
^{118}Br	98.040 †
^{119}Br	106.600 †
^{120}Br	116.580 †
^{121}Br	125.380 †
^{122}Br	135.790 †
^{123}Br	144.590 †
^{124}Br	155.040 †
^{125}Br	163.820 †
^{126}Br	174.070 †
^{127}Br	183.070 †
^{128}Br	193.610 †
^{129}Br	202.640 †

Isotope	Mass Excess
^{64}Kr	9.350 †
^{65}Kr	0.350 †
^{66}Kr	-10.400 ‡
^{67}Kr	-17.700 ‡
^{68}Kr	-27.110
^{69}Kr	-33.060
^{70}Kr	-41.510
^{71}Kr	-46.370
^{72}Kr	-53.820
^{73}Kr	-56.800
^{74}Kr	-62.420
^{75}Kr	-64.580
^{76}Kr	-69.190
^{77}Kr	-70.480
^{78}Kr	-74.290
^{79}Kr	-74.810
^{80}Kr	-78.060
^{81}Kr	-78.070
^{82}Kr	-80.720
^{83}Kr	-80.240
^{84}Kr	-82.480
^{85}Kr	-81.680
^{86}Kr	-83.370
^{87}Kr	-80.840
^{88}Kr	-79.710
^{89}Kr	-76.290
^{90}Kr	-74.830
^{91}Kr	-70.860
^{92}Kr	-68.910
^{93}Kr	-64.290
^{94}Kr	-61.950
^{95}Kr	-56.980
^{96}Kr	-54.370
^{97}Kr	-49.180
^{98}Kr	-46.210
^{99}Kr	-40.660
^{100}Kr	-37.270
^{101}Kr	-31.290
^{102}Kr	-27.460
^{103}Kr	-21.100
^{104}Kr	-16.910
^{105}Kr	-10.210
^{106}Kr	-5.720
^{107}Kr	1.290
^{108}Kr	6.040
^{109}Kr	13.290
^{110}Kr	18.130
^{111}Kr	25.460
^{112}Kr	30.560
^{113}Kr	38.120
^{114}Kr	43.510
^{115}Kr	51.340
^{116}Kr	57.020
^{117}Kr	64.930
^{118}Kr	70.940
^{119}Kr	80.560 †
^{120}Kr	88.540 ‡
^{121}Kr	98.460 †
^{122}Kr	106.680 †
^{123}Kr	117.030 †
^{124}Kr	125.260 †
^{125}Kr	135.650 †
^{126}Kr	143.880 †
^{127}Kr	154.070 †
^{128}Kr	162.530 †
^{129}Kr	173.010 †
^{130}Kr	181.510 †
^{131}Kr	192.020 †
^{132}Kr	200.750 †
^{133}Kr	211.460 †
^{134}Kr	220.280 †
^{135}Kr	231.140 †
^{136}Kr	240.170 †
^{65}Rb	21.520 †
^{66}Rb	11.500 †

Isotope	Mass Excess
^{67}Rb	0.520 †
^{68}Rb	-7.780 †
^{69}Rb	-17.420 †
^{70}Rb	-24.370 †
^{71}Rb	-33.040 †
^{72}Rb	-38.870 †
^{73}Rb	-46.530 †
^{74}Rb	-51.340
^{75}Rb	-57.150
^{76}Rb	-60.240
^{77}Rb	-65.030
^{78}Rb	-67.220
^{79}Rb	-71.200
^{80}Rb	-72.600
^{81}Rb	-75.980
^{82}Rb	-76.840
^{83}Rb	-79.630
^{84}Rb	-79.980
^{85}Rb	-82.360
^{86}Rb	-82.370
^{87}Rb	-84.210
^{88}Rb	-82.480
^{89}Rb	-81.510
^{90}Rb	-78.870
^{91}Rb	-77.560
^{92}Rb	-74.370
^{93}Rb	-72.570
^{94}Rb	-68.720
^{95}Rb	-66.530
^{96}Rb	-62.330
^{97}Rb	-59.870
^{98}Rb	-55.440
^{99}Rb	-52.590
^{100}Rb	-47.760
^{101}Rb	-44.470
^{102}Rb	-39.210
^{103}Rb	-35.470
^{104}Rb	-29.800
^{105}Rb	-25.690
^{106}Rb	-19.650
^{107}Rb	-15.220
^{108}Rb	-8.850
^{109}Rb	-4.160
^{110}Rb	2.470
^{111}Rb	7.250
^{112}Rb	13.970
^{113}Rb	19.000
^{114}Rb	25.960
^{115}Rb	31.270
^{116}Rb	38.500
^{117}Rb	44.120
^{118}Rb	51.440
^{119}Rb	57.380
^{120}Rb	66.420 †
^{121}Rb	74.320 ‡
^{122}Rb	83.670 †
^{123}Rb	91.820 †
^{124}Rb	101.590 †
^{125}Rb	109.750 †
^{126}Rb	119.570 †
^{127}Rb	127.730 †
^{128}Rb	137.370 †
^{129}Rb	145.750 †
^{130}Rb	155.670 †
^{131}Rb	164.100 †
^{132}Rb	174.070 †
^{133}Rb	182.740 †
^{134}Rb	192.920 †
^{135}Rb	201.690 †
^{136}Rb	212.040 †
^{137}Rb	221.030 †
^{138}Rb	231.580 †
^{139}Rb	240.770 †
^{66}Sr	31.020 †
^{67}Sr	20.790 †

Isotope	Mass Excess
^{68}Sr	8.810 †
^{69}Sr	0.310 †
^{70}Sr	-10.280 ‡
^{71}Sr	-17.420 ‡
^{72}Sr	-27.030
^{73}Sr	-33.030
^{74}Sr	-41.630
^{75}Sr	-46.600
^{76}Sr	-54.200
^{77}Sr	-57.460
^{78}Sr	-63.160
^{79}Sr	-65.510
^{80}Sr	-70.400
^{81}Sr	-71.960
^{82}Sr	-76.260
^{83}Sr	-77.300
^{84}Sr	-80.960
^{85}Sr	-81.480
^{86}Sr	-84.690
^{87}Sr	-84.850
^{88}Sr	-87.490
^{89}Sr	-85.910
^{90}Sr	-85.740
^{91}Sr	-83.250
^{92}Sr	-82.710
^{93}Sr	-79.650
^{94}Sr	-78.580
^{95}Sr	-74.840
^{96}Sr	-73.360
^{97}Sr	-69.230
^{98}Sr	-67.460
^{99}Sr	-63.080
^{100}Sr	-60.930
^{101}Sr	-56.180
^{102}Sr	-53.610
^{103}Sr	-48.410
^{104}Sr	-45.390
^{105}Sr	-39.790
^{106}Sr	-36.410
^{107}Sr	-30.460
^{108}Sr	-26.760
^{109}Sr	-20.500
^{110}Sr	-16.520
^{111}Sr	-10.000
^{112}Sr	-5.890
^{113}Sr	0.720
^{114}Sr	5.120
^{115}Sr	11.990
^{116}Sr	16.690
^{117}Sr	23.850
^{118}Sr	28.870
^{119}Sr	36.120
^{120}Sr	41.480
^{121}Sr	50.440 †
^{122}Sr	57.770 ‡
^{123}Sr	67.040 †
^{124}Sr	74.620 ‡
^{125}Sr	84.340 †
^{126}Sr	91.960 ‡
^{127}Sr	101.740 †
^{128}Sr	109.370 ‡
^{129}Sr	118.970 †
^{130}Sr	126.850 ‡
^{131}Sr	136.780 †
^{132}Sr	144.700 ‡
^{133}Sr	154.650 †
^{134}Sr	162.830 †
^{135}Sr	173.000 †
^{136}Sr	181.250 †
^{137}Sr	191.580 †
^{138}Sr	200.060 †
^{139}Sr	210.600 †
^{140}Sr	219.290 †
^{141}Sr	230.020 †
^{142}Sr	238.860 †

Isotope	Mass Excess
^{143}Sr	249.750 †
^{144}Sr	258.600 †
^{70}Y	11.350 †
^{71}Y	0.560 †
^{72}Y	-7.530 †
^{73}Y	-17.340 †
^{74}Y	-24.280 †
^{75}Y	-33.060 †
^{76}Y	-38.950 †
^{77}Y	-46.740 †
^{78}Y	-51.730
^{79}Y	-57.610
^{80}Y	-60.840
^{81}Y	-65.910
^{82}Y	-68.330
^{83}Y	-72.790
^{84}Y	-74.670
^{85}Y	-78.500
^{86}Y	-79.840
^{87}Y	-83.200
^{88}Y	-84.160
^{89}Y	-86.940
^{90}Y	-86.150
^{91}Y	-86.130
^{92}Y	-84.420
^{93}Y	-84.030
^{94}Y	-81.720
^{95}Y	-80.790
^{96}Y	-77.790
^{97}Y	-76.440
^{98}Y	-73.030
^{99}Y	-71.380
^{100}Y	-67.710
^{101}Y	-65.680
^{102}Y	-61.620
^{103}Y	-59.170
^{104}Y	-54.650
^{105}Y	-51.740
^{106}Y	-46.810
^{107}Y	-43.540
^{108}Y	-38.240
^{109}Y	-34.650
^{110}Y	-29.030
^{111}Y	-25.150
^{112}Y	-19.260
^{113}Y	-15.250
^{114}Y	-9.250
^{115}Y	-4.950
^{116}Y	1.320
^{117}Y	5.940
^{118}Y	12.500
^{119}Y	17.450
^{120}Y	24.120
^{121}Y	29.410
^{122}Y	37.790 †
^{123}Y	45.040
^{124}Y	53.740 †
^{125}Y	61.250 ‡
^{126}Y	70.410 †
^{127}Y	77.960 ‡
^{128}Y	87.200 †
^{129}Y	94.770 ‡
^{130}Y	103.830 †
^{131}Y	111.650 ‡
^{132}Y	121.050 †
^{133}Y	128.920 ‡
^{134}Y	138.360 †
^{135}Y	146.480 †
^{136}Y	156.150 †
^{137}Y	164.350 †
^{138}Y	174.180 †
^{139}Y	182.610 †
^{140}Y	192.660 †
^{141}Y	201.300 †
^{142}Y	211.550 †

Isotope	Mass Excess
^{143}Y	220.340 †
^{144}Y	230.760 †
^{145}Y	239.560 †
^{71}Zr	20.980 †
^{72}Zr	9.230 †
^{73}Zr	0.950 †
^{74}Zr	-9.800 †
^{75}Zr	-16.920 †
^{76}Zr	-26.620 ‡
^{77}Zr	-32.690
^{78}Zr	-41.380
^{79}Zr	-46.560
^{80}Zr	-54.140
^{81}Zr	-57.540
^{82}Zr	-63.480
^{83}Zr	-66.070
^{84}Zr	-71.390
^{85}Zr	-73.440
^{86}Zr	-78.100
^{87}Zr	-79.600
^{88}Zr	-83.770
^{89}Zr	-84.880
^{90}Zr	-88.450
^{91}Zr	-87.810
^{92}Zr	-88.580
^{93}Zr	-87.010
^{94}Zr	-87.390
^{95}Zr	-85.220
^{96}Zr	-85.040
^{97}Zr	-82.170
^{98}Zr	-81.540
^{99}Zr	-78.240
^{100}Zr	-77.300
^{101}Zr	-73.740
^{102}Zr	-72.420
^{103}Zr	-68.460
^{104}Zr	-66.710
^{105}Zr	-62.290
^{106}Zr	-60.060
^{107}Zr	-55.230
^{108}Zr	-52.630
^{109}Zr	-47.450
^{110}Zr	-44.510
^{111}Zr	-39.000
^{112}Zr	-35.770
^{113}Zr	-29.980
^{114}Zr	-26.610
^{115}Zr	-20.700
^{116}Zr	-17.010
^{117}Zr	-10.840
^{118}Zr	-6.810
^{119}Zr	-0.330
^{120}Zr	4.020
^{121}Zr	10.610
^{122}Zr	15.330
^{123}Zr	23.630 †
^{124}Zr	30.300
^{125}Zr	38.930 †
^{126}Zr	45.870
^{127}Zr	54.970 †
^{128}Zr	61.970
^{129}Zr	71.140 †
^{130}Zr	78.170 ‡
^{131}Zr	87.170 †
^{132}Zr	94.470 ‡
^{133}Zr	103.820 †
^{134}Zr	111.170 ‡
^{135}Zr	120.560 †
^{136}Zr	128.170 ‡
^{137}Zr	137.790 †
^{138}Zr	145.480 ‡
^{139}Zr	155.270 †
^{140}Zr	163.200 ‡
^{141}Zr	173.210 †
^{142}Zr	181.350 †

Isotope	Mass Excess
^{143}Zr	191.560 †
^{144}Zr	199.860 †
^{145}Zr	210.250 †
^{146}Zr	218.550 †
^{147}Zr	229.290 †
^{148}Zr	237.500 †
^{149}Zr	247.680 †
^{150}Zr	255.930 †
^{73}Nb	21.610 †
^{74}Nb	12.380 †
^{75}Nb	1.420 †
^{76}Nb	-6.650 †
^{77}Nb	-16.550 †
^{78}Nb	-23.550 †
^{79}Nb	-32.410 †
^{80}Nb	-38.480 †
^{81}Nb	-46.230 †
^{82}Nb	-51.310
^{83}Nb	-57.400
^{84}Nb	-60.840
^{85}Nb	-66.280
^{86}Nb	-69.130
^{87}Nb	-73.920
^{88}Nb	-76.210
^{89}Nb	-80.530
^{90}Nb	-82.420
^{91}Nb	-86.130
^{92}Nb	-86.280
^{93}Nb	-87.200
^{94}Nb	-86.400
^{95}Nb	-86.930
^{96}Nb	-85.510
^{97}Nb	-85.490
^{98}Nb	-83.390
^{99}Nb	-82.930
^{100}Nb	-80.410
^{101}Nb	-79.630
^{102}Nb	-76.810
^{103}Nb	-75.620
^{104}Nb	-72.390
^{105}Nb	-70.730
^{106}Nb	-67.030
^{107}Nb	-64.890
^{108}Nb	-60.750
^{109}Nb	-58.210
^{110}Nb	-53.680
^{111}Nb	-50.790
^{112}Nb	-45.900
^{113}Nb	-42.720
^{114}Nb	-37.540
^{115}Nb	-34.210
^{116}Nb	-28.900
^{117}Nb	-25.280
^{118}Nb	-19.700
^{119}Nb	-15.750
^{120}Nb	-9.860
^{121}Nb	-5.580
^{122}Nb	0.430
^{123}Nb	5.060
^{124}Nb	12.790
^{125}Nb	19.380
^{126}Nb	27.440
^{127}Nb	34.300
^{128}Nb	42.830 †
^{129}Nb	49.740
^{130}Nb	58.340 †
^{131}Nb	65.280
^{132}Nb	73.730 †
^{133}Nb	80.930
^{134}Nb	89.710 †
^{135}Nb	96.980
^{136}Nb	105.830 †
^{137}Nb	113.360 ‡
^{138}Nb	122.430 †
^{139}Nb	130.080 ‡

Isotope	Mass Excess
^{140}Nb	139.340 †
^{141}Nb	147.230 ‡
^{142}Nb	156.720 †
^{143}Nb	164.830 †
^{144}Nb	174.520 †
^{145}Nb	182.800 †
^{146}Nb	192.690 †
^{147}Nb	201.020 †
^{148}Nb	211.230 †
^{149}Nb	219.520 †
^{150}Nb	229.290 †
^{151}Nb	237.560 †
^{152}Nb	247.790 †
^{153}Nb	256.610 †
^{154}Nb	266.920 †
^{155}Nb	275.870 †
^{74}Mo	31.350 †
^{75}Mo	21.950 †
^{76}Mo	10.100 †
^{77}Mo	1.880 †
^{78}Mo	-8.920 †
^{79}Mo	-16.060 †
^{80}Mo	-25.820 ‡
^{81}Mo	-32.050
^{82}Mo	-40.670
^{83}Mo	-45.900
^{84}Mo	-53.640
^{85}Mo	-57.240
^{86}Mo	-63.570
^{87}Mo	-66.600
^{88}Mo	-72.240
^{89}Mo	-74.700
^{90}Mo	-79.820
^{91}Mo	-81.860
^{92}Mo	-86.350
^{93}Mo	-86.640
^{94}Mo	-88.330
^{95}Mo	-87.680
^{96}Mo	-88.960
^{97}Mo	-87.670
^{98}Mo	-88.370
^{99}Mo	-86.360
^{100}Mo	-86.600
^{101}Mo	-84.140
^{102}Mo	-84.040
^{103}Mo	-81.290
^{104}Mo	-80.780
^{105}Mo	-77.630
^{106}Mo	-76.680
^{107}Mo	-73.050
^{108}Mo	-71.600
^{109}Mo	-67.540
^{110}Mo	-65.720
^{111}Mo	-61.280
^{112}Mo	-59.110
^{113}Mo	-54.330
^{114}Mo	-51.840
^{115}Mo	-46.770
^{116}Mo	-44.110
^{117}Mo	-38.910
^{118}Mo	-35.920
^{119}Mo	-30.440
^{120}Mo	-27.090
^{121}Mo	-21.280
^{122}Mo	-17.590
^{123}Mo	-11.660
^{124}Mo	-7.590
^{125}Mo	0.050
^{126}Mo	6.070
^{127}Mo	14.050
^{128}Mo	20.360
^{129}Mo	28.820 †
^{130}Mo	35.200
^{131}Mo	43.750 †
^{132}Mo	50.180

Isotope	Mass Excess
^{133}Mo	58.580 †
^{134}Mo	65.280
^{135}Mo	74.040 †
^{136}Mo	80.820
^{137}Mo	89.630 †
^{138}Mo	96.670
^{139}Mo	105.730 †
^{140}Mo	112.860 ‡
^{141}Mo	122.100 †
^{142}Mo	129.480 ‡
^{143}Mo	138.950 †
^{144}Mo	146.550 ‡
^{145}Mo	156.230 †
^{146}Mo	164.000 ‡
^{147}Mo	173.860 †
^{148}Mo	181.630 ‡
^{149}Mo	191.860 †
^{150}Mo	199.560 ‡
^{151}Mo	209.230 †
^{152}Mo	216.980 ‡
^{153}Mo	227.170 †
^{154}Mo	235.520 †
^{155}Mo	245.780 †
^{156}Mo	254.270 †
^{157}Mo	264.590 †
^{158}Mo	273.070 †
^{159}Mo	283.410 †
^{160}Mo	292.130 †
^{161}Mo	302.680 †
^{162}Mo	311.690 †
^{77}Tc	22.340 †
^{78}Tc	13.220 †
^{79}Tc	2.250 †
^{80}Tc	-5.770 †
^{81}Tc	-15.710 †
^{82}Tc	-22.800 †
^{83}Tc	-31.590 †
^{84}Tc	-37.670 †
^{85}Tc	-45.580 †
^{86}Tc	-50.770
^{87}Tc	-57.250
^{88}Tc	-61.090
^{89}Tc	-66.880
^{90}Tc	-70.140
^{91}Tc	-75.400
^{92}Tc	-78.220
^{93}Tc	-82.850
^{94}Tc	-83.900
^{95}Tc	-85.750
^{96}Tc	-85.850
^{97}Tc	-87.270
^{98}Tc	-86.730
^{99}Tc	-87.560
^{100}Tc	-86.280
^{101}Tc	-86.650
^{102}Tc	-84.910
^{103}Tc	-84.940
^{104}Tc	-82.890
^{105}Tc	-82.510
^{106}Tc	-80.040
^{107}Tc	-79.200
^{108}Tc	-76.240
^{109}Tc	-74.910
^{110}Tc	-71.500
^{111}Tc	-69.780
^{112}Tc	-65.990
^{113}Tc	-63.920
^{114}Tc	-59.770
^{115}Tc	-57.380
^{116}Tc	-52.930
^{117}Tc	-50.350
^{118}Tc	-45.760
^{119}Tc	-42.860
^{120}Tc	-37.970
^{121}Tc	-34.710

Isotope	Mass Excess
^{122}Tc	-29.490
^{123}Tc	-25.880
^{124}Tc	-20.520
^{125}Tc	-16.530
^{126}Tc	-9.460
^{127}Tc	-3.520
^{128}Tc	3.890
^{129}Tc	10.120
^{130}Tc	18.030
^{131}Tc	24.330
^{132}Tc	32.340
^{133}Tc	38.690
^{134}Tc	46.560
^{135}Tc	53.190
^{136}Tc	61.420 †
^{137}Tc	68.130
^{138}Tc	76.430 †
^{139}Tc	83.410
^{140}Tc	91.960 †
^{141}Tc	99.030
^{142}Tc	107.770 †
^{143}Tc	115.090
^{144}Tc	124.070 †
^{145}Tc	131.620 ‡
^{146}Tc	140.810 †
^{147}Tc	148.530 ‡
^{148}Tc	157.920 †
^{149}Tc	165.650 ‡
^{150}Tc	175.410 †
^{151}Tc	183.070 ‡
^{152}Tc	192.280 †
^{153}Tc	200.000 ‡
^{154}Tc	209.740 †
^{155}Tc	218.050 †
^{156}Tc	227.860 †
^{157}Tc	236.320 †
^{158}Tc	246.200 †
^{159}Tc	254.640 †
^{160}Tc	264.550 †
^{161}Tc	273.240 †
^{162}Tc	283.360 †
^{163}Tc	292.340 †
^{164}Tc	302.580 †
^{165}Tc	311.740 †
^{78}Ru	31.900 †
^{79}Ru	22.680 †
^{80}Ru	10.840 †
^{81}Ru	2.720 †
^{82}Ru	-8.100 †
^{83}Ru	-15.330 †
^{84}Ru	-24.980 ‡
^{85}Ru	-31.200 ‡
^{86}Ru	-39.980
^{87}Ru	-45.320
^{88}Ru	-53.450
^{89}Ru	-57.490
^{90}Ru	-64.160
^{91}Ru	-67.600
^{92}Ru	-73.660
^{93}Ru	-76.620
^{94}Ru	-82.020
^{95}Ru	-83.220
^{96}Ru	-85.810
^{97}Ru	-86.050
^{98}Ru	-88.210
^{99}Ru	-87.790
^{100}Ru	-89.300
^{101}Ru	-88.080
^{102}Ru	-89.090
^{103}Ru	-87.380
^{104}Ru	-88.060
^{105}Ru	-86.050
^{106}Ru	-86.350
^{107}Ru	-83.950
^{108}Ru	-83.810

Isotope	Mass Excess
^{109}Ru	-80.910
^{110}Ru	-80.280
^{111}Ru	-76.940
^{112}Ru	-75.940
^{113}Ru	-72.250
^{114}Ru	-70.900
^{115}Ru	-66.870
^{116}Ru	-65.180
^{117}Ru	-60.850
^{118}Ru	-58.980
^{119}Ru	-54.520
^{120}Ru	-52.280
^{121}Ru	-47.490
^{122}Ru	-44.830
^{123}Ru	-39.700
^{124}Ru	-36.670
^{125}Ru	-31.400
^{126}Ru	-27.990
^{127}Ru	-20.990
^{128}Ru	-15.620
^{129}Ru	-8.270
^{130}Ru	-2.590
^{131}Ru	5.260
^{132}Ru	11.060
^{133}Ru	19.070
^{134}Ru	24.920
^{135}Ru	32.750
^{136}Ru	38.900
^{137}Ru	47.140 †
^{138}Ru	53.350
^{139}Ru	61.620 †
^{140}Ru	68.120
^{141}Ru	76.660 †
^{142}Ru	83.220
^{143}Ru	91.930 †
^{144}Ru	98.740
^{145}Ru	107.700 †
^{146}Ru	114.750
^{147}Ru	123.930 †
^{148}Ru	131.130 ‡
^{149}Ru	140.500 †
^{150}Ru	147.660 ‡
^{151}Ru	157.450 †
^{152}Ru	164.490 ‡
^{153}Ru	173.580 †
^{154}Ru	180.760 ‡
^{155}Ru	190.430 †
^{156}Ru	198.270 ‡
^{157}Ru	208.020 †
^{158}Ru	216.000 ‡
^{159}Ru	225.820 †
^{160}Ru	233.820 ‡
^{161}Ru	243.680 †
^{162}Ru	251.930 †
^{163}Ru	262.020 †
^{164}Ru	270.560 †
^{165}Ru	280.770 †
^{166}Ru	289.510 †
^{167}Ru	299.910 †
^{168}Ru	308.840 †
^{82}Rh	13.920 †
^{83}Rh	2.930 †
^{84}Rh	-5.130 †
^{85}Rh	-14.950 †
^{86}Rh	-21.980 †
^{87}Rh	-30.940 †
^{88}Rh	-37.090 †
^{89}Rh	-45.420 †
^{90}Rh	-50.990
^{91}Rh	-57.850
^{92}Rh	-62.080
^{93}Rh	-68.290
^{94}Rh	-72.030
^{95}Rh	-77.580
^{96}Rh	-79.530

Isotope	Mass Excess
^{97}Rh	-82.260
^{98}Rh	-83.220
^{99}Rh	-85.510
^{100}Rh	-85.810
^{101}Rh	-87.450
^{102}Rh	-86.900
^{103}Rh	-88.010
^{104}Rh	-86.960
^{105}Rh	-87.750
^{106}Rh	-86.400
^{107}Rh	-86.830
^{108}Rh	-85.080
^{109}Rh	-85.070
^{110}Rh	-82.810
^{111}Rh	-82.310
^{112}Rh	-79.610
^{113}Rh	-78.730
^{114}Rh	-75.670
^{115}Rh	-74.450
^{116}Rh	-71.040
^{117}Rh	-69.480
^{118}Rh	-65.780
^{119}Rh	-64.040
^{120}Rh	-60.200
^{121}Rh	-58.080
^{122}Rh	-53.890
^{123}Rh	-51.330
^{124}Rh	-46.780
^{125}Rh	-43.850
^{126}Rh	-39.160
^{127}Rh	-35.840
^{128}Rh	-29.390
^{129}Rh	-24.090
^{130}Rh	-17.290
^{131}Rh	-11.680
^{132}Rh	-4.360
^{133}Rh	1.380
^{134}Rh	8.880
^{135}Rh	14.670
^{136}Rh	21.990
^{137}Rh	28.090
^{138}Rh	35.830
^{139}Rh	41.980
^{140}Rh	49.750
^{141}Rh	56.190
^{142}Rh	64.240
^{143}Rh	70.730
^{144}Rh	78.960 †
^{145}Rh	85.710
^{146}Rh	94.190 †
^{147}Rh	101.170
^{148}Rh	109.890 †
^{149}Rh	117.030
^{150}Rh	125.930 †
^{151}Rh	133.020
^{152}Rh	142.360 †
^{153}Rh	149.320 ‡
^{154}Rh	157.930 †
^{155}Rh	165.030
^{156}Rh	174.250 †
^{157}Rh	182.020 ‡
^{158}Rh	191.320 †
^{159}Rh	199.250 ‡
^{160}Rh	208.620 †
^{161}Rh	216.570 ‡
^{162}Rh	225.990 †
^{163}Rh	234.200 †
^{164}Rh	243.850 †
^{165}Rh	252.350 †
^{166}Rh	262.140 †
^{167}Rh	270.840 †
^{168}Rh	280.820 †
^{169}Rh	289.710 †
^{170}Rh	299.750 †
^{171}Rh	309.090 †

Isotope	Mass Excess
^{83}Pd	23.440 †
^{84}Pd	11.590 †
^{85}Pd	3.400 †
^{86}Pd	-7.250 †
^{87}Pd	-14.420 †
^{88}Pd	-24.230 ‡
^{89}Pd	-30.520 ‡
^{90}Pd	-39.730
^{91}Pd	-45.480
^{92}Pd	-53.850
^{93}Pd	-58.250
^{94}Pd	-65.280
^{95}Pd	-69.220
^{96}Pd	-75.660
^{97}Pd	-77.710
^{98}Pd	-81.070
^{99}Pd	-82.130
^{100}Pd	-85.110
^{101}Pd	-85.510
^{102}Pd	-87.840
^{103}Pd	-87.390
^{104}Pd	-89.150
^{105}Pd	-88.150
^{106}Pd	-89.600
^{107}Pd	-88.340
^{108}Pd	-89.440
^{109}Pd	-87.780
^{110}Pd	-88.450
^{111}Pd	-86.290
^{112}Pd	-86.450
^{113}Pd	-83.840
^{114}Pd	-83.640
^{115}Pd	-80.680
^{116}Pd	-80.120
^{117}Pd	-76.820
^{118}Pd	-75.930
^{119}Pd	-72.340
^{120}Pd	-71.270
^{121}Pd	-67.560
^{122}Pd	-66.060
^{123}Pd	-61.980
^{124}Pd	-60.040
^{125}Pd	-55.620
^{126}Pd	-53.320
^{127}Pd	-48.790
^{128}Pd	-46.140
^{129}Pd	-39.690
^{130}Pd	-34.850
^{131}Pd	-28.070
^{132}Pd	-22.950
^{133}Pd	-15.670
^{134}Pd	-10.450
^{135}Pd	-2.980
^{136}Pd	2.310
^{137}Pd	9.580
^{138}Pd	15.190
^{139}Pd	22.890
^{140}Pd	28.530
^{141}Pd	36.250
^{142}Pd	42.200
^{143}Pd	50.200
^{144}Pd	56.190
^{145}Pd	64.360 †
^{146}Pd	70.620
^{147}Pd	79.050 †
^{148}Pd	85.550
^{149}Pd	94.220 †
^{150}Pd	100.870
^{151}Pd	109.730 †
^{152}Pd	116.320
^{153}Pd	125.630 †
^{154}Pd	132.080
^{155}Pd	140.610 †
^{156}Pd	147.200
^{157}Pd	156.370 †

Isotope	Mass Excess
^{158}Pd	163.670 ‡
^{159}Pd	172.910 †
^{160}Pd	180.370 ‡
^{161}Pd	189.700 †
^{162}Pd	197.180 ‡
^{163}Pd	206.540 †
^{164}Pd	214.290 ‡
^{165}Pd	223.880 †
^{166}Pd	231.920 ‡
^{167}Pd	241.630 †
^{168}Pd	249.870 †
^{169}Pd	259.770 †
^{170}Pd	268.190 †
^{171}Pd	278.120 †
^{172}Pd	287.040 †
^{173}Pd	298.690 †
^{174}Pd	308.780 †
^{85}Ag	23.720 †
^{86}Ag	14.720 †
^{87}Ag	3.900 †
^{88}Ag	-4.060 †
^{89}Ag	-14.040 †
^{90}Ag	-21.120 †
^{91}Ag	-30.500 †
^{92}Ag	-37.030 †
^{93}Ag	-45.560 †
^{94}Ag	-51.420
^{95}Ag	-58.640
^{96}Ag	-63.410
^{97}Ag	-70.140
^{98}Ag	-72.890
^{99}Ag	-76.270
^{100}Ag	-78.010
^{101}Ag	-81.080
^{102}Ag	-82.180
^{103}Ag	-84.630
^{104}Ag	-84.870
^{105}Ag	-86.750
^{106}Ag	-86.410
^{107}Ag	-87.980
^{108}Ag	-87.370
^{109}Ag	-88.590
^{110}Ag	-87.590
^{111}Ag	-88.380
^{112}Ag	-86.860
^{113}Ag	-87.140
^{114}Ag	-85.170
^{115}Ag	-85.090
^{116}Ag	-82.750
^{117}Ag	-82.320
^{118}Ag	-79.640
^{119}Ag	-78.860
^{120}Ag	-75.890
^{121}Ag	-74.950
^{122}Ag	-71.840
^{123}Ag	-70.430
^{124}Ag	-66.950
^{125}Ag	-65.140
^{126}Ag	-61.320
^{127}Ag	-59.190
^{128}Ag	-55.310
^{129}Ag	-52.860
^{130}Ag	-46.860
^{131}Ag	-42.000
^{132}Ag	-35.700
^{133}Ag	-30.620
^{134}Ag	-23.860
^{135}Ag	-18.710
^{136}Ag	-11.760
^{137}Ag	-6.530
^{138}Ag	0.230
^{139}Ag	5.770
^{140}Ag	12.970
^{141}Ag	18.550
^{142}Ag	25.770

Isotope	Mass Excess
^{143}Ag	31.650
^{144}Ag	39.160
^{145}Ag	45.080
^{146}Ag	52.770
^{147}Ag	58.960
^{148}Ag	66.920
^{149}Ag	73.350
^{150}Ag	81.540 †
^{151}Ag	88.140
^{152}Ag	96.530 †
^{153}Ag	103.060
^{154}Ag	111.910 †
^{155}Ag	118.300
^{156}Ag	126.360
^{157}Ag	132.880
^{158}Ag	141.590 †
^{159}Ag	148.830
^{160}Ag	157.630 †
^{161}Ag	165.040 ‡
^{162}Ag	173.920 †
^{163}Ag	181.360 ‡
^{164}Ag	190.270 †
^{165}Ag	197.950 ‡
^{166}Ag	207.090 †
^{167}Ag	215.060 ‡
^{168}Ag	224.300 †
^{169}Ag	232.460 †
^{170}Ag	241.890 †
^{171}Ag	250.220 †
^{172}Ag	259.650 †
^{173}Ag	268.520 †
^{174}Ag	279.890 †
^{175}Ag	290.050 †
^{86}Cd	33.320 †
^{87}Cd	24.160 †
^{88}Cd	12.540 †
^{89}Cd	4.430 †
^{90}Cd	-6.350 †
^{91}Cd	-13.580 †
^{92}Cd	-23.740 ‡
^{93}Cd	-30.420 ‡
^{94}Cd	-39.740
^{95}Cd	-45.790
^{96}Cd	-54.640
^{97}Cd	-59.820
^{98}Cd	-67.710
^{99}Cd	-70.500
^{100}Cd	-74.240
^{101}Cd	-75.930
^{102}Cd	-79.540
^{103}Cd	-80.700
^{104}Cd	-83.810
^{105}Cd	-84.160
^{106}Cd	-86.720
^{107}Cd	-86.460
^{108}Cd	-88.680
^{109}Cd	-88.150
^{110}Cd	-90.030
^{111}Cd	-89.120
^{112}Cd	-90.570
^{113}Cd	-89.140
^{114}Cd	-90.080
^{115}Cd	-88.190
^{116}Cd	-88.780
^{117}Cd	-86.540
^{118}Cd	-86.770
^{119}Cd	-84.200
^{120}Cd	-84.090
^{121}Cd	-81.230
^{122}Cd	-80.910
^{123}Cd	-77.900
^{124}Cd	-77.120
^{125}Cd	-73.770
^{126}Cd	-72.670
^{127}Cd	-69.090

Isotope	Mass Excess
^{128}Cd	-67.810
^{129}Cd	-64.300
^{130}Cd	-62.690
^{131}Cd	-56.510
^{132}Cd	-51.860
^{133}Cd	-45.390
^{134}Cd	-40.650
^{135}Cd	-33.860
^{136}Cd	-29.210
^{137}Cd	-22.320
^{138}Cd	-17.610
^{139}Cd	-10.900
^{140}Cd	-5.850
^{141}Cd	1.310
^{142}Cd	6.390
^{143}Cd	13.560
^{144}Cd	18.950
^{145}Cd	26.410
^{146}Cd	31.830
^{147}Cd	39.470
^{148}Cd	45.170
^{149}Cd	53.080
^{150}Cd	59.030
^{151}Cd	67.180 †
^{152}Cd	73.280
^{153}Cd	81.630 †
^{154}Cd	87.660
^{155}Cd	96.480 †
^{156}Cd	102.360
^{157}Cd	110.340
^{158}Cd	116.350
^{159}Cd	125.010 †
^{160}Cd	131.800
^{161}Cd	140.540 †
^{162}Cd	147.510
^{163}Cd	156.330 †
^{164}Cd	163.280
^{165}Cd	172.080 †
^{166}Cd	179.230
^{167}Cd	188.200 †
^{168}Cd	195.600 ‡
^{169}Cd	204.620 †
^{170}Cd	212.200 ‡
^{171}Cd	221.410 †
^{172}Cd	229.180 ‡
^{173}Cd	238.350 †
^{174}Cd	246.780 †
^{175}Cd	258.430 †
^{176}Cd	268.490 †
^{90}In	15.670 †
^{91}In	4.740 †
^{92}In	-3.270 †
^{93}In	-13.570 †
^{94}In	-21.010 †
^{95}In	-30.500 †
^{96}In	-37.330 †
^{97}In	-46.520 †
^{98}In	-53.300
^{99}In	-61.570
^{100}In	-65.040
^{101}In	-68.690
^{102}In	-70.960
^{103}In	-74.540
^{104}In	-76.320
^{105}In	-79.530
^{106}In	-80.560
^{107}In	-83.260
^{108}In	-83.670
^{109}In	-86.000
^{110}In	-86.110
^{111}In	-88.110
^{112}In	-87.830
^{113}In	-89.410
^{114}In	-88.600
^{115}In	-89.660

Isotope	Mass Excess
^{116}In	-88.390
^{117}In	-89.110
^{118}In	-87.490
^{119}In	-87.850
^{120}In	-85.900
^{121}In	-85.910
^{122}In	-83.640
^{123}In	-83.420
^{124}In	-81.000
^{125}In	-80.340
^{126}In	-77.610
^{127}In	-76.740
^{128}In	-73.860
^{129}In	-72.870
^{130}In	-70.080
^{131}In	-68.740
^{132}In	-62.960
^{133}In	-58.180
^{134}In	-52.070
^{135}In	-47.210
^{136}In	-40.850
^{137}In	-36.270
^{138}In	-29.900
^{139}In	-25.260
^{140}In	-19.070
^{141}In	-14.080
^{142}In	-7.410
^{143}In	-2.390
^{144}In	4.280
^{145}In	9.620
^{146}In	16.590
^{147}In	21.940
^{148}In	29.100
^{149}In	34.740
^{150}In	42.170
^{151}In	48.050
^{152}In	55.740
^{153}In	61.780
^{154}In	69.660
^{155}In	75.620
^{156}In	84.000 †
^{157}In	89.790
^{158}In	97.290
^{159}In	103.230
^{160}In	111.440 †
^{161}In	118.180
^{162}In	126.480 †
^{163}In	133.390
^{164}In	141.770 †
^{165}In	148.630
^{166}In	156.940 †
^{167}In	163.930
^{168}In	172.360 †
^{169}In	179.610
^{170}In	188.070 †
^{171}In	195.510
^{172}In	204.200 †
^{173}In	211.830 ‡
^{174}In	220.480 †
^{175}In	228.840 †
^{176}In	240.270 †
^{177}In	250.480 †
^{91}Sn	25.350 †
^{92}Sn	13.640 †
^{93}Sn	5.480 †
^{94}Sn	-5.580 †
^{95}Sn	-13.170 †
^{96}Sn	-23.430 ‡
^{97}Sn	-30.470 ‡
^{98}Sn	-40.720
^{99}Sn	-47.910
^{100}Sn	-57.900
^{101}Sn	-61.430
^{102}Sn	-65.500
^{103}Sn	-67.720

Isotope	Mass Excess
^{104}Sn	-71.760
^{105}Sn	-73.520
^{106}Sn	-77.360
^{107}Sn	-78.510
^{108}Sn	-81.880
^{109}Sn	-82.430
^{110}Sn	-85.430
^{111}Sn	-85.650
^{112}Sn	-88.300
^{113}Sn	-88.120
^{114}Sn	-90.360
^{115}Sn	-89.630
^{116}Sn	-91.340
^{117}Sn	-90.170
^{118}Sn	-91.540
^{119}Sn	-90.010
^{120}Sn	-91.020
^{121}Sn	-89.160
^{122}Sn	-89.770
^{123}Sn	-87.610
^{124}Sn	-87.970
^{125}Sn	-85.660
^{126}Sn	-85.610
^{127}Sn	-83.060
^{128}Sn	-83.020
^{129}Sn	-80.410
^{130}Sn	-80.250
^{131}Sn	-77.780
^{132}Sn	-77.230
^{133}Sn	-71.320
^{134}Sn	-66.820
^{135}Sn	-60.540
^{136}Sn	-55.910
^{137}Sn	-49.430
^{138}Sn	-45.340
^{139}Sn	-39.050
^{140}Sn	-34.930
^{141}Sn	-28.820
^{142}Sn	-24.340
^{143}Sn	-17.720
^{144}Sn	-13.200
^{145}Sn	-6.580
^{146}Sn	-1.730
^{147}Sn	5.200
^{148}Sn	10.050
^{149}Sn	17.160
^{150}Sn	22.300
^{151}Sn	29.690
^{152}Sn	35.090
^{153}Sn	42.730
^{154}Sn	48.280
^{155}Sn	56.120
^{156}Sn	61.590
^{157}Sn	69.930 †
^{158}Sn	75.210
^{159}Sn	82.630
^{160}Sn	88.110
^{161}Sn	96.270 †
^{162}Sn	102.570
^{163}Sn	110.820 †
^{164}Sn	117.280
^{165}Sn	125.590 †
^{166}Sn	131.950
^{167}Sn	140.080 †
^{168}Sn	146.440
^{169}Sn	154.650 †
^{170}Sn	161.320
^{171}Sn	169.570 †
^{172}Sn	176.460
^{173}Sn	184.960 †
^{174}Sn	192.050
^{175}Sn	200.480 †
^{176}Sn	208.400 ‡
^{177}Sn	220.040 †
^{178}Sn	230.110 †

Isotope	Mass Excess
^{179}Sn	241.770 †
^{180}Sn	251.880 †
^{95}Sb	6.870 †
^{96}Sb	-1.470 †
^{97}Sb	-11.860 †
^{98}Sb	-19.590 †
^{99}Sb	-29.750 †
^{100}Sb	-37.490 †
^{101}Sb	-47.390 †
^{102}Sb	-52.320 †
^{103}Sb	-56.750 †
^{104}Sb	-59.800 †
^{105}Sb	-64.160 †
^{106}Sb	-66.730
^{107}Sb	-70.760
^{108}Sb	-72.610
^{109}Sb	-76.110
^{110}Sb	-77.340
^{111}Sb	-80.470
^{112}Sb	-81.350
^{113}Sb	-84.130
^{114}Sb	-84.610
^{115}Sb	-86.960
^{116}Sb	-86.900
^{117}Sb	-88.720
^{118}Sb	-88.180
^{119}Sb	-89.650
^{120}Sb	-88.750
^{121}Sb	-89.850
^{122}Sb	-88.600
^{123}Sb	-89.320
^{124}Sb	-87.750
^{125}Sb	-88.220
^{126}Sb	-86.490
^{127}Sb	-86.510
^{128}Sb	-84.480
^{129}Sb	-84.350
^{130}Sb	-82.190
^{131}Sb	-81.940
^{132}Sb	-79.880
^{133}Sb	-79.250
^{134}Sb	-74.040
^{135}Sb	-69.830
^{136}Sb	-64.260
^{137}Sb	-59.930
^{138}Sb	-54.140
^{139}Sb	-50.160
^{140}Sb	-44.400
^{141}Sb	-40.370
^{142}Sb	-34.780
^{143}Sb	-30.380
^{144}Sb	-24.290
^{145}Sb	-19.850
^{146}Sb	-13.740
^{147}Sb	-8.980
^{148}Sb	-2.570
^{149}Sb	2.220
^{150}Sb	8.830
^{151}Sb	13.910
^{152}Sb	20.800
^{153}Sb	26.140
^{154}Sb	33.290
^{155}Sb	38.790
^{156}Sb	46.150
^{157}Sb	51.590
^{158}Sb	59.440
^{159}Sb	64.710
^{160}Sb	71.700
^{161}Sb	77.130
^{162}Sb	84.840
^{163}Sb	91.090
^{164}Sb	98.900
^{165}Sb	105.320
^{166}Sb	113.200
^{167}Sb	119.570

Isotope	Mass Excess
^{168}Sb	127.370
^{169}Sb	133.820
^{170}Sb	141.720
^{171}Sb	148.450
^{172}Sb	156.400
^{173}Sb	163.330
^{174}Sb	171.510 †
^{175}Sb	178.650
^{176}Sb	186.790 †
^{177}Sb	194.700
^{178}Sb	205.760 †
^{179}Sb	215.620 †
^{180}Sb	226.710 †
^{181}Sb	236.600 †
^{96}Te	17.600 †
^{97}Te	9.110 †
^{98}Te	-1.990 †
^{99}Te	-9.820 †
^{100}Te	-20.440 †
^{101}Te	-28.060 †
^{102}Te	-38.350 †
^{103}Te	-43.510 †
^{104}Te	-49.570 ‡
^{105}Te	-52.940 ‡
^{106}Te	-58.230
^{107}Te	-61.060
^{108}Te	-65.830
^{109}Te	-67.820
^{110}Te	-72.020
^{111}Te	-73.370
^{112}Te	-77.180
^{113}Te	-78.230
^{114}Te	-81.670
^{115}Te	-82.300
^{116}Te	-85.280
^{117}Te	-85.370
^{118}Te	-87.810
^{119}Te	-87.410
^{120}Te	-89.460
^{121}Te	-88.690
^{122}Te	-90.360
^{123}Te	-89.220
^{124}Te	-90.520
^{125}Te	-89.060
^{126}Te	-90.120
^{127}Te	-88.480
^{128}Te	-89.050
^{129}Te	-87.060
^{130}Te	-87.310
^{131}Te	-85.070
^{132}Te	-85.130
^{133}Te	-82.940
^{134}Te	-82.650
^{135}Te	-77.740
^{136}Te	-74.340
^{137}Te	-69.110
^{138}Te	-65.590
^{139}Te	-60.040
^{140}Te	-56.630
^{141}Te	-50.970
^{142}Te	-47.470
^{143}Te	-41.950
^{144}Te	-38.090
^{145}Te	-32.110
^{146}Te	-28.190
^{147}Te	-22.180
^{148}Te	-17.940
^{149}Te	-11.620
^{150}Te	-7.310
^{151}Te	-0.800
^{152}Te	3.800
^{153}Te	10.610
^{154}Te	15.480
^{155}Te	22.540
^{156}Te	27.590

Isotope	Mass Excess
^{157}Te	34.870
^{158}Te	39.880
^{159}Te	47.650
^{160}Te	52.520
^{161}Te	59.480
^{162}Te	64.490
^{163}Te	72.150
^{164}Te	77.950
^{165}Te	85.710
^{166}Te	91.700
^{167}Te	99.550
^{168}Te	105.540
^{169}Te	113.380
^{170}Te	119.570
^{171}Te	127.580
^{172}Te	134.030
^{173}Te	142.100
^{174}Te	148.740
^{175}Te	157.020 †
^{176}Te	163.870
^{177}Te	172.130 †
^{178}Te	179.660
^{179}Te	190.450 †
^{180}Te	199.670 †
^{181}Te	210.470 †
^{182}Te	219.700 †
^{99}I	10.610 †
^{100}I	2.090 †
^{101}I	-8.530 †
^{102}I	-16.680 †
^{103}I	-26.870 †
^{104}I	-32.790 †
^{105}I	-39.220 †
^{106}I	-44.030 †
^{107}I	-49.580 †
^{108}I	-53.150 †
^{109}I	-58.080 †
^{110}I	-60.770
^{111}I	-65.100
^{112}I	-67.140
^{113}I	-71.090
^{114}I	-72.820
^{115}I	-76.390
^{116}I	-77.690
^{117}I	-80.780
^{118}I	-81.520
^{119}I	-84.060
^{120}I	-84.310
^{121}I	-86.450
^{122}I	-86.290
^{123}I	-88.030
^{124}I	-87.490
^{125}I	-88.870
^{126}I	-87.990
^{127}I	-89.140
^{128}I	-88.080
^{129}I	-88.730
^{130}I	-87.280
^{131}I	-87.520
^{132}I	-85.750
^{133}I	-85.720
^{134}I	-83.920
^{135}I	-83.560
^{136}I	-79.350
^{137}I	-76.240
^{138}I	-71.720
^{139}I	-68.440
^{140}I	-63.500
^{141}I	-60.190
^{142}I	-55.070
^{143}I	-51.650
^{144}I	-46.670
^{145}I	-42.900
^{146}I	-37.460
^{147}I	-33.630

Isotope	Mass Excess
^{148}I	-28.130
^{149}I	-23.970
^{150}I	-18.160
^{151}I	-13.930
^{152}I	-7.910
^{153}I	-3.370
^{154}I	2.940
^{155}I	7.750
^{156}I	14.330
^{157}I	19.320
^{158}I	26.130
^{159}I	31.100
^{160}I	38.390
^{161}I	43.250
^{162}I	49.790
^{163}I	54.780
^{164}I	61.990
^{165}I	67.740
^{166}I	75.060
^{167}I	81.000
^{168}I	88.430
^{169}I	94.400
^{170}I	101.860
^{171}I	108.080
^{172}I	115.760
^{173}I	122.260
^{174}I	130.030
^{175}I	136.730
^{176}I	144.700
^{177}I	151.590
^{178}I	159.560
^{179}I	167.070
^{180}I	177.290 †
^{181}I	186.290 †
^{182}I	196.510 †
^{183}I	205.530 †
^{184}I	215.860 †
^{185}I	224.860 †
^{100}Xe	21.420 †
^{101}Xe	12.780 †
^{102}Xe	1.550 †
^{103}Xe	-6.580 †
^{104}Xe	-17.190 †
^{105}Xe	-23.320 †
^{106}Xe	-30.700 †
^{107}Xe	-35.760 †
^{108}Xe	-42.700 ‡
^{109}Xe	-46.450 ‡
^{110}Xe	-52.090
^{111}Xe	-54.930
^{112}Xe	-59.940
^{113}Xe	-62.160
^{114}Xe	-66.800
^{115}Xe	-68.700
^{116}Xe	-72.920
^{117}Xe	-74.370
^{118}Xe	-78.080
^{119}Xe	-78.960
^{120}Xe	-82.110
^{121}Xe	-82.500
^{122}Xe	-85.220
^{123}Xe	-85.180
^{124}Xe	-87.490
^{125}Xe	-87.050
^{126}Xe	-88.970
^{127}Xe	-88.190
^{128}Xe	-89.890
^{129}Xe	-88.930
^{130}Xe	-90.130
^{131}Xe	-88.750
^{132}Xe	-89.490
^{133}Xe	-87.730
^{134}Xe	-88.090
^{135}Xe	-86.200
^{136}Xe	-86.190

Isotope	Mass Excess
^{137}Xe	-82.250
^{138}Xe	-79.910
^{139}Xe	-75.640
^{140}Xe	-73.020
^{141}Xe	-68.230
^{142}Xe	-65.470
^{143}Xe	-60.450
^{144}Xe	-57.570
^{145}Xe	-52.690
^{146}Xe	-49.460
^{147}Xe	-44.130
^{148}Xe	-40.820
^{149}Xe	-35.420
^{150}Xe	-31.770
^{151}Xe	-26.050
^{152}Xe	-22.300
^{153}Xe	-16.370
^{154}Xe	-12.310
^{155}Xe	-6.080
^{156}Xe	-1.740
^{157}Xe	4.760
^{158}Xe	9.300
^{159}Xe	16.020
^{160}Xe	20.570
^{161}Xe	27.760
^{162}Xe	32.230
^{163}Xe	38.750
^{164}Xe	43.340
^{165}Xe	50.500
^{166}Xe	55.810
^{167}Xe	63.080
^{168}Xe	68.600
^{169}Xe	75.980
^{170}Xe	81.550
^{171}Xe	89.000
^{172}Xe	94.850
^{173}Xe	102.550
^{174}Xe	108.720
^{175}Xe	116.550
^{176}Xe	122.930
^{177}Xe	130.980
^{178}Xe	137.570
^{179}Xe	145.650 †
^{180}Xe	152.780
^{181}Xe	162.740 †
^{182}Xe	171.120 †
^{183}Xe	181.120 †
^{184}Xe	189.600 †
^{185}Xe	199.790 †
^{186}Xe	208.350 †
^{187}Xe	218.670 †
^{188}Xe	227.460 †
^{189}Xe	237.490 †
^{190}Xe	246.880 †
^{191}Xe	257.020 †
^{192}Xe	265.550 †
^{193}Xe	275.570 †
^{194}Xe	284.190 †
^{195}Xe	294.360 †
^{196}Xe	303.050 †
^{197}Xe	313.330 †
^{198}Xe	322.150 †
^{105}Cs	-4.680 †
^{106}Cs	-11.570 †
^{107}Cs	-19.250 †
^{108}Cs	-25.070 †
^{109}Cs	-32.210 †
^{110}Cs	-37.250 †
^{111}Cs	-43.060 †
^{112}Cs	-46.590 †
^{113}Cs	-51.780 †
^{114}Cs	-54.740 †
^{115}Cs	-59.540
^{116}Cs	-62.140
^{117}Cs	-66.470

Isotope	Mass Excess
^{118}Cs	-68.590
^{119}Cs	-72.410
^{120}Cs	-73.950
^{121}Cs	-77.190
^{122}Cs	-78.210
^{123}Cs	-81.000
^{124}Cs	-81.580
^{125}Cs	-83.940
^{126}Cs	-84.100
^{127}Cs	-86.060
^{128}Cs	-85.850
^{129}Cs	-87.580
^{130}Cs	-87.170
^{131}Cs	-88.440
^{132}Cs	-87.610
^{133}Cs	-88.390
^{134}Cs	-87.140
^{135}Cs	-87.500
^{136}Cs	-86.040
^{137}Cs	-85.960
^{138}Cs	-82.720
^{139}Cs	-80.630
^{140}Cs	-76.980
^{141}Cs	-74.520
^{142}Cs	-70.300
^{143}Cs	-67.660
^{144}Cs	-63.190
^{145}Cs	-60.430
^{146}Cs	-56.100
^{147}Cs	-52.990
^{148}Cs	-48.210
^{149}Cs	-44.990
^{150}Cs	-40.100
^{151}Cs	-36.540
^{152}Cs	-31.340
^{153}Cs	-27.660
^{154}Cs	-22.220
^{155}Cs	-18.230
^{156}Cs	-12.490
^{157}Cs	-8.220
^{158}Cs	-2.210
^{159}Cs	2.280
^{160}Cs	8.540
^{161}Cs	13.060
^{162}Cs	19.760
^{163}Cs	24.240
^{164}Cs	30.360
^{165}Cs	34.960
^{166}Cs	41.680
^{167}Cs	46.970
^{168}Cs	53.810
^{169}Cs	59.290
^{170}Cs	66.250
^{171}Cs	71.790
^{172}Cs	78.840
^{173}Cs	84.680
^{174}Cs	92.000
^{175}Cs	98.160
^{176}Cs	105.650
^{177}Cs	112.040
^{178}Cs	119.760
^{179}Cs	126.380
^{180}Cs	134.190
^{181}Cs	141.300
^{182}Cs	150.670 †
^{183}Cs	158.860 †
^{184}Cs	168.360 †
^{185}Cs	176.720 †
^{186}Cs	186.450 †
^{187}Cs	194.930 †
^{188}Cs	204.830 †
^{189}Cs	213.550 †
^{190}Cs	223.170 †
^{191}Cs	232.450 †
^{192}Cs	242.180 †

Isotope	Mass Excess
^{193}Cs	250.670 †
^{194}Cs	260.310 †
^{195}Cs	268.890 †
^{196}Cs	278.690 †
^{197}Cs	287.350 †
^{198}Cs	297.260 †
^{199}Cs	306.050 †
^{106}Ba	5.530 †
^{107}Ba	-1.500 †
^{108}Ba	-9.920 †
^{109}Ba	-15.890 †
^{110}Ba	-23.730 †
^{111}Ba	-28.930 †
^{112}Ba	-36.000 ‡
^{113}Ba	-39.710 ‡
^{114}Ba	-45.620
^{115}Ba	-48.780
^{116}Ba	-54.250
^{117}Ba	-57.010
^{118}Ba	-61.990
^{119}Ba	-64.260
^{120}Ba	-68.690
^{121}Ba	-70.370
^{122}Ba	-74.210
^{123}Ba	-75.360
^{124}Ba	-78.730
^{125}Ba	-79.420
^{126}Ba	-82.330
^{127}Ba	-82.590
^{128}Ba	-85.090
^{129}Ba	-84.960
^{130}Ba	-87.200
^{131}Ba	-86.860
^{132}Ba	-88.680
^{133}Ba	-87.930
^{134}Ba	-89.260
^{135}Ba	-88.090
^{136}Ba	-88.970
^{137}Ba	-87.580
^{138}Ba	-88.010
^{139}Ba	-84.890
^{140}Ba	-83.370
^{141}Ba	-79.840
^{142}Ba	-77.940
^{143}Ba	-73.840
^{144}Ba	-71.740
^{145}Ba	-67.420
^{146}Ba	-65.200
^{147}Ba	-60.970
^{148}Ba	-58.410
^{149}Ba	-53.740
^{150}Ba	-51.030
^{151}Ba	-46.250
^{152}Ba	-43.200
^{153}Ba	-38.100
^{154}Ba	-34.890
^{155}Ba	-29.540
^{156}Ba	-26.020
^{157}Ba	-20.370
^{158}Ba	-16.560
^{159}Ba	-10.640
^{160}Ba	-6.600
^{161}Ba	-0.420
^{162}Ba	3.680
^{163}Ba	10.290
^{164}Ba	14.380
^{165}Ba	20.480
^{166}Ba	24.700
^{167}Ba	31.370
^{168}Ba	36.240
^{169}Ba	43.050
^{170}Ba	48.110
^{171}Ba	55.030
^{172}Ba	60.150
^{173}Ba	67.160

Isotope	Mass Excess
^{174}Ba	72.590
^{175}Ba	79.880
^{176}Ba	85.640
^{177}Ba	93.090
^{178}Ba	99.090
^{179}Ba	106.780
^{180}Ba	113.000
^{181}Ba	120.790
^{182}Ba	127.500
^{183}Ba	136.780 †
^{184}Ba	144.540 ‡
^{185}Ba	153.970 †
^{186}Ba	161.900 ‡
^{187}Ba	171.570 †
^{188}Ba	179.640 ‡
^{189}Ba	189.470 †
^{190}Ba	197.770 †
^{191}Ba	207.330 †
^{192}Ba	216.160 †
^{193}Ba	225.840 †
^{194}Ba	233.930 †
^{195}Ba	243.540 †
^{196}Ba	251.740 †
^{197}Ba	261.500 †
^{198}Ba	269.790 †
^{199}Ba	279.670 †
^{200}Ba	288.090 †
^{201}Ba	298.190 †
^{202}Ba	306.710 †
^{203}Ba	316.900 †
^{204}Ba	325.620 †
^{111}La	-12.140 †
^{112}La	-18.020 †
^{113}La	-25.280 †
^{114}La	-30.330 †
^{115}La	-36.450 †
^{116}La	-40.380 †
^{117}La	-46.030 †
^{118}La	-49.520 †
^{119}La	-54.620 †
^{120}La	-57.570
^{121}La	-62.090
^{122}La	-64.440
^{123}La	-68.360
^{124}La	-70.160
^{125}La	-73.560
^{126}La	-74.860
^{127}La	-77.790
^{128}La	-78.620
^{129}La	-81.120
^{130}La	-81.540
^{131}La	-83.770
^{132}La	-83.930
^{133}La	-85.770
^{134}La	-85.570
^{135}La	-86.970
^{136}La	-86.350
^{137}La	-87.310
^{138}La	-86.450
^{139}La	-86.960
^{140}La	-84.400
^{141}La	-82.990
^{142}La	-80.000
^{143}La	-78.210
^{144}La	-74.670
^{145}La	-72.710
^{146}La	-69.000
^{147}La	-66.920
^{148}La	-63.240
^{149}La	-60.810
^{150}La	-56.730
^{151}La	-54.130
^{152}La	-49.880
^{153}La	-46.940
^{154}La	-42.370

Isotope	Mass Excess
^{155}La	-39.220
^{156}La	-34.390
^{157}La	-30.930
^{158}La	-25.800
^{159}La	-22.030
^{160}La	-16.620
^{161}La	-12.600
^{162}La	-6.920
^{163}La	-2.780
^{164}La	3.290
^{165}La	7.480
^{166}La	13.230
^{167}La	17.500
^{168}La	23.760
^{169}La	28.610
^{170}La	35.000
^{171}La	40.050
^{172}La	46.560
^{173}La	51.660
^{174}La	58.260
^{175}La	63.640
^{176}La	70.520
^{177}La	76.230
^{178}La	83.280
^{179}La	89.240
^{180}La	96.520
^{181}La	102.710
^{182}La	110.090
^{183}La	116.760
^{184}La	125.630 †
^{185}La	133.330 ‡
^{186}La	142.350 †
^{187}La	150.220 ‡
^{188}La	159.470 †
^{189}La	167.480 ‡
^{190}La	176.890 †
^{191}La	185.080 †
^{192}La	194.230 †
^{193}La	202.880 †
^{194}La	212.140 †
^{195}La	220.170 ‡
^{196}La	229.400 †
^{197}La	237.550 †
^{198}La	246.940 †
^{199}La	255.190 †
^{200}La	264.700 †
^{201}La	273.100 †
^{202}La	282.820 †
^{203}La	291.320 †
^{204}La	301.150 †
^{205}La	309.850 †
^{112}Ce	-2.590 †
^{113}Ce	-8.630 †
^{114}Ce	-16.610 †
^{115}Ce	-21.870 †
^{116}Ce	-29.280 ‡
^{117}Ce	-33.450 ‡
^{118}Ce	-39.790
^{119}Ce	-43.500
^{120}Ce	-49.230
^{121}Ce	-52.370
^{122}Ce	-57.460
^{123}Ce	-60.010
^{124}Ce	-64.480
^{125}Ce	-66.460
^{126}Ce	-70.350
^{127}Ce	-71.780
^{128}Ce	-75.180
^{129}Ce	-76.110
^{130}Ce	-79.080
^{131}Ce	-79.570
^{132}Ce	-82.270
^{133}Ce	-82.490
^{134}Ce	-84.830
^{135}Ce	-84.690

Isotope	Mass Excess
^{136}Ce	-86.640
^{137}Ce	-86.110
^{138}Ce	-87.620
^{139}Ce	-86.850
^{140}Ce	-87.900
^{141}Ce	-85.430
^{142}Ce	-84.560
^{143}Ce	-81.670
^{144}Ce	-80.420
^{145}Ce	-76.990
^{146}Ce	-75.600
^{147}Ce	-72.050
^{148}Ce	-70.520
^{149}Ce	-66.970
^{150}Ce	-65.110
^{151}Ce	-61.200
^{152}Ce	-59.120
^{153}Ce	-55.010
^{154}Ce	-52.600
^{155}Ce	-48.180
^{156}Ce	-45.490
^{157}Ce	-40.790
^{158}Ce	-37.780
^{159}Ce	-32.780
^{160}Ce	-29.450
^{161}Ce	-24.170
^{162}Ce	-20.560
^{163}Ce	-14.990
^{164}Ce	-11.160
^{165}Ce	-5.270
^{166}Ce	-1.300
^{167}Ce	4.500
^{168}Ce	8.440
^{169}Ce	14.650
^{170}Ce	19.100
^{171}Ce	25.460
^{172}Ce	30.100
^{173}Ce	36.580
^{174}Ce	41.270
^{175}Ce	47.830
^{176}Ce	52.800
^{177}Ce	59.620
^{178}Ce	64.920
^{179}Ce	71.910
^{180}Ce	77.460
^{181}Ce	84.700
^{182}Ce	90.480
^{183}Ce	97.820
^{184}Ce	104.080
^{185}Ce	112.900 †
^{186}Ce	120.200
^{187}Ce	129.160 †
^{188}Ce	136.630 ‡
^{189}Ce	145.830 †
^{190}Ce	153.440 ‡
^{191}Ce	162.770 †
^{192}Ce	170.520 ‡
^{193}Ce	179.600 †
^{194}Ce	187.740 †
^{195}Ce	196.910 †
^{196}Ce	204.540 ‡
^{197}Ce	213.720 †
^{198}Ce	221.480 ‡
^{199}Ce	230.830 †
^{200}Ce	238.710 ‡
^{201}Ce	248.190 †
^{202}Ce	256.230 ‡
^{203}Ce	265.900 †
^{204}Ce	274.060 †
^{205}Ce	283.860 †
^{206}Ce	292.200 †
^{207}Ce	302.200 †
^{208}Ce	310.680 †
^{209}Ce	320.790 †
^{210}Ce	329.450 †

Isotope	Mass Excess
^{115}Pr	-5.010 †
^{116}Pr	-11.030 †
^{117}Pr	-18.680 †
^{118}Pr	-24.270 †
^{119}Pr	-30.840 †
^{120}Pr	-35.380 †
^{121}Pr	-41.230 †
^{122}Pr	-45.120
^{123}Pr	-50.260
^{124}Pr	-53.550
^{125}Pr	-58.040
^{126}Pr	-60.710
^{127}Pr	-64.550
^{128}Pr	-66.590
^{129}Pr	-69.870
^{130}Pr	-71.350
^{131}Pr	-74.200
^{132}Pr	-75.200
^{133}Pr	-77.810
^{134}Pr	-78.530
^{135}Pr	-80.860
^{136}Pr	-81.240
^{137}Pr	-83.240
^{138}Pr	-83.250
^{139}Pr	-84.850
^{140}Pr	-84.620
^{141}Pr	-85.760
^{142}Pr	-83.830
^{143}Pr	-83.060
^{144}Pr	-80.700
^{145}Pr	-79.550
^{146}Pr	-76.720
^{147}Pr	-75.480
^{148}Pr	-72.550
^{149}Pr	-71.190
^{150}Pr	-68.220
^{151}Pr	-66.570
^{152}Pr	-63.340
^{153}Pr	-61.410
^{154}Pr	-57.900
^{155}Pr	-55.650
^{156}Pr	-51.850
^{157}Pr	-49.200
^{158}Pr	-45.060
^{159}Pr	-42.080
^{160}Pr	-37.660
^{161}Pr	-34.360
^{162}Pr	-29.640
^{163}Pr	-25.990
^{164}Pr	-20.970
^{165}Pr	-16.950
^{166}Pr	-11.710
^{167}Pr	-7.370
^{168}Pr	-1.780
^{169}Pr	2.340
^{170}Pr	8.140
^{171}Pr	12.590
^{172}Pr	18.550
^{173}Pr	23.180
^{174}Pr	29.270
^{175}Pr	33.950
^{176}Pr	40.100
^{177}Pr	45.020
^{178}Pr	51.430
^{179}Pr	56.670
^{180}Pr	63.260
^{181}Pr	68.750
^{182}Pr	75.590
^{183}Pr	81.310
^{184}Pr	88.250
^{185}Pr	94.460
^{186}Pr	102.880 †
^{187}Pr	110.130
^{188}Pr	118.700 †
^{189}Pr	126.120

Isotope	Mass Excess
^{190}Pr	134.920 †
^{191}Pr	142.460 ‡
^{192}Pr	151.340 †
^{193}Pr	158.980 ‡
^{194}Pr	167.630 †
^{195}Pr	175.470 ‡
^{196}Pr	184.150 †
^{197}Pr	191.680 ‡
^{198}Pr	200.470 †
^{199}Pr	208.150 ‡
^{200}Pr	217.110 †
^{201}Pr	224.950 ‡
^{202}Pr	234.070 †
^{203}Pr	242.080 ‡
^{204}Pr	251.350 †
^{205}Pr	259.520 †
^{206}Pr	268.950 †
^{207}Pr	277.280 †
^{208}Pr	286.870 †
^{209}Pr	295.350 †
^{210}Pr	305.070 †
^{211}Pr	313.710 †
^{212}Pr	323.580 †
^{213}Pr	332.350 †
^{116}Nd	4.440 †
^{117}Nd	-1.750 †
^{118}Nd	-10.080 †
^{119}Nd	-15.870 †
^{120}Nd	-23.640 ‡
^{121}Nd	-28.360 ‡
^{122}Nd	-34.830
^{123}Nd	-38.880
^{124}Nd	-44.610
^{125}Nd	-48.040
^{126}Nd	-53.110
^{127}Nd	-55.920
^{128}Nd	-60.300
^{129}Nd	-62.460
^{130}Nd	-66.250
^{131}Nd	-67.830
^{132}Nd	-71.180
^{133}Nd	-72.260
^{134}Nd	-75.370
^{135}Nd	-76.160
^{136}Nd	-79.030
^{137}Nd	-79.480
^{138}Nd	-82.010
^{139}Nd	-82.120
^{140}Nd	-84.260
^{141}Nd	-84.120
^{142}Nd	-85.790
^{143}Nd	-83.960
^{144}Nd	-83.710
^{145}Nd	-81.450
^{146}Nd	-80.830
^{147}Nd	-78.120
^{148}Nd	-77.410
^{149}Nd	-74.610
^{150}Nd	-73.780
^{151}Nd	-70.930
^{152}Nd	-69.810
^{153}Nd	-66.730
^{154}Nd	-65.310
^{155}Nd	-61.920
^{156}Nd	-60.170
^{157}Nd	-56.490
^{158}Nd	-54.300
^{159}Nd	-50.270
^{160}Nd	-47.750
^{161}Nd	-43.430
^{162}Nd	-40.580
^{163}Nd	-35.960
^{164}Nd	-32.750
^{165}Nd	-27.820
^{166}Nd	-24.170

Isotope	Mass Excess
^{167}Nd	-19.060
^{168}Nd	-15.050
^{169}Nd	-9.440
^{170}Nd	-5.670
^{171}Nd	0.080
^{172}Nd	4.120
^{173}Nd	10.030
^{174}Nd	14.240
^{175}Nd	20.280
^{176}Nd	24.550
^{177}Nd	30.660
^{178}Nd	35.160
^{179}Nd	41.510
^{180}Nd	46.340
^{181}Nd	52.880
^{182}Nd	57.960
^{183}Nd	64.740
^{184}Nd	70.070
^{185}Nd	76.960
^{186}Nd	82.770
^{187}Nd	91.140 †
^{188}Nd	97.980
^{189}Nd	106.500 †
^{190}Nd	113.530
^{191}Nd	122.280 †
^{192}Nd	129.420
^{193}Nd	138.240 †
^{194}Nd	145.470
^{195}Nd	154.060 †
^{196}Nd	161.420
^{197}Nd	170.030 †
^{198}Nd	177.160
^{199}Nd	185.910 †
^{200}Nd	193.200
^{201}Nd	202.120 †
^{202}Nd	209.600 ‡
^{203}Nd	218.670 †
^{204}Nd	226.330 ‡
^{205}Nd	235.560 †
^{206}Nd	243.380 ‡
^{207}Nd	252.770 †
^{208}Nd	260.750 ‡
^{209}Nd	270.290 †
^{210}Nd	278.430 †
^{211}Nd	288.110 †
^{212}Nd	296.410 †
^{213}Nd	306.240 †
^{214}Nd	314.690 †
^{215}Nd	324.660 †
^{216}Nd	333.250 †
^{119}Pm	1.360 †
^{120}Pm	-5.330 †
^{121}Pm	-13.330 †
^{122}Pm	-19.390 †
^{123}Pm	-25.980 †
^{124}Pm	-30.750 †
^{125}Pm	-36.530 †
^{126}Pm	-40.680 †
^{127}Pm	-45.780 †
^{128}Pm	-49.260
^{129}Pm	-53.600
^{130}Pm	-56.370
^{131}Pm	-60.060
^{132}Pm	-62.180
^{133}Pm	-65.380
^{134}Pm	-66.960
^{135}Pm	-69.940
^{136}Pm	-71.210
^{137}Pm	-74.090
^{138}Pm	-75.040
^{139}Pm	-77.600
^{140}Pm	-78.220
^{141}Pm	-80.450
^{142}Pm	-80.840
^{143}Pm	-82.610

Isotope	Mass Excess
^{144}Pm	-81.300
^{145}Pm	-81.160
^{146}Pm	-79.420
^{147}Pm	-78.940
^{148}Pm	-76.820
^{149}Pm	-76.260
^{150}Pm	-74.090
^{151}Pm	-73.430
^{152}Pm	-71.180
^{153}Pm	-70.300
^{154}Pm	-67.920
^{155}Pm	-66.650
^{156}Pm	-63.840
^{157}Pm	-62.250
^{158}Pm	-59.160
^{159}Pm	-57.010
^{160}Pm	-53.530
^{161}Pm	-51.050
^{162}Pm	-47.280
^{163}Pm	-44.460
^{164}Pm	-40.390
^{165}Pm	-37.160
^{166}Pm	-32.760
^{167}Pm	-28.970
^{168}Pm	-24.470
^{169}Pm	-20.150
^{170}Pm	-14.730
^{171}Pm	-10.720
^{172}Pm	-5.370
^{173}Pm	-1.310
^{174}Pm	4.200
^{175}Pm	8.410
^{176}Pm	14.050
^{177}Pm	18.310
^{178}Pm	24.020
^{179}Pm	28.490
^{180}Pm	34.420
^{181}Pm	39.200
^{182}Pm	45.320
^{183}Pm	50.360
^{184}Pm	56.730
^{185}Pm	62.000
^{186}Pm	68.490
^{187}Pm	74.250
^{188}Pm	82.220
^{189}Pm	89.020
^{190}Pm	97.140 †
^{191}Pm	104.120
^{192}Pm	112.470 †
^{193}Pm	119.520
^{194}Pm	127.900 †
^{195}Pm	135.010
^{196}Pm	143.170 †
^{197}Pm	150.150
^{198}Pm	158.260 †
^{199}Pm	165.270
^{200}Pm	173.620 †
^{201}Pm	180.840
^{202}Pm	189.370 †
^{203}Pm	196.810
^{204}Pm	205.520 †
^{205}Pm	213.140 ‡
^{206}Pm	221.980 †
^{207}Pm	229.810 ‡
^{208}Pm	238.830 †
^{209}Pm	246.800 ‡
^{210}Pm	255.920 †
^{211}Pm	264.060 †
^{212}Pm	273.360 †
^{213}Pm	281.640 †
^{214}Pm	291.120 †
^{215}Pm	299.590 †
^{216}Pm	309.270 †
^{217}Pm	317.840 †
^{120}Sm	10.950 †

Isotope	Mass Excess
^{121}Sm	4.120 †
^{122}Sm	-4.510 †
^{123}Sm	-10.700 †
^{124}Sm	-18.430 †
^{125}Sm	-23.320 †
^{126}Sm	-29.700 ‡
^{127}Sm	-33.960
^{128}Sm	-39.650
^{129}Sm	-43.250
^{130}Sm	-48.160
^{131}Sm	-51.040
^{132}Sm	-55.280
^{133}Sm	-57.510
^{134}Sm	-61.260
^{135}Sm	-62.940
^{136}Sm	-66.460
^{137}Sm	-67.820
^{138}Sm	-71.230
^{139}Sm	-72.280
^{140}Sm	-75.370
^{141}Sm	-76.080
^{142}Sm	-78.840
^{143}Sm	-79.330
^{144}Sm	-81.620
^{145}Sm	-80.410
^{146}Sm	-80.790
^{147}Sm	-79.140
^{148}Sm	-79.190
^{149}Sm	-77.160
^{150}Sm	-77.130
^{151}Sm	-75.050
^{152}Sm	-74.910
^{153}Sm	-72.750
^{154}Sm	-72.380
^{155}Sm	-70.100
^{156}Sm	-69.320
^{157}Sm	-66.600
^{158}Sm	-65.490
^{159}Sm	-62.490
^{160}Sm	-60.820
^{161}Sm	-57.420
^{162}Sm	-55.410
^{163}Sm	-51.720
^{164}Sm	-49.360
^{165}Sm	-45.360
^{166}Sm	-42.580
^{167}Sm	-38.250
^{168}Sm	-34.890
^{169}Sm	-30.480
^{170}Sm	-26.570
^{171}Sm	-21.190
^{172}Sm	-17.590
^{173}Sm	-12.300
^{174}Sm	-8.680
^{175}Sm	-3.220
^{176}Sm	0.570
^{177}Sm	6.160
^{178}Sm	10.000
^{179}Sm	15.660
^{180}Sm	19.710
^{181}Sm	25.590
^{182}Sm	29.960
^{183}Sm	36.020
^{184}Sm	40.650
^{185}Sm	46.970
^{186}Sm	51.840
^{187}Sm	58.280
^{188}Sm	63.640
^{189}Sm	71.560
^{190}Sm	77.960
^{191}Sm	86.030
^{192}Sm	92.610
^{193}Sm	100.910 †
^{194}Sm	107.580
^{195}Sm	115.910 †

Isotope	Mass Excess
^{196}Sm	122.620
^{197}Sm	130.730 †
^{198}Sm	137.300
^{199}Sm	145.360
^{200}Sm	151.990
^{201}Sm	160.300 †
^{202}Sm	167.150
^{203}Sm	175.630 †
^{204}Sm	182.710
^{205}Sm	191.380 †
^{206}Sm	198.650
^{207}Sm	207.450 †
^{208}Sm	214.920 ‡
^{209}Sm	223.910 †
^{210}Sm	231.520 ‡
^{211}Sm	240.610 †
^{212}Sm	248.400 ‡
^{213}Sm	257.670 †
^{214}Sm	265.600 ‡
^{215}Sm	275.040 †
^{216}Sm	283.180 †
^{217}Sm	292.840 †
^{218}Sm	301.060 †
^{124}Eu	0.020 †
^{125}Eu	-7.820 †
^{126}Eu	-13.880 †
^{127}Eu	-20.340 †
^{128}Eu	-25.250 †
^{129}Eu	-31.010 †
^{130}Eu	-35.240 †
^{131}Eu	-40.180 †
^{132}Eu	-43.650 †
^{133}Eu	-47.900 †
^{134}Eu	-50.680
^{135}Eu	-54.420
^{136}Eu	-56.610
^{137}Eu	-60.110
^{138}Eu	-61.980
^{139}Eu	-65.450
^{140}Eu	-67.010
^{141}Eu	-70.170
^{142}Eu	-71.390
^{143}Eu	-74.230
^{144}Eu	-75.240
^{145}Eu	-77.630
^{146}Eu	-76.940
^{147}Eu	-77.420
^{148}Eu	-76.300
^{149}Eu	-76.470
^{150}Eu	-74.990
^{151}Eu	-75.070
^{152}Eu	-73.560
^{153}Eu	-73.550
^{154}Eu	-71.950
^{155}Eu	-71.730
^{156}Eu	-70.030
^{157}Eu	-69.370
^{158}Eu	-67.170
^{159}Eu	-66.180
^{160}Eu	-63.700
^{161}Eu	-62.090
^{162}Eu	-59.200
^{163}Eu	-57.240
^{164}Eu	-54.060
^{165}Eu	-51.750
^{166}Eu	-48.250
^{167}Eu	-45.500
^{168}Eu	-41.660
^{169}Eu	-38.260
^{170}Eu	-34.380
^{171}Eu	-30.360
^{172}Eu	-25.310
^{173}Eu	-21.610
^{174}Eu	-16.730
^{175}Eu	-13.130

Isotope	Mass Excess
^{176}Eu	-8.070
^{177}Eu	-4.330
^{178}Eu	0.860
^{179}Eu	4.660
^{180}Eu	9.920
^{181}Eu	13.930
^{182}Eu	19.400
^{183}Eu	23.710
^{184}Eu	29.370
^{185}Eu	33.940
^{186}Eu	39.870
^{187}Eu	44.680
^{188}Eu	50.720
^{189}Eu	56.030
^{190}Eu	63.550
^{191}Eu	69.900
^{192}Eu	77.580
^{193}Eu	84.110
^{194}Eu	92.010
^{195}Eu	98.600
^{196}Eu	106.520
^{197}Eu	113.150
^{198}Eu	120.860
^{199}Eu	127.200
^{200}Eu	134.820
^{201}Eu	141.370
^{202}Eu	149.310
^{203}Eu	156.100
^{204}Eu	164.210 †
^{205}Eu	171.240
^{206}Eu	179.550 †
^{207}Eu	186.780
^{208}Eu	195.210 †
^{209}Eu	202.670
^{210}Eu	211.300 †
^{211}Eu	218.880 ‡
^{212}Eu	227.590 †
^{213}Eu	235.360 ‡
^{214}Eu	244.270 †
^{215}Eu	252.170 ‡
^{216}Eu	261.270 †
^{217}Eu	269.400 †
^{218}Eu	278.740 †
^{219}Eu	286.940 †
^{125}Gd	9.980 †
^{126}Gd	1.530 †
^{127}Gd	-4.610 †
^{128}Gd	-12.190 †
^{129}Gd	-17.170 †
^{130}Gd	-23.540 †
^{131}Gd	-27.850 †
^{132}Gd	-33.410 ‡
^{133}Gd	-36.980
^{134}Gd	-41.870
^{135}Gd	-44.760
^{136}Gd	-49.150
^{137}Gd	-51.470
^{138}Gd	-55.610
^{139}Gd	-57.610
^{140}Gd	-61.640
^{141}Gd	-63.320
^{142}Gd	-67.040
^{143}Gd	-68.360
^{144}Gd	-71.740
^{145}Gd	-72.850
^{146}Gd	-75.750
^{147}Gd	-75.160
^{148}Gd	-76.150
^{149}Gd	-75.120
^{150}Gd	-75.780
^{151}Gd	-74.370
^{152}Gd	-74.940
^{153}Gd	-73.470
^{154}Gd	-73.920
^{155}Gd	-72.360
^{156}Gd	-72.580
^{157}Gd	-70.890
^{158}Gd	-70.690
^{159}Gd	-68.540
^{160}Gd	-68.000
^{161}Gd	-65.570
^{162}Gd	-64.440
^{163}Gd	-61.600
^{164}Gd	-60.120
^{165}Gd	-56.980
^{166}Gd	-55.140
^{167}Gd	-51.700
^{168}Gd	-49.430
^{169}Gd	-45.630
^{170}Gd	-42.750
^{171}Gd	-38.880
^{172}Gd	-35.420
^{173}Gd	-30.510
^{174}Gd	-27.370
^{175}Gd	-22.570
^{176}Gd	-19.430
^{177}Gd	-14.450
^{178}Gd	-11.140
^{179}Gd	-6.030
^{180}Gd	-2.660
^{181}Gd	2.530
^{182}Gd	6.120
^{183}Gd	11.530
^{184}Gd	15.440
^{185}Gd	21.040
^{186}Gd	25.210
^{187}Gd	31.080
^{188}Gd	35.490
^{189}Gd	41.490
^{190}Gd	46.400
^{191}Gd	53.870
^{192}Gd	59.820
^{193}Gd	67.440
^{194}Gd	73.590
^{195}Gd	81.450
^{196}Gd	87.670
^{197}Gd	95.550
^{198}Gd	101.830
^{199}Gd	109.510
^{200}Gd	115.610
^{201}Gd	123.230
^{202}Gd	129.440
^{203}Gd	137.340
^{204}Gd	143.770
^{205}Gd	151.850 †
^{206}Gd	158.520
^{207}Gd	166.790 †
^{208}Gd	173.660
^{209}Gd	182.060 †
^{210}Gd	189.150
^{211}Gd	197.750 †
^{212}Gd	204.970
^{213}Gd	213.660 †
^{214}Gd	221.080
^{215}Gd	229.960 †
^{216}Gd	237.520 ‡
^{217}Gd	246.590 †
^{218}Gd	254.360 ‡
^{219}Gd	263.650 †
^{220}Gd	271.510 ‡
^{221}Gd	280.800 †
^{222}Gd	288.900 †
^{223}Gd	298.370 †
^{224}Gd	306.580 †
^{129}Tb	-1.390 †
^{130}Tb	-7.510 †
^{131}Tb	-13.950 †
^{132}Tb	-18.880 †
^{133}Tb	-24.470 †
^{134}Tb	-28.610 †
^{135}Tb	-33.500 †
^{136}Tb	-36.940 †
^{137}Tb	-41.290 †
^{138}Tb	-44.130 †
^{139}Tb	-48.220 †
^{140}Tb	-50.720
^{141}Tb	-54.790
^{142}Tb	-56.980
^{143}Tb	-60.750
^{144}Tb	-62.580
^{145}Tb	-66.040
^{146}Tb	-67.660
^{147}Tb	-70.650
^{148}Tb	-70.580
^{149}Tb	-71.670
^{150}Tb	-71.170
^{151}Tb	-71.960
^{152}Tb	-71.090
^{153}Tb	-71.790
^{154}Tb	-70.890
^{155}Tb	-71.480
^{156}Tb	-70.480
^{157}Tb	-70.870
^{158}Tb	-69.780
^{159}Tb	-69.680
^{160}Tb	-68.070
^{161}Tb	-67.650
^{162}Tb	-65.740
^{163}Tb	-64.670
^{164}Tb	-62.340
^{165}Tb	-60.910
^{166}Tb	-58.280
^{167}Tb	-56.500
^{168}Tb	-53.550
^{169}Tb	-51.300
^{170}Tb	-47.990
^{171}Tb	-45.070
^{172}Tb	-41.730
^{173}Tb	-38.140
^{174}Tb	-33.540
^{175}Tb	-30.270
^{176}Tb	-25.880
^{177}Tb	-22.750
^{178}Tb	-18.180
^{179}Tb	-14.900
^{180}Tb	-10.190
^{181}Tb	-6.850
^{182}Tb	-2.060
^{183}Tb	1.480
^{184}Tb	6.500
^{185}Tb	10.340
^{186}Tb	15.540
^{187}Tb	19.650
^{188}Tb	25.120
^{189}Tb	29.480
^{190}Tb	35.080
^{191}Tb	39.940
^{192}Tb	47.010
^{193}Tb	52.910
^{194}Tb	60.140
^{195}Tb	66.240
^{196}Tb	73.690
^{197}Tb	79.840
^{198}Tb	87.310
^{199}Tb	93.490
^{200}Tb	100.760
^{201}Tb	106.600
^{202}Tb	113.780
^{203}Tb	119.910
^{204}Tb	127.430
^{205}Tb	133.800
^{206}Tb	141.500
^{207}Tb	148.130
^{208}Tb	156.040
^{209}Tb	162.880
^{210}Tb	170.910
^{211}Tb	177.970
^{212}Tb	186.210 †
^{213}Tb	193.410
^{214}Tb	201.720 †
^{215}Tb	209.120
^{216}Tb	217.640 †
^{217}Tb	225.160
^{218}Tb	233.890 †
^{219}Tb	241.660 ‡
^{220}Tb	250.640 †
^{221}Tb	258.470 ‡
^{222}Tb	267.380 †
^{223}Tb	275.490 †
^{224}Tb	284.600 †
^{225}Tb	292.810 †
^{130}Dy	8.320 †
^{131}Dy	2.120 †
^{132}Dy	-5.410 †
^{133}Dy	-10.420 †
^{134}Dy	-16.630 †
^{135}Dy	-20.870 †
^{136}Dy	-26.400 ‡
^{137}Dy	-29.950 ‡
^{138}Dy	-34.950
^{139}Dy	-37.920
^{140}Dy	-42.670
^{141}Dy	-45.290
^{142}Dy	-49.940
^{143}Dy	-52.230
^{144}Dy	-56.560
^{145}Dy	-58.500
^{146}Dy	-62.490
^{147}Dy	-64.200
^{148}Dy	-67.710
^{149}Dy	-67.730
^{150}Dy	-69.340
^{151}Dy	-68.910
^{152}Dy	-70.190
^{153}Dy	-69.390
^{154}Dy	-70.560
^{155}Dy	-69.700
^{156}Dy	-70.750
^{157}Dy	-69.780
^{158}Dy	-70.590
^{159}Dy	-69.500
^{160}Dy	-69.870
^{161}Dy	-68.300
^{162}Dy	-68.320
^{163}Dy	-66.460
^{164}Dy	-65.870
^{165}Dy	-63.580
^{166}Dy	-62.630
^{167}Dy	-60.040
^{168}Dy	-58.730
^{169}Dy	-55.820
^{170}Dy	-54.060
^{171}Dy	-50.790
^{172}Dy	-48.380
^{173}Dy	-45.060
^{174}Dy	-42.040
^{175}Dy	-37.590
^{176}Dy	-34.900
^{177}Dy	-30.590
^{178}Dy	-27.920
^{179}Dy	-23.420
^{180}Dy	-20.590
^{181}Dy	-15.950
^{182}Dy	-13.050
^{183}Dy	-8.320
^{184}Dy	-5.200
^{185}Dy	-0.250
^{186}Dy	3.190
^{187}Dy	8.330
^{188}Dy	12.040
^{189}Dy	17.460
^{190}Dy	21.420
^{191}Dy	26.970
^{192}Dy	31.430
^{193}Dy	38.450
^{194}Dy	43.950
^{195}Dy	51.140
^{196}Dy	56.840
^{197}Dy	64.250
^{198}Dy	70.030
^{199}Dy	77.480
^{200}Dy	83.300
^{201}Dy	90.550
^{202}Dy	96.170
^{203}Dy	103.350
^{204}Dy	109.130
^{205}Dy	116.620
^{206}Dy	122.640
^{207}Dy	130.310
^{208}Dy	136.580
^{209}Dy	144.450
^{210}Dy	150.920
^{211}Dy	158.920
^{212}Dy	165.620
^{213}Dy	173.830 †
^{214}Dy	180.670
^{215}Dy	188.970 †
^{216}Dy	196.010
^{217}Dy	204.500 †
^{218}Dy	211.680
^{219}Dy	220.370 †
^{220}Dy	227.790
^{221}Dy	236.710 †
^{222}Dy	244.200 ‡
^{223}Dy	253.110 †
^{224}Dy	260.860 ‡
^{225}Dy	269.960 †
^{226}Dy	277.820 ‡
^{134}Ho	-0.250 †
^{135}Ho	-6.530 †
^{136}Ho	-11.340 †
^{137}Ho	-16.910 †
^{138}Ho	-21.010 †
^{139}Ho	-26.050 †
^{140}Ho	-29.540 †
^{141}Ho	-34.310 †
^{142}Ho	-37.450 †
^{143}Ho	-42.160 †
^{144}Ho	-44.970
^{145}Ho	-49.370
^{146}Ho	-51.820
^{147}Ho	-55.900
^{148}Ho	-58.120
^{149}Ho	-61.720
^{150}Ho	-62.260
^{151}Ho	-63.960
^{152}Ho	-64.050
^{153}Ho	-65.430
^{154}Ho	-65.150
^{155}Ho	-66.440
^{156}Ho	-66.110
^{157}Ho	-67.270
^{158}Ho	-66.820
^{159}Ho	-67.760
^{160}Ho	-67.200
^{161}Ho	-67.670
^{162}Ho	-66.600
^{163}Ho	-66.720
^{164}Ho	-65.350
^{165}Ho	-64.830
^{166}Ho	-63.030
^{167}Ho	-62.140
^{168}Ho	-60.030
^{169}Ho	-58.780
^{170}Ho	-56.350
^{171}Ho	-54.630
^{172}Ho	-51.830
^{173}Ho	-49.440
^{174}Ho	-46.600
^{175}Ho	-43.540
^{176}Ho	-39.460
^{177}Ho	-36.740
^{178}Ho	-32.850
^{179}Ho	-30.220
^{180}Ho	-26.130
^{181}Ho	-23.350
^{182}Ho	-19.110
^{183}Ho	-16.260
^{184}Ho	-11.940
^{185}Ho	-8.870
^{186}Ho	-4.320
^{187}Ho	-0.940
^{188}Ho	3.810
^{189}Ho	7.460
^{190}Ho	12.480
^{191}Ho	16.390
^{192}Ho	21.540
^{193}Ho	25.950
^{194}Ho	32.570
^{195}Ho	38.020
^{196}Ho	44.810
^{197}Ho	50.460
^{198}Ho	57.480
^{199}Ho	63.200
^{200}Ho	70.250
^{201}Ho	76.000
^{202}Ho	82.850
^{203}Ho	88.320
^{204}Ho	95.100
^{205}Ho	100.820
^{206}Ho	107.930
^{207}Ho	113.900
^{208}Ho	121.200
^{209}Ho	127.420
^{210}Ho	134.940
^{211}Ho	141.370
^{212}Ho	149.010
^{213}Ho	155.680
^{214}Ho	163.530
^{215}Ho	170.340
^{216}Ho	178.270
^{217}Ho	185.280
^{218}Ho	193.420 †
^{219}Ho	200.570
^{220}Ho	208.920 †
^{221}Ho	216.310
^{222}Ho	224.910 †
^{223}Ho	232.370
^{224}Ho	240.930 †
^{225}Ho	248.670 ‡
^{226}Ho	257.420 †
^{227}Ho	265.260 ‡
^{135}Er	9.710 †
^{136}Er	2.330 †
^{137}Er	-2.570 †
^{138}Er	-8.780 †
^{139}Er	-12.990 †
^{140}Er	-18.680 †
^{141}Er	-22.310 ‡
^{142}Er	-27.730 ‡
^{143}Er	-30.990
^{144}Er	-36.270
^{145}Er	-39.200
^{146}Er	-44.150
^{147}Er	-46.710
^{148}Er	-51.320
^{149}Er	-53.630
^{150}Er	-57.740
^{151}Er	-58.370
^{152}Er	-60.580

Isotope	Mass Excess
^{153}Er	-60.750
^{154}Er	-62.610
^{155}Er	-62.390
^{156}Er	-64.150
^{157}Er	-63.860
^{158}Er	-65.460
^{159}Er	-65.050
^{160}Er	-66.400
^{161}Er	-65.840
^{162}Er	-66.760
^{163}Er	-65.730
^{164}Er	-66.290
^{165}Er	-64.960
^{166}Er	-64.920
^{167}Er	-63.160
^{168}Er	-62.750
^{169}Er	-60.680
^{170}Er	-59.900
^{171}Er	-57.510
^{172}Er	-56.270
^{173}Er	-53.510
^{174}Er	-51.640
^{175}Er	-48.800
^{176}Er	-46.330
^{177}Er	-42.420
^{178}Er	-40.270
^{179}Er	-36.460
^{180}Er	-34.290
^{181}Er	-30.280
^{182}Er	-27.940
^{183}Er	-23.780
^{184}Er	-21.350
^{185}Er	-17.100
^{186}Er	-14.450
^{187}Er	-9.970
^{188}Er	-6.990
^{189}Er	-2.300
^{190}Er	0.950
^{191}Er	5.910
^{192}Er	9.420
^{193}Er	14.520
^{194}Er	18.540
^{195}Er	25.110
^{196}Er	30.170
^{197}Er	36.910
^{198}Er	42.170
^{199}Er	49.150
^{200}Er	54.500
^{201}Er	61.520
^{202}Er	66.920
^{203}Er	73.750
^{204}Er	79.010
^{205}Er	85.790
^{206}Er	91.170
^{207}Er	98.250
^{208}Er	103.860
^{209}Er	111.130
^{210}Er	117.000
^{211}Er	124.470
^{212}Er	130.540
^{213}Er	138.150
^{214}Er	144.460
^{215}Er	152.270
^{216}Er	158.720
^{217}Er	166.640
^{218}Er	173.300
^{219}Er	181.410 †
^{220}Er	188.210
^{221}Er	196.530 †
^{222}Er	203.560
^{223}Er	212.110 †
^{224}Er	219.230
^{225}Er	227.790 †
^{226}Er	235.160
^{227}Er	243.900 †

Isotope	Mass Excess
^{228}Er	251.390 ‡
^{138}Tm	7.970 †
^{139}Tm	1.700 †
^{140}Tm	-3.050 †
^{141}Tm	-8.790 †
^{142}Tm	-12.930 †
^{143}Tm	-18.400 †
^{144}Tm	-22.180 †
^{145}Tm	-27.530 †
^{146}Tm	-30.970 †
^{147}Tm	-35.990 †
^{148}Tm	-39.060 †
^{149}Tm	-43.750 †
^{150}Tm	-46.570
^{151}Tm	-50.770
^{152}Tm	-51.910
^{153}Tm	-54.210
^{154}Tm	-54.890
^{155}Tm	-56.860
^{156}Tm	-57.160
^{157}Tm	-59.010
^{158}Tm	-59.240
^{159}Tm	-60.960
^{160}Tm	-61.050
^{161}Tm	-62.520
^{162}Tm	-62.480
^{163}Tm	-63.490
^{164}Tm	-62.950
^{165}Tm	-63.610
^{166}Tm	-62.770
^{167}Tm	-62.790
^{168}Tm	-61.510
^{169}Tm	-61.170
^{170}Tm	-59.570
^{171}Tm	-58.850
^{172}Tm	-56.930
^{173}Tm	-55.740
^{174}Tm	-53.440
^{175}Tm	-51.590
^{176}Tm	-49.230
^{177}Tm	-46.740
^{178}Tm	-43.210
^{179}Tm	-41.050
^{180}Tm	-37.660
^{181}Tm	-35.540
^{182}Tm	-31.940
^{183}Tm	-29.650
^{184}Tm	-25.890
^{185}Tm	-23.510
^{186}Tm	-19.670
^{187}Tm	-17.070
^{188}Tm	-12.990
^{189}Tm	-10.080
^{190}Tm	-5.790
^{191}Tm	-2.590
^{192}Tm	1.970
^{193}Tm	5.430
^{194}Tm	10.140
^{195}Tm	14.110
^{196}Tm	20.280
^{197}Tm	25.280
^{198}Tm	31.630
^{199}Tm	36.840
^{200}Tm	43.440
^{201}Tm	48.720
^{202}Tm	55.350
^{203}Tm	60.680
^{204}Tm	67.120
^{205}Tm	72.250
^{206}Tm	78.640
^{207}Tm	83.950
^{208}Tm	90.670
^{209}Tm	96.230
^{210}Tm	103.130
^{211}Tm	108.950

Isotope	Mass Excess
^{212}Tm	116.070
^{213}Tm	122.100
^{214}Tm	129.350
^{215}Tm	135.620
^{216}Tm	143.080
^{217}Tm	149.500
^{218}Tm	157.060
^{219}Tm	163.680
^{220}Tm	171.450
^{221}Tm	178.210
^{222}Tm	186.190
^{223}Tm	193.190
^{224}Tm	201.420 †
^{225}Tm	208.510
^{226}Tm	216.710 †
^{227}Tm	224.070
^{228}Tm	232.470 †
^{229}Tm	239.940
^{139}Yb	18.140 †
^{140}Yb	10.780 †
^{141}Yb	5.930 †
^{142}Yb	-0.450 †
^{143}Yb	-4.720 †
^{144}Yb	-10.810 †
^{145}Yb	-14.710 †
^{146}Yb	-20.620 ‡
^{147}Yb	-24.160 ‡
^{148}Yb	-29.730
^{149}Yb	-32.910
^{150}Yb	-38.120
^{151}Yb	-41.030
^{152}Yb	-45.730
^{153}Yb	-46.970
^{154}Yb	-49.770
^{155}Yb	-50.530
^{156}Yb	-52.980
^{157}Yb	-53.340
^{158}Yb	-55.670
^{159}Yb	-55.940
^{160}Yb	-58.100
^{161}Yb	-58.240
^{162}Yb	-60.130
^{163}Yb	-60.100
^{164}Yb	-61.560
^{165}Yb	-61.060
^{166}Yb	-62.170
^{167}Yb	-61.370
^{168}Yb	-61.860
^{169}Yb	-60.630
^{170}Yb	-60.750
^{171}Yb	-59.200
^{172}Yb	-58.950
^{173}Yb	-57.070
^{174}Yb	-56.360
^{175}Yb	-54.100
^{176}Yb	-52.760
^{177}Yb	-50.420
^{178}Yb	-48.480
^{179}Yb	-45.110
^{180}Yb	-43.500
^{181}Yb	-40.190
^{182}Yb	-38.520
^{183}Yb	-35.000
^{184}Yb	-33.140
^{185}Yb	-29.450
^{186}Yb	-27.500
^{187}Yb	-23.730
^{188}Yb	-21.550
^{189}Yb	-17.530
^{190}Yb	-15.020
^{191}Yb	-10.790
^{192}Yb	-7.990
^{193}Yb	-3.480
^{194}Yb	-0.410
^{195}Yb	4.240

Isotope	Mass Excess
^{196}Yb	7.810
^{197}Yb	13.930
^{198}Yb	18.550
^{199}Yb	24.840
^{200}Yb	29.660
^{201}Yb	36.210
^{202}Yb	41.140
^{203}Yb	47.720
^{204}Yb	52.710
^{205}Yb	59.120
^{206}Yb	64.010
^{207}Yb	70.390
^{208}Yb	75.370
^{209}Yb	82.040
^{210}Yb	87.250
^{211}Yb	94.120
^{212}Yb	99.580
^{213}Yb	106.660
^{214}Yb	112.330
^{215}Yb	119.550
^{216}Yb	125.450
^{217}Yb	132.880
^{218}Yb	138.940
^{219}Yb	146.480
^{220}Yb	152.750
^{221}Yb	160.490
^{222}Yb	166.910
^{223}Yb	174.850
^{224}Yb	181.500
^{225}Yb	189.680 †
^{226}Yb	196.430
^{227}Yb	204.620 †
^{228}Yb	211.620
^{229}Yb	220.000 †
^{230}Yb	227.130
^{143}Lu	10.470 †
^{144}Lu	5.650 †
^{145}Lu	-0.590 †
^{146}Lu	-5.030 †
^{147}Lu	-11.060 †
^{148}Lu	-15.130 †
^{149}Lu	-20.810 †
^{150}Lu	-24.510 †
^{151}Lu	-29.810 †
^{152}Lu	-33.230 †
^{153}Lu	-38.020 †
^{154}Lu	-39.750
^{155}Lu	-42.650
^{156}Lu	-43.910
^{157}Lu	-46.420
^{158}Lu	-47.260
^{159}Lu	-49.660
^{160}Lu	-50.400
^{161}Lu	-52.620
^{162}Lu	-53.200
^{163}Lu	-55.140
^{164}Lu	-55.540
^{165}Lu	-57.060
^{166}Lu	-57.010
^{167}Lu	-58.180
^{168}Lu	-57.810
^{169}Lu	-58.390
^{170}Lu	-57.600
^{171}Lu	-57.800
^{172}Lu	-56.680
^{173}Lu	-56.510
^{174}Lu	-55.060
^{175}Lu	-54.430
^{176}Lu	-52.600
^{177}Lu	-51.380
^{178}Lu	-49.430
^{179}Lu	-47.650
^{180}Lu	-44.760
^{181}Lu	-43.290
^{182}Lu	-40.410

Isotope	Mass Excess
^{183}Lu	-38.820
^{184}Lu	-35.730
^{185}Lu	-33.940
^{186}Lu	-30.680
^{187}Lu	-28.800
^{188}Lu	-25.440
^{189}Lu	-23.330
^{190}Lu	-19.720
^{191}Lu	-17.260
^{192}Lu	-13.430
^{193}Lu	-10.680
^{194}Lu	-6.570
^{195}Lu	-3.560
^{196}Lu	0.710
^{197}Lu	4.230
^{198}Lu	9.950
^{199}Lu	14.510
^{200}Lu	20.420
^{201}Lu	25.190
^{202}Lu	31.370
^{203}Lu	36.240
^{204}Lu	42.470
^{205}Lu	47.420
^{206}Lu	53.470
^{207}Lu	58.390
^{208}Lu	64.440
^{209}Lu	69.380
^{210}Lu	75.700
^{211}Lu	80.870
^{212}Lu	87.380
^{213}Lu	92.800
^{214}Lu	99.520
^{215}Lu	105.150
^{216}Lu	112.020
^{217}Lu	117.880
^{218}Lu	124.960
^{219}Lu	130.980
^{220}Lu	138.190
^{221}Lu	144.410
^{222}Lu	151.820
^{223}Lu	158.190
^{224}Lu	165.800
^{225}Lu	172.400
^{226}Lu	180.230
^{227}Lu	186.940
^{228}Lu	194.820
^{229}Lu	201.770
^{230}Lu	209.840
^{231}Lu	216.920
^{144}Hf	19.760 †
^{145}Hf	14.800 †
^{146}Hf	7.940 †
^{147}Hf	3.360 †
^{148}Hf	-3.230 †
^{149}Hf	-7.420 †
^{150}Hf	-13.640 ‡
^{151}Hf	-17.450 ‡
^{152}Hf	-23.260 ‡
^{153}Hf	-26.760
^{154}Hf	-32.050
^{155}Hf	-33.880
^{156}Hf	-37.280
^{157}Hf	-38.630
^{158}Hf	-41.610
^{159}Hf	-42.490
^{160}Hf	-45.350
^{161}Hf	-46.120
^{162}Hf	-48.780
^{163}Hf	-49.400
^{164}Hf	-51.740
^{165}Hf	-52.110
^{166}Hf	-54.070
^{167}Hf	-54.050
^{168}Hf	-55.640
^{169}Hf	-55.300

Isotope	Mass Excess
^{170}Hf	-56.350
^{171}Hf	-55.600
^{172}Hf	-56.270
^{173}Hf	-55.190
^{174}Hf	-55.480
^{175}Hf	-54.050
^{176}Hf	-53.910
^{177}Hf	-52.120
^{178}Hf	-51.440
^{179}Hf	-49.480
^{180}Hf	-48.310
^{181}Hf	-45.620
^{182}Hf	-44.720
^{183}Hf	-41.920
^{184}Hf	-40.780
^{185}Hf	-37.770
^{186}Hf	-36.420
^{187}Hf	-33.240
^{188}Hf	-31.790
^{189}Hf	-28.510
^{190}Hf	-26.820
^{191}Hf	-23.260
^{192}Hf	-21.200
^{193}Hf	-17.430
^{194}Hf	-15.080
^{195}Hf	-11.020
^{196}Hf	-8.400
^{197}Hf	-4.190
^{198}Hf	-1.060
^{199}Hf	4.610
^{200}Hf	8.780
^{201}Hf	14.630
^{202}Hf	19.020
^{203}Hf	25.150
^{204}Hf	29.670
^{205}Hf	35.870
^{206}Hf	40.480
^{207}Hf	46.510
^{208}Hf	51.210
^{209}Hf	57.270
^{210}Hf	61.890
^{211}Hf	68.160
^{212}Hf	73.000
^{213}Hf	79.470
^{214}Hf	84.530
^{215}Hf	91.210
^{216}Hf	96.480
^{217}Hf	103.330
^{218}Hf	108.810
^{219}Hf	115.860
^{220}Hf	121.520
^{221}Hf	128.720
^{222}Hf	134.580
^{223}Hf	141.970
^{224}Hf	148.000
^{225}Hf	155.570
^{226}Hf	161.810
^{227}Hf	169.580
^{228}Hf	175.960
^{229}Hf	183.830
^{230}Hf	190.420
^{231}Hf	198.470
^{232}Hf	205.200
^{147}Ta	18.950 †
^{148}Ta	13.810 †
^{149}Ta	7.050 †
^{150}Ta	2.310 †
^{151}Ta	-4.060 †
^{152}Ta	-8.380 †
^{153}Ta	-14.270 †
^{154}Ta	-18.280 †
^{155}Ta	-23.650 †
^{156}Ta	-25.970 †
^{157}Ta	-29.470 †
^{158}Ta	-31.300 †

Isotope	Mass Excess
^{159}Ta	-34.350
^{160}Ta	-35.660
^{161}Ta	-38.550
^{162}Ta	-39.710
^{163}Ta	-42.410
^{164}Ta	-43.430
^{165}Ta	-45.770
^{166}Ta	-46.470
^{167}Ta	-48.460
^{168}Ta	-48.820
^{169}Ta	-50.440
^{170}Ta	-50.460
^{171}Ta	-51.610
^{172}Ta	-51.250
^{173}Ta	-52.020
^{174}Ta	-51.310
^{175}Ta	-51.710
^{176}Ta	-50.660
^{177}Ta	-50.660
^{178}Ta	-49.250
^{179}Ta	-48.810
^{180}Ta	-47.140
^{181}Ta	-46.330
^{182}Ta	-44.240
^{183}Ta	-43.590
^{184}Ta	-41.240
^{185}Ta	-40.210
^{186}Ta	-37.640
^{187}Ta	-36.390
^{188}Ta	-33.640
^{189}Ta	-32.300
^{190}Ta	-29.450
^{191}Ta	-27.820
^{192}Ta	-24.660
^{193}Ta	-22.660
^{194}Ta	-19.280
^{195}Ta	-16.990
^{196}Ta	-13.320
^{197}Ta	-10.760
^{198}Ta	-6.930
^{199}Ta	-3.860
^{200}Ta	1.430
^{201}Ta	5.540
^{202}Ta	11.010
^{203}Ta	15.340
^{204}Ta	21.090
^{205}Ta	25.590
^{206}Ta	31.460
^{207}Ta	36.080
^{208}Ta	41.770
^{209}Ta	46.620
^{210}Ta	52.400
^{211}Ta	57.020
^{212}Ta	62.950
^{213}Ta	67.760
^{214}Ta	73.890
^{215}Ta	78.910
^{216}Ta	85.240
^{217}Ta	90.460
^{218}Ta	96.980
^{219}Ta	102.390
^{220}Ta	109.100
^{221}Ta	114.710
^{222}Ta	121.610
^{223}Ta	127.410
^{224}Ta	134.480
^{225}Ta	140.460
^{226}Ta	147.710
^{227}Ta	153.860
^{228}Ta	161.270
^{229}Ta	167.600
^{230}Ta	175.200
^{231}Ta	181.690
^{232}Ta	189.450
^{233}Ta	196.110

Isotope	Mass Excess
^{148}W	28.050 †
^{149}W	22.710 †
^{150}W	15.280 †
^{151}W	10.370 †
^{152}W	3.460 †
^{153}W	-0.950 †
^{154}W	-7.350 ‡
^{155}W	-11.440 ‡
^{156}W	-17.310 ‡
^{157}W	-19.720
^{158}W	-23.700
^{159}W	-25.620
^{160}W	-29.140
^{161}W	-30.440
^{162}W	-33.710
^{163}W	-34.790
^{164}W	-37.860
^{165}W	-38.880
^{166}W	-41.550
^{167}W	-42.140
^{168}W	-44.530
^{169}W	-44.840
^{170}W	-46.830
^{171}W	-46.780
^{172}W	-48.440
^{173}W	-48.040
^{174}W	-49.310
^{175}W	-48.550
^{176}W	-49.450
^{177}W	-48.350
^{178}W	-48.910
^{179}W	-47.470
^{180}W	-47.760
^{181}W	-45.930
^{182}W	-46.020
^{183}W	-44.240
^{184}W	-44.270
^{185}W	-42.020
^{186}W	-41.500
^{187}W	-39.040
^{188}W	-38.280
^{189}W	-35.650
^{190}W	-34.780
^{191}W	-32.000
^{192}W	-30.780
^{193}W	-27.690
^{194}W	-26.090
^{195}W	-22.770
^{196}W	-20.870
^{197}W	-17.260
^{198}W	-15.090
^{199}W	-11.320
^{200}W	-8.630
^{201}W	-3.400
^{202}W	0.330
^{203}W	5.760
^{204}W	9.710
^{205}W	15.420
^{206}W	19.570
^{207}W	25.480
^{208}W	29.840
^{209}W	35.550
^{210}W	40.310
^{211}W	46.150
^{212}W	50.480
^{213}W	56.370
^{214}W	60.870
^{215}W	66.980
^{216}W	71.640
^{217}W	77.920
^{218}W	82.780
^{219}W	89.290
^{220}W	94.320
^{221}W	101.000
^{222}W	106.250

Isotope	Mass Excess
^{223}W	113.160
^{224}W	118.590
^{225}W	125.650
^{226}W	131.290
^{227}W	138.500
^{228}W	144.270
^{229}W	151.590
^{230}W	157.590
^{231}W	165.220
^{232}W	171.310
^{233}W	179.070
^{234}W	185.360
^{151}Re	26.030 †
^{152}Re	20.590 †
^{153}Re	13.570 †
^{154}Re	8.640 †
^{155}Re	2.130 †
^{156}Re	-2.470 †
^{157}Re	-8.440 †
^{158}Re	-11.320 †
^{159}Re	-15.370 †
^{160}Re	-17.750 †
^{161}Re	-21.330 †
^{162}Re	-23.070 †
^{163}Re	-26.360 †
^{164}Re	-27.780
^{165}Re	-30.870
^{166}Re	-32.290
^{167}Re	-34.970
^{168}Re	-35.920
^{169}Re	-38.360
^{170}Re	-39.080
^{171}Re	-41.110
^{172}Re	-41.450
^{173}Re	-43.200
^{174}Re	-43.210
^{175}Re	-44.580
^{176}Re	-44.210
^{177}Re	-45.210
^{178}Re	-44.500
^{179}Re	-45.170
^{180}Re	-44.130
^{181}Re	-44.600
^{182}Re	-43.110
^{183}Re	-43.460
^{184}Re	-42.210
^{185}Re	-42.460
^{186}Re	-40.650
^{187}Re	-40.250
^{188}Re	-38.250
^{189}Re	-37.600
^{190}Re	-35.410
^{191}Re	-34.630
^{192}Re	-32.280
^{193}Re	-31.130
^{194}Re	-28.450
^{195}Re	-26.930
^{196}Re	-24.010
^{197}Re	-22.190
^{198}Re	-18.980
^{199}Re	-16.870
^{200}Re	-13.500
^{201}Re	-10.870
^{202}Re	-6.000
^{203}Re	-2.300
^{204}Re	2.770
^{205}Re	6.700
^{206}Re	12.060
^{207}Re	16.180
^{208}Re	21.760
^{209}Re	26.160
^{210}Re	31.550
^{211}Re	36.440
^{212}Re	41.960
^{213}Re	46.270

Isotope	Mass Excess
^{214}Re	51.810
^{215}Re	56.280
^{216}Re	62.040
^{217}Re	66.650
^{218}Re	72.590
^{219}Re	77.400
^{220}Re	83.570
^{221}Re	88.540
^{222}Re	94.880
^{223}Re	100.080
^{224}Re	106.680
^{225}Re	112.050
^{226}Re	118.790
^{227}Re	124.380
^{228}Re	131.260
^{229}Re	136.970
^{230}Re	143.940
^{231}Re	149.900
^{232}Re	157.220
^{233}Re	163.250
^{234}Re	170.700
^{235}Re	176.940
^{152}Os	35.500 †
^{153}Os	29.970 †
^{154}Os	22.410 †
^{155}Os	17.380 †
^{156}Os	10.340 †
^{157}Os	5.600 †
^{158}Os	-0.920 †
^{159}Os	-3.840 †
^{160}Os	-8.310 ‡
^{161}Os	-10.740 ‡
^{162}Os	-14.780
^{163}Os	-16.580
^{164}Os	-20.330
^{165}Os	-21.780
^{166}Os	-25.300
^{167}Os	-26.780
^{168}Os	-29.890
^{169}Os	-30.870
^{170}Os	-33.760
^{171}Os	-34.540
^{172}Os	-37.010
^{173}Os	-37.410
^{174}Os	-39.620
^{175}Os	-39.690
^{176}Os	-41.500
^{177}Os	-41.200
^{178}Os	-42.640
^{179}Os	-41.990
^{180}Os	-43.110
^{181}Os	-42.130
^{182}Os	-43.070
^{183}Os	-41.620
^{184}Os	-42.460
^{185}Os	-41.320
^{186}Os	-42.050
^{187}Os	-40.320
^{188}Os	-40.370
^{189}Os	-38.450
^{190}Os	-38.240
^{191}Os	-36.120
^{192}Os	-35.750
^{193}Os	-33.480
^{194}Os	-32.760
^{195}Os	-30.150
^{196}Os	-29.040
^{197}Os	-26.220
^{198}Os	-24.810
^{199}Os	-21.690
^{200}Os	-20.000
^{201}Os	-16.740
^{202}Os	-14.500
^{203}Os	-9.620
^{204}Os	-6.240

Isotope	Mass Excess
^{205}Os	-1.190
^{206}Os	2.400
^{207}Os	7.740
^{208}Os	11.500
^{209}Os	17.060
^{210}Os	21.120
^{211}Os	26.480
^{212}Os	31.080
^{213}Os	36.580
^{214}Os	40.530
^{215}Os	46.030
^{216}Os	50.140
^{217}Os	55.860
^{218}Os	60.120
^{219}Os	66.010
^{220}Os	70.470
^{221}Os	76.600
^{222}Os	81.220
^{223}Os	87.510
^{224}Os	92.370
^{225}Os	98.930
^{226}Os	103.950
^{227}Os	110.660
^{228}Os	115.910
^{229}Os	122.760
^{230}Os	128.120
^{231}Os	135.040
^{232}Os	140.670
^{233}Os	147.970
^{234}Os	153.660
^{235}Os	161.080
^{236}Os	166.990
^{155}Ir	33.670 †
^{156}Ir	28.100 †
^{157}Ir	20.880 †
^{158}Ir	15.540 †
^{159}Ir	8.770 †
^{160}Ir	5.520 †
^{161}Ir	1.090 †
^{162}Ir	-1.730 †
^{163}Ir	-5.790 †
^{164}Ir	-8.030 †
^{165}Ir	-11.840 †
^{166}Ir	-13.740 †
^{167}Ir	-17.310 †
^{168}Ir	-19.220 †
^{169}Ir	-22.370 †
^{170}Ir	-23.770
^{171}Ir	-26.720
^{172}Ir	-27.930
^{173}Ir	-30.470
^{174}Ir	-31.290
^{175}Ir	-33.580
^{176}Ir	-34.070
^{177}Ir	-35.970
^{178}Ir	-36.090
^{179}Ir	-37.610
^{180}Ir	-37.380
^{181}Ir	-38.590
^{182}Ir	-38.020
^{183}Ir	-39.070
^{184}Ir	-38.010
^{185}Ir	-38.990
^{186}Ir	-38.320
^{187}Ir	-39.190
^{188}Ir	-37.890
^{189}Ir	-38.030
^{190}Ir	-36.530
^{191}Ir	-36.380
^{192}Ir	-34.680
^{193}Ir	-34.400
^{194}Ir	-32.550
^{195}Ir	-31.930
^{196}Ir	-29.760
^{197}Ir	-28.760

Isotope	Mass Excess
^{198}Ir	-26.390
^{199}Ir	-25.110
^{200}Ir	-22.460
^{201}Ir	-20.920
^{202}Ir	-18.170
^{203}Ir	-16.010
^{204}Ir	-11.330
^{205}Ir	-7.860
^{206}Ir	-3.060
^{207}Ir	0.550
^{208}Ir	5.570
^{209}Ir	9.320
^{210}Ir	14.530
^{211}Ir	18.560
^{212}Ir	23.580
^{213}Ir	28.210
^{214}Ir	33.360
^{215}Ir	37.280
^{216}Ir	42.420
^{217}Ir	46.500
^{218}Ir	51.860
^{219}Ir	56.070
^{220}Ir	61.610
^{221}Ir	66.020
^{222}Ir	71.820
^{223}Ir	76.380
^{224}Ir	82.340
^{225}Ir	87.150
^{226}Ir	93.370
^{227}Ir	98.350
^{228}Ir	104.730
^{229}Ir	109.930
^{230}Ir	116.450
^{231}Ir	121.760
^{232}Ir	128.350
^{233}Ir	133.940
^{234}Ir	140.920
^{235}Ir	146.560
^{236}Ir	153.660
^{237}Ir	159.530
^{156}Pt	43.490 †
^{157}Pt	37.790 †
^{158}Pt	29.970 †
^{159}Pt	24.430 †
^{160}Pt	17.040 †
^{161}Pt	13.820 †
^{162}Pt	9.060 †
^{163}Pt	6.240 †
^{164}Pt	1.770 †
^{165}Pt	-0.510 †
^{166}Pt	-4.790 ‡
^{167}Pt	-6.770 ‡
^{168}Pt	-10.800
^{169}Pt	-12.770
^{170}Pt	-16.350
^{171}Pt	-17.800
^{172}Pt	-21.200
^{173}Pt	-22.470
^{174}Pt	-25.450
^{175}Pt	-26.330
^{176}Pt	-29.070
^{177}Pt	-29.630
^{178}Pt	-31.970
^{179}Pt	-32.150
^{180}Pt	-34.120
^{181}Pt	-33.940
^{182}Pt	-35.590
^{183}Pt	-35.090
^{184}Pt	-36.590
^{185}Pt	-35.580
^{186}Pt	-37.030
^{187}Pt	-36.460
^{188}Pt	-37.800
^{189}Pt	-36.570
^{190}Pt	-37.120

Isotope	Mass Excess
^{191}Pt	-35.690
^{192}Pt	-35.960
^{193}Pt	-34.320
^{194}Pt	-34.460
^{195}Pt	-32.700
^{196}Pt	-32.510
^{197}Pt	-30.450
^{198}Pt	-29.900
^{199}Pt	-27.670
^{200}Pt	-26.850
^{201}Pt	-24.340
^{202}Pt	-23.250
^{203}Pt	-20.660
^{204}Pt	-18.910
^{205}Pt	-14.140
^{206}Pt	-10.910
^{207}Pt	-6.050
^{208}Pt	-2.720
^{209}Pt	2.310
^{210}Pt	5.720
^{211}Pt	10.900
^{212}Pt	14.570
^{213}Pt	19.530
^{214}Pt	23.850
^{215}Pt	28.970
^{216}Pt	32.530
^{217}Pt	37.630
^{218}Pt	41.360
^{219}Pt	46.670
^{220}Pt	50.540
^{221}Pt	56.030
^{222}Pt	60.090
^{223}Pt	65.840
^{224}Pt	70.050
^{225}Pt	75.960
^{226}Pt	80.430
^{227}Pt	86.620
^{228}Pt	91.260
^{229}Pt	97.590
^{230}Pt	102.460
^{231}Pt	108.930
^{232}Pt	113.910
^{233}Pt	120.450
^{234}Pt	125.710
^{235}Pt	132.660
^{236}Pt	137.970
^{237}Pt	145.030
^{238}Pt	150.570
^{159}Au	41.330 †
^{160}Au	35.150 †
^{161}Au	27.520 †
^{162}Au	23.960 †
^{163}Au	19.290 †
^{164}Au	16.140 †
^{165}Au	11.700 †
^{166}Au	9.010 †
^{167}Au	4.660 †
^{168}Au	2.230 †
^{169}Au	-1.880 †
^{170}Au	-4.310 †
^{171}Au	-7.940 †
^{172}Au	-9.810 †
^{173}Au	-13.270 †
^{174}Au	-14.970 †
^{175}Au	-18.010 †
^{176}Au	-19.320
^{177}Au	-22.140
^{178}Au	-23.120
^{179}Au	-25.540
^{180}Au	-26.140
^{181}Au	-28.190
^{182}Au	-28.430
^{183}Au	-30.170
^{184}Au	-30.080
^{185}Au	-31.680

Isotope	Mass Excess
^{186}Au	-31.070
^{187}Au	-32.640
^{188}Au	-32.530
^{189}Au	-33.980
^{190}Au	-33.160
^{191}Au	-33.780
^{192}Au	-32.760
^{193}Au	-33.100
^{194}Au	-31.870
^{195}Au	-32.100
^{196}Au	-30.780
^{197}Au	-30.710
^{198}Au	-29.130
^{199}Au	-28.720
^{200}Au	-26.990
^{201}Au	-26.320
^{202}Au	-24.300
^{203}Au	-23.360
^{204}Au	-21.270
^{205}Au	-19.600
^{206}Au	-15.030
^{207}Au	-11.690
^{208}Au	-7.040
^{209}Au	-3.610
^{210}Au	1.150
^{211}Au	4.560
^{212}Au	9.390
^{213}Au	13.020
^{214}Au	17.630
^{215}Au	21.940
^{216}Au	26.720
^{217}Au	30.240
^{218}Au	34.990
^{219}Au	38.670
^{220}Au	43.630
^{221}Au	47.450
^{222}Au	52.590
^{223}Au	56.610
^{224}Au	62.020
^{225}Au	66.180
^{226}Au	71.750
^{227}Au	76.170
^{228}Au	82.030
^{229}Au	86.620
^{230}Au	92.620
^{231}Au	97.450
^{232}Au	103.590
^{233}Au	108.520
^{234}Au	114.730
^{235}Au	119.950
^{236}Au	126.580
^{237}Au	131.840
^{238}Au	138.590
^{239}Au	144.080
^{160}Hg	51.250 †
^{161}Hg	44.880 †
^{162}Hg	36.660 †
^{163}Hg	33.110 †
^{164}Hg	28.100 †
^{165}Hg	24.980 †
^{166}Hg	20.180 †
^{167}Hg	17.450 †
^{168}Hg	12.650 †
^{169}Hg	10.140 †
^{170}Hg	5.560 †
^{171}Hg	3.060 †
^{172}Hg	-1.030 ‡
^{173}Hg	-2.940 ‡
^{174}Hg	-6.850
^{175}Hg	-8.610
^{176}Hg	-12.090
^{177}Hg	-13.450
^{178}Hg	-16.720
^{179}Hg	-17.770
^{180}Hg	-20.630

Isotope	Mass Excess
^{181}Hg	-21.290
^{182}Hg	-23.770
^{183}Hg	-24.070
^{184}Hg	-26.250
^{185}Hg	-26.220
^{186}Hg	-28.280
^{187}Hg	-27.710
^{188}Hg	-29.750
^{189}Hg	-29.740
^{190}Hg	-31.620
^{191}Hg	-30.870
^{192}Hg	-31.900
^{193}Hg	-30.940
^{194}Hg	-31.690
^{195}Hg	-30.530
^{196}Hg	-31.190
^{197}Hg	-29.960
^{198}Hg	-30.360
^{199}Hg	-28.900
^{200}Hg	-28.960
^{201}Hg	-27.370
^{202}Hg	-27.160
^{203}Hg	-25.270
^{204}Hg	-24.780
^{205}Hg	-22.830
^{206}Hg	-21.560
^{207}Hg	-16.930
^{208}Hg	-13.840
^{209}Hg	-9.120
^{210}Hg	-5.940
^{211}Hg	-1.130
^{212}Hg	1.950
^{213}Hg	6.750
^{214}Hg	10.020
^{215}Hg	14.580
^{216}Hg	18.560
^{217}Hg	23.300
^{218}Hg	26.470
^{219}Hg	31.170
^{220}Hg	34.500
^{221}Hg	39.420
^{222}Hg	42.880
^{223}Hg	47.980
^{224}Hg	51.640
^{225}Hg	57.010
^{226}Hg	60.830
^{227}Hg	66.350
^{228}Hg	70.430
^{229}Hg	76.250
^{230}Hg	80.500
^{231}Hg	86.460
^{232}Hg	90.950
^{233}Hg	97.050
^{234}Hg	101.640
^{235}Hg	107.810
^{236}Hg	112.700
^{237}Hg	119.290
^{238}Hg	124.220
^{239}Hg	130.940
^{240}Hg	136.110
^{163}Tl	48.010 †
^{164}Tl	44.100 †
^{165}Tl	39.170 †
^{166}Tl	35.720 †
^{167}Tl	30.980 †
^{168}Tl	27.870 †
^{169}Tl	23.000 †
^{170}Tl	20.040 †
^{171}Tl	15.380 †
^{172}Tl	12.420 †
^{173}Tl	8.250 †
^{174}Tl	5.910 †
^{175}Tl	1.940 †
^{176}Tl	-0.250 †
^{177}Tl	-3.790 †

Isotope	Mass Excess
^{178}Tl	-5.570 †
^{179}Tl	-8.920 †
^{180}Tl	-10.390 †
^{181}Tl	-13.330 †
^{182}Tl	-14.410
^{183}Tl	-16.970
^{184}Tl	-17.680
^{185}Tl	-19.940
^{186}Tl	-20.320
^{187}Tl	-22.490
^{188}Tl	-22.300
^{189}Tl	-24.470
^{190}Tl	-24.910
^{191}Tl	-26.860
^{192}Tl	-26.520
^{193}Tl	-27.620
^{194}Tl	-27.060
^{195}Tl	-27.880
^{196}Tl	-27.130
^{197}Tl	-27.880
^{198}Tl	-27.110
^{199}Tl	-27.660
^{200}Tl	-26.690
^{201}Tl	-26.910
^{202}Tl	-25.810
^{203}Tl	-25.740
^{204}Tl	-24.320
^{205}Tl	-23.960
^{206}Tl	-22.490
^{207}Tl	-21.290
^{208}Tl	-16.900
^{209}Tl	-13.720
^{210}Tl	-9.230
^{211}Tl	-5.950
^{212}Tl	-1.350
^{213}Tl	1.750
^{214}Tl	6.210
^{215}Tl	9.440
^{216}Tl	13.630
^{217}Tl	17.580
^{218}Tl	21.980
^{219}Tl	25.110
^{220}Tl	29.450
^{221}Tl	32.740
^{222}Tl	37.310
^{223}Tl	40.730
^{224}Tl	45.480
^{225}Tl	49.100
^{226}Tl	54.120
^{227}Tl	57.890
^{228}Tl	63.080
^{229}Tl	67.110
^{230}Tl	72.600
^{231}Tl	76.800
^{232}Tl	82.430
^{233}Tl	86.880
^{234}Tl	92.650
^{235}Tl	97.190
^{236}Tl	103.020
^{237}Tl	107.880
^{238}Tl	114.150
^{239}Tl	119.030
^{240}Tl	125.430
^{241}Tl	130.560
^{164}Pb	58.490 †
^{165}Pb	54.530 †
^{166}Pb	49.180 †
^{167}Pb	45.690 †
^{168}Pb	40.540 †
^{169}Pb	37.370 †
^{170}Pb	32.050 †
^{171}Pb	29.000 †
^{172}Pb	23.880 †
^{173}Pb	20.850 †
^{174}Pb	16.220 †

Isotope	Mass Excess
^{175}Pb	13.790 †
^{176}Pb	9.380 †
^{177}Pb	7.120 †
^{178}Pb	3.140 ‡
^{179}Pb	1.290 ‡
^{180}Pb	-2.500
^{181}Pb	-4.040
^{182}Pb	-7.410
^{183}Pb	-8.560
^{184}Pb	-11.550
^{185}Pb	-12.330
^{186}Pb	-15.020
^{187}Pb	-15.470
^{188}Pb	-18.060
^{189}Pb	-17.940
^{190}Pb	-20.540
^{191}Pb	-21.060
^{192}Pb	-23.420
^{193}Pb	-23.140
^{194}Pb	-24.650
^{195}Pb	-24.160
^{196}Pb	-25.380
^{197}Pb	-24.700
^{198}Pb	-25.860
^{199}Pb	-25.170
^{200}Pb	-26.150
^{201}Pb	-25.270
^{202}Pb	-25.910
^{203}Pb	-24.910
^{204}Pb	-25.250
^{205}Pb	-23.920
^{206}Pb	-23.960
^{207}Pb	-22.590
^{208}Pb	-21.770
^{209}Pb	-17.400
^{210}Pb	-14.550
^{211}Pb	-10.060
^{212}Pb	-7.100
^{213}Pb	-2.500
^{214}Pb	0.250
^{215}Pb	4.680
^{216}Pb	7.540
^{217}Pb	11.680
^{218}Pb	15.260
^{219}Pb	19.620
^{220}Pb	22.390
^{221}Pb	26.690
^{222}Pb	29.620
^{223}Pb	34.150
^{224}Pb	37.210
^{225}Pb	41.910
^{226}Pb	45.190
^{227}Pb	50.170
^{228}Pb	53.590
^{229}Pb	58.730
^{230}Pb	62.420
^{231}Pb	67.870
^{232}Pb	71.730
^{233}Pb	77.320
^{234}Pb	81.440
^{235}Pb	87.160
^{236}Pb	91.370
^{237}Pb	97.160
^{238}Pb	101.690
^{239}Pb	107.920
^{240}Pb	112.480
^{241}Pb	118.830
^{242}Pb	123.640
^{172}Bi	40.460 †
^{173}Bi	35.270 †
^{174}Bi	31.770 †
^{175}Bi	27.070 †
^{176}Bi	24.180 †
^{177}Bi	19.670 †
^{178}Bi	16.950 †

Isotope	Mass Excess
^{179}Bi	12.880 †
^{180}Bi	10.560 †
^{181}Bi	6.700 †
^{182}Bi	4.710 †
^{183}Bi	1.260 †
^{184}Bi	-0.330 †
^{185}Bi	-3.390 †
^{186}Bi	-4.610 †
^{187}Bi	-7.360 †
^{188}Bi	-8.240
^{189}Bi	-10.860
^{190}Bi	-11.200
^{191}Bi	-13.800
^{192}Bi	-14.690
^{193}Bi	-17.110
^{194}Bi	-17.240
^{195}Bi	-18.810
^{196}Bi	-18.720
^{197}Bi	-20.000
^{198}Bi	-19.710
^{199}Bi	-20.900
^{200}Bi	-20.540
^{201}Bi	-21.480
^{202}Bi	-20.890
^{203}Bi	-21.490
^{204}Bi	-20.770
^{205}Bi	-21.090
^{206}Bi	-20.050
^{207}Bi	-20.080
^{208}Bi	-18.980
^{209}Bi	-18.210
^{210}Bi	-14.350
^{211}Bi	-11.710
^{212}Bi	-7.750
^{213}Bi	-5.010
^{214}Bi	-0.950
^{215}Bi	1.660
^{216}Bi	5.690
^{217}Bi	8.480
^{218}Bi	12.260
^{219}Bi	15.770
^{220}Bi	19.750
^{221}Bi	22.460
^{222}Bi	26.400
^{223}Bi	29.280
^{224}Bi	33.450
^{225}Bi	36.460
^{226}Bi	40.810
^{227}Bi	44.040
^{228}Bi	48.670
^{229}Bi	52.050
^{230}Bi	56.850
^{231}Bi	60.490
^{232}Bi	65.590
^{233}Bi	69.410
^{234}Bi	74.660
^{235}Bi	78.730
^{236}Bi	84.130
^{237}Bi	88.300
^{238}Bi	93.770
^{239}Bi	98.250
^{240}Bi	104.150
^{241}Bi	108.670
^{242}Bi	114.700
^{243}Bi	119.470
^{173}Po	50.910 †
^{174}Po	45.250 †
^{175}Po	41.680 †
^{176}Po	36.510 †
^{177}Po	33.490 †
^{178}Po	28.510 †
^{179}Po	25.680 †
^{180}Po	21.140 †
^{181}Po	18.710 †
^{182}Po	14.430 †

Isotope	Mass Excess
^{183}Po	12.340 †
^{184}Po	8.470 ‡
^{185}Po	6.770 ‡
^{186}Po	3.300 ‡
^{187}Po	1.970
^{188}Po	-1.170
^{189}Po	-2.150
^{190}Po	-5.130
^{191}Po	-5.580
^{192}Po	-8.490
^{193}Po	-9.390
^{194}Po	-12.190
^{195}Po	-12.390
^{196}Po	-14.360
^{197}Po	-14.330
^{198}Po	-16.010
^{199}Po	-15.770
^{200}Po	-17.310
^{201}Po	-16.940
^{202}Po	-18.160
^{203}Po	-17.510
^{204}Po	-18.370
^{205}Po	-17.560
^{206}Po	-18.140
^{207}Po	-17.030
^{208}Po	-17.330
^{209}Po	-16.140
^{210}Po	-15.710
^{211}Po	-12.130
^{212}Po	-10.080
^{213}Po	-6.410
^{214}Po	-4.270
^{215}Po	-0.450
^{216}Po	1.710
^{217}Po	5.630
^{218}Po	8.050
^{219}Po	11.770
^{220}Po	14.870
^{221}Po	18.760
^{222}Po	21.100
^{223}Po	24.980
^{224}Po	27.490
^{225}Po	31.610
^{226}Po	34.270
^{227}Po	38.580
^{228}Po	41.450
^{229}Po	46.030
^{230}Po	49.070
^{231}Po	53.820
^{232}Po	57.130
^{233}Po	62.170
^{234}Po	65.660
^{235}Po	70.860
^{236}Po	74.590
^{237}Po	79.940
^{238}Po	83.800
^{239}Po	89.230
^{240}Po	93.380
^{241}Po	99.220
^{242}Po	103.440
^{243}Po	109.410
^{244}Po	113.870
^{177}At	48.190 †
^{178}At	44.670 †
^{179}At	39.600 †
^{180}At	36.300 †
^{181}At	31.670 †
^{182}At	28.780 †
^{183}At	24.420 †
^{184}At	21.880 †
^{185}At	17.940 †
^{186}At	15.800 †
^{187}At	12.260 †
^{188}At	10.500 †
^{189}At	7.300 †

Isotope	Mass Excess
^{190}At	5.890 †
^{191}At	2.890 †
^{192}At	1.980 †
^{193}At	-0.920 †
^{194}At	-2.170
^{195}At	-4.970
^{196}At	-5.570
^{197}At	-7.600
^{198}At	-7.970
^{199}At	-9.700
^{200}At	-9.850
^{201}At	-11.430
^{202}At	-11.420
^{203}At	-12.640
^{204}At	-12.300
^{205}At	-13.130
^{206}At	-12.580
^{207}At	-13.130
^{208}At	-12.290
^{209}At	-12.550
^{210}At	-11.600
^{211}At	-11.200
^{212}At	-8.190
^{213}At	-6.390
^{214}At	-3.270
^{215}At	-1.340
^{216}At	2.000
^{217}At	4.060
^{218}At	7.590
^{219}At	9.930
^{220}At	13.290
^{221}At	16.260
^{222}At	19.780
^{223}At	22.050
^{224}At	25.580
^{225}At	28.030
^{226}At	31.790
^{227}At	34.400
^{228}At	38.360
^{229}At	41.190
^{230}At	45.410
^{231}At	48.420
^{232}At	52.820
^{233}At	56.080
^{234}At	60.780
^{235}At	64.230
^{236}At	69.080
^{237}At	72.780
^{238}At	77.790
^{239}At	81.610
^{240}At	86.730
^{241}At	90.840
^{242}At	96.340
^{243}At	100.530
^{244}At	106.180
^{245}At	110.600
^{178}Rn	58.400 †
^{179}Rn	54.730 †
^{180}Rn	49.200 †
^{181}Rn	45.780 †
^{182}Rn	40.690 †
^{183}Rn	37.680 †
^{184}Rn	32.910 †
^{185}Rn	30.260 †
^{186}Rn	25.910 †
^{187}Rn	23.660 †
^{188}Rn	19.710 †
^{189}Rn	17.840 †
^{190}Rn	14.250 ‡
^{191}Rn	12.740 ‡
^{192}Rn	9.400
^{193}Rn	8.370
^{194}Rn	5.180
^{195}Rn	3.940
^{196}Rn	0.850

Isotope	Mass Excess
^{197}Rn	0.200
^{198}Rn	-2.220
^{199}Rn	-2.650
^{200}Rn	-4.760
^{201}Rn	-4.960
^{202}Rn	-6.900
^{203}Rn	-6.920
^{204}Rn	-8.470
^{205}Rn	-8.140
^{206}Rn	-9.290
^{207}Rn	-8.700
^{208}Rn	-9.530
^{209}Rn	-8.620
^{210}Rn	-9.150
^{211}Rn	-8.080
^{212}Rn	-8.030
^{213}Rn	-5.320
^{214}Rn	-4.110
^{215}Rn	-1.220
^{216}Rn	0.220
^{217}Rn	3.420
^{218}Rn	5.060
^{219}Rn	8.500
^{220}Rn	10.460
^{221}Rn	13.730
^{222}Rn	16.220
^{223}Rn	19.650
^{224}Rn	21.550
^{225}Rn	25.010
^{226}Rn	27.100
^{227}Rn	30.810
^{228}Rn	33.070
^{229}Rn	36.980
^{230}Rn	39.460
^{231}Rn	43.630
^{232}Rn	46.300
^{233}Rn	50.660
^{234}Rn	53.580
^{235}Rn	58.210
^{236}Rn	61.340
^{237}Rn	66.140
^{238}Rn	69.500
^{239}Rn	74.470
^{240}Rn	77.980
^{241}Rn	83.050
^{242}Rn	86.840
^{243}Rn	92.290
^{244}Rn	96.160
^{245}Rn	101.760
^{246}Rn	105.870
^{180}Fr	66.710 †
^{181}Fr	61.070 †
^{182}Fr	57.160 †
^{183}Fr	51.960 †
^{184}Fr	48.470 †
^{185}Fr	43.630 †
^{186}Fr	40.520 †
^{187}Fr	36.110 †
^{188}Fr	33.400 †
^{189}Fr	29.400 †
^{190}Fr	27.070 †
^{191}Fr	23.450 †
^{192}Fr	21.500 †
^{193}Fr	18.180 †
^{194}Fr	16.660 †
^{195}Fr	13.570 †
^{196}Fr	12.030 †
^{197}Fr	9.020 †
^{198}Fr	7.990 †
^{199}Fr	5.580 †
^{200}Fr	4.790 †
^{201}Fr	2.640 †
^{202}Fr	2.060
^{203}Fr	0.090
^{204}Fr	-0.290

Isotope	Mass Excess
^{205}Fr	-1.880
^{206}Fr	-1.900
^{207}Fr	-3.080
^{208}Fr	-2.830
^{209}Fr	-3.680
^{210}Fr	-3.110
^{211}Fr	-3.640
^{212}Fr	-2.880
^{213}Fr	-2.870
^{214}Fr	-0.640
^{215}Fr	0.420
^{216}Fr	2.880
^{217}Fr	4.200
^{218}Fr	6.980
^{219}Fr	8.530
^{220}Fr	11.570
^{221}Fr	13.400
^{222}Fr	16.270
^{223}Fr	18.530
^{224}Fr	21.550
^{225}Fr	23.370
^{226}Fr	26.480
^{227}Fr	28.500
^{228}Fr	31.850
^{229}Fr	34.070
^{230}Fr	37.620
^{231}Fr	40.060
^{232}Fr	43.880
^{233}Fr	46.510
^{234}Fr	50.520
^{235}Fr	53.410
^{236}Fr	57.690
^{237}Fr	60.770
^{238}Fr	65.230
^{239}Fr	68.550
^{240}Fr	73.190
^{241}Fr	76.670
^{242}Fr	81.440
^{243}Fr	85.180
^{244}Fr	90.280
^{245}Fr	94.140
^{246}Fr	99.400
^{247}Fr	103.490
^{181}Ra	77.350 †
^{182}Ra	71.250 †
^{183}Ra	67.220 †
^{184}Ra	61.560 †
^{185}Ra	57.940 †
^{186}Ra	52.690 †
^{187}Ra	49.480 †
^{188}Ra	44.660 †
^{189}Ra	41.830 †
^{190}Ra	37.430 †
^{191}Ra	34.990 †
^{192}Ra	30.990 †
^{193}Ra	28.940 †
^{194}Ra	25.310 ‡
^{195}Ra	23.640 ‡
^{196}Ra	20.300 ‡
^{197}Ra	18.790 ‡
^{198}Ra	15.500 ‡
^{199}Ra	14.430
^{200}Ra	11.670
^{201}Ra	10.840
^{202}Ra	8.350
^{203}Ra	7.740
^{204}Ra	5.390
^{205}Ra	4.960
^{206}Ra	3.000
^{207}Ra	2.920
^{208}Ra	1.370
^{209}Ra	1.560
^{210}Ra	0.340
^{211}Ra	0.860
^{212}Ra	-0.050

Isotope	Mass Excess
^{213}Ra	0.670
^{214}Ra	0.310
^{215}Ra	2.460
^{216}Ra	3.140
^{217}Ra	5.520
^{218}Ra	6.460
^{219}Ra	9.170
^{220}Ra	10.330
^{221}Ra	13.280
^{222}Ra	14.680
^{223}Ra	17.450
^{224}Ra	19.210
^{225}Ra	22.130
^{226}Ra	23.570
^{227}Ra	26.620
^{228}Ra	28.280
^{229}Ra	31.570
^{230}Ra	33.440
^{231}Ra	36.950
^{232}Ra	39.050
^{233}Ra	42.800
^{234}Ra	45.110
^{235}Ra	49.070
^{236}Ra	51.630
^{237}Ra	55.830
^{238}Ra	58.600
^{239}Ra	63.000
^{240}Ra	65.990
^{241}Ra	70.580
^{242}Ra	73.750
^{243}Ra	78.490
^{244}Ra	81.910
^{245}Ra	86.940
^{246}Ra	90.510
^{247}Ra	95.710
^{248}Ra	99.490
^{183}Ac	83.520 †
^{184}Ac	78.970 †
^{185}Ac	73.160 †
^{186}Ac	68.980 †
^{187}Ac	63.700 †
^{188}Ac	59.970 †
^{189}Ac	55.120 †
^{190}Ac	51.770 †
^{191}Ac	47.350 †
^{192}Ac	44.390 †
^{193}Ac	40.420 †
^{194}Ac	37.870 †
^{195}Ac	34.430 †
^{196}Ac	32.160 †
^{197}Ac	29.150 †
^{198}Ac	27.440 †
^{199}Ac	24.330 †
^{200}Ac	22.890 †
^{201}Ac	20.150 †
^{202}Ac	18.980 †
^{203}Ac	16.500 †
^{204}Ac	15.550 †
^{205}Ac	13.210 †
^{206}Ac	12.410 †
^{207}Ac	10.390 †
^{208}Ac	9.940
^{209}Ac	8.330
^{210}Ac	8.150
^{211}Ac	6.870
^{212}Ac	7.020
^{213}Ac	6.050
^{214}Ac	6.390
^{215}Ac	5.970
^{216}Ac	7.750
^{217}Ac	8.360
^{218}Ac	10.380
^{219}Ac	11.250
^{220}Ac	13.570
^{221}Ac	14.660

Isotope	Mass Excess
^{222}Ac	17.150
^{223}Ac	18.370
^{224}Ac	20.720
^{225}Ac	22.150
^{226}Ac	24.630
^{227}Ac	25.960
^{228}Ac	28.650
^{229}Ac	30.220
^{230}Ac	33.150
^{231}Ac	34.960
^{232}Ac	38.130
^{233}Ac	40.180
^{234}Ac	43.570
^{235}Ac	45.870
^{236}Ac	49.480
^{237}Ac	52.000
^{238}Ac	55.820
^{239}Ac	58.570
^{240}Ac	62.610
^{241}Ac	65.570
^{242}Ac	69.820
^{243}Ac	72.990
^{244}Ac	77.450
^{245}Ac	80.820
^{246}Ac	85.480
^{247}Ac	89.060
^{248}Ac	93.910
^{249}Ac	97.690
^{184}Th	94.240 †
^{185}Th	89.540 †
^{186}Th	83.240 †
^{187}Th	78.900 †
^{188}Th	73.220 †
^{189}Th	69.350 †
^{190}Th	64.110 †
^{191}Th	60.620 †
^{192}Th	55.810 †
^{193}Th	52.710 †
^{194}Th	48.400 †
^{195}Th	45.720 †
^{196}Th	42.050 †
^{197}Th	39.570 †
^{198}Th	36.460 †
^{199}Th	34.850 †
^{200}Th	31.500 ‡
^{201}Th	30.020 ‡
^{202}Th	26.930 ‡
^{203}Th	25.720 ‡
^{204}Th	22.900
^{205}Th	21.920
^{206}Th	19.240
^{207}Th	18.410
^{208}Th	16.010
^{209}Th	15.500
^{210}Th	13.510
^{211}Th	13.260
^{212}Th	11.600
^{213}Th	11.690
^{214}Th	10.350
^{215}Th	10.640
^{216}Th	9.840
^{217}Th	11.560
^{218}Th	11.800
^{219}Th	13.760
^{220}Th	14.260
^{221}Th	16.530
^{222}Th	17.220
^{223}Th	19.590
^{224}Th	20.380
^{225}Th	22.640
^{226}Th	23.530
^{227}Th	25.880
^{228}Th	26.810
^{229}Th	29.440
^{230}Th	30.630

Isotope	Mass Excess
^{231}Th	33.490
^{232}Th	34.970
^{233}Th	38.080
^{234}Th	39.800
^{235}Th	43.110
^{236}Th	45.100
^{237}Th	48.650
^{238}Th	50.850
^{239}Th	54.580
^{240}Th	57.020
^{241}Th	60.990
^{242}Th	63.630
^{243}Th	67.820
^{244}Th	70.720
^{245}Th	75.150
^{246}Th	78.210
^{247}Th	82.780
^{248}Th	86.090
^{249}Th	90.860
^{250}Th	94.360
^{189}Pa	84.850 †
^{190}Pa	80.490 †
^{191}Pa	75.200 †
^{192}Pa	71.220 †
^{193}Pa	66.380 †
^{194}Pa	62.780 †
^{195}Pa	58.490 †
^{196}Pa	55.340 †
^{197}Pa	51.790 †
^{198}Pa	48.750 †
^{199}Pa	45.920 †
^{200}Pa	44.120 †
^{201}Pa	40.940 †
^{202}Pa	39.090 †
^{203}Pa	36.000 †
^{204}Pa	34.440 †
^{205}Pa	31.600 †
^{206}Pa	30.270 †
^{207}Pa	27.580 †
^{208}Pa	26.400 †
^{209}Pa	23.960 †
^{210}Pa	23.070 †
^{211}Pa	21.020 †
^{212}Pa	20.400
^{213}Pa	18.680
^{214}Pa	18.400
^{215}Pa	17.000
^{216}Pa	16.910
^{217}Pa	16.060
^{218}Pa	17.410
^{219}Pa	17.590
^{220}Pa	19.180
^{221}Pa	19.620
^{222}Pa	21.510
^{223}Pa	22.100
^{224}Pa	24.040
^{225}Pa	24.710
^{226}Pa	26.570
^{227}Pa	27.140
^{228}Pa	29.040
^{229}Pa	29.860
^{230}Pa	32.120
^{231}Pa	33.230
^{232}Pa	35.730
^{233}Pa	37.150
^{234}Pa	39.910
^{235}Pa	41.600
^{236}Pa	44.540
^{237}Pa	46.510
^{238}Pa	49.720
^{239}Pa	51.880
^{240}Pa	55.230
^{241}Pa	57.650
^{242}Pa	61.260
^{243}Pa	63.860

Isotope	Mass Excess
^{244}Pa	67.720
^{245}Pa	70.620
^{246}Pa	74.780
^{247}Pa	77.800
^{248}Pa	81.980
^{249}Pa	85.310
^{250}Pa	89.730
^{251}Pa	93.220
^{190}U	95.330 †
^{191}U	90.860 †
^{192}U	85.170 †
^{193}U	81.080 †
^{194}U	75.840 †
^{195}U	72.140 †
^{196}U	67.470 †
^{197}U	64.220 †
^{198}U	60.360 †
^{199}U	57.180 †
^{200}U	54.100 †
^{201}U	52.330 †
^{202}U	48.870 †
^{203}U	46.970 †
^{204}U	43.520 †
^{205}U	41.910 †
^{206}U	38.700 ‡
^{207}U	37.330 ‡
^{208}U	34.280 ‡
^{209}U	33.050 ‡
^{210}U	30.250
^{211}U	29.300
^{212}U	26.870
^{213}U	26.190
^{214}U	24.100
^{215}U	23.750
^{216}U	21.980
^{217}U	21.840
^{218}U	20.610
^{219}U	21.900
^{220}U	21.720
^{221}U	23.250
^{222}U	23.330
^{223}U	25.150
^{224}U	25.350
^{225}U	27.210
^{226}U	27.480
^{227}U	29.260
^{228}U	29.360
^{229}U	31.150
^{230}U	31.590
^{231}U	33.800
^{232}U	34.540
^{233}U	36.980
^{234}U	38.060
^{235}U	40.780
^{236}U	42.120
^{237}U	45.000
^{238}U	46.650
^{239}U	49.810
^{240}U	51.640
^{241}U	54.930
^{242}U	57.030
^{243}U	60.570
^{244}U	62.850
^{245}U	66.660
^{246}U	69.260
^{247}U	73.390
^{248}U	76.090
^{249}U	80.200
^{250}U	83.240
^{251}U	87.600
^{252}U	90.800
^{195}Np	87.380 †
^{196}Np	83.230 †
^{197}Np	78.540 †

Isotope	Mass Excess
^{198}Np	74.850 †
^{199}Np	71.040 †
^{200}Np	67.360 †
^{201}Np	64.420 †
^{202}Np	62.410 †
^{203}Np	59.050 †
^{204}Np	56.790 †
^{205}Np	53.310 †
^{206}Np	51.340 †
^{207}Np	48.110 †
^{208}Np	46.370 †
^{209}Np	43.300 †
^{210}Np	41.720 †
^{211}Np	38.880 †
^{212}Np	37.570 †
^{213}Np	35.070 †
^{214}Np	34.020 †
^{215}Np	31.870 †
^{216}Np	31.150 †
^{217}Np	29.320 †
^{218}Np	28.810
^{219}Np	27.530
^{220}Np	28.450
^{221}Np	28.210
^{222}Np	29.370
^{223}Np	29.390
^{224}Np	30.830
^{225}Np	30.940
^{226}Np	32.400
^{227}Np	32.560
^{228}Np	33.960
^{229}Np	33.790
^{230}Np	35.170
^{231}Np	35.520
^{232}Np	37.360
^{233}Np	38.030
^{234}Np	40.120
^{235}Np	41.150
^{236}Np	43.520
^{237}Np	44.820
^{238}Np	47.350
^{239}Np	48.970
^{240}Np	51.790
^{241}Np	53.580
^{242}Np	56.500
^{243}Np	58.570
^{244}Np	61.770
^{245}Np	64.010
^{246}Np	67.490
^{247}Np	70.080
^{248}Np	73.910
^{249}Np	76.570
^{250}Np	80.320
^{251}Np	83.360
^{252}Np	87.380
^{253}Np	90.560
^{196}Pu	97.880 †
^{197}Pu	93.640 †
^{198}Pu	88.560 †
^{199}Pu	84.790 †
^{200}Pu	80.610 †
^{201}Pu	76.840 †
^{202}Pu	73.550 †
^{203}Pu	71.500 †
^{204}Pu	67.790 †
^{205}Pu	65.460 †
^{206}Pu	61.610 †
^{207}Pu	59.580 †
^{208}Pu	55.970 †
^{209}Pu	54.180 †
^{210}Pu	50.730 †
^{211}Pu	49.100 †
^{212}Pu	45.890 ‡
^{213}Pu	44.510 ‡
^{214}Pu	41.650 ‡

Isotope	Mass Excess
^{215}Pu	40.530
^{216}Pu	38.010
^{217}Pu	37.230
^{218}Pu	35.030
^{219}Pu	34.470
^{220}Pu	32.820
^{221}Pu	33.680
^{222}Pu	33.080
^{223}Pu	34.180
^{224}Pu	33.840
^{225}Pu	35.210
^{226}Pu	34.960
^{227}Pu	36.350
^{228}Pu	36.150
^{229}Pu	37.480
^{230}Pu	36.920
^{231}Pu	38.220
^{232}Pu	38.210
^{233}Pu	40.010
^{234}Pu	40.330
^{235}Pu	42.360
^{236}Pu	43.050
^{237}Pu	45.370
^{238}Pu	46.340
^{239}Pu	48.810
^{240}Pu	50.100
^{241}Pu	52.870
^{242}Pu	54.330
^{243}Pu	57.200
^{244}Pu	58.940
^{245}Pu	62.090
^{246}Pu	64.010
^{247}Pu	67.440
^{248}Pu	69.710
^{249}Pu	73.500
^{250}Pu	75.840
^{251}Pu	79.540
^{252}Pu	82.280
^{253}Pu	86.250
^{254}Pu	89.110
^{200}Am	95.850 †
^{201}Am	91.780 †
^{202}Am	87.480 †
^{203}Am	84.430 †
^{204}Am	82.200 †
^{205}Am	78.710 †
^{206}Am	76.040 †
^{207}Am	72.200 †
^{208}Am	69.830 †
^{209}Am	66.200 †
^{210}Am	64.070 †
^{211}Am	60.610 †
^{212}Am	58.640 †
^{213}Am	55.410 †
^{214}Am	53.690 †
^{215}Am	50.780 †
^{216}Am	49.290 †
^{217}Am	46.710 †
^{218}Am	45.560 †
^{219}Am	43.300 †
^{220}Am	42.370 †
^{221}Am	40.670 †
^{222}Am	41.170 †
^{223}Am	40.500 †
^{224}Am	41.240
^{225}Am	40.830
^{226}Am	41.790
^{227}Am	41.430
^{228}Am	42.410
^{229}Am	42.060
^{230}Am	42.990
^{231}Am	42.030
^{232}Am	42.880
^{233}Am	42.760
^{234}Am	44.190

Isotope	Mass Excess
^{235}Am	44.430
^{236}Am	46.100
^{237}Am	46.740
^{238}Am	48.720
^{239}Am	49.650
^{240}Am	51.760
^{241}Am	53.030
^{242}Am	55.460
^{243}Am	56.890
^{244}Am	59.370
^{245}Am	61.100
^{246}Am	63.890
^{247}Am	65.770
^{248}Am	68.880
^{249}Am	71.140
^{250}Am	74.660
^{251}Am	76.950
^{252}Am	80.270
^{253}Am	83.030
^{254}Am	86.650
^{255}Am	89.510
^{201}Cm	106.700 †
^{202}Cm	102.240 †
^{203}Cm	97.860 †
^{204}Cm	94.430 †
^{205}Cm	92.130 †
^{206}Cm	88.260 †
^{207}Cm	85.520 †
^{208}Cm	81.300 †
^{209}Cm	78.860 †
^{210}Cm	74.860 †
^{211}Cm	72.660 †
^{212}Cm	68.820 †
^{213}Cm	66.800 †
^{214}Cm	63.190 †
^{215}Cm	61.410 †
^{216}Cm	58.130 †
^{217}Cm	56.580 ‡
^{218}Cm	53.630 ‡
^{219}Cm	52.420 ‡
^{220}Cm	49.800 ‡
^{221}Cm	48.810
^{222}Cm	46.740
^{223}Cm	47.180
^{224}Cm	46.150
^{225}Cm	46.840
^{226}Cm	46.060
^{227}Cm	46.960
^{228}Cm	46.250
^{229}Cm	47.160
^{230}Cm	46.460
^{231}Cm	47.330
^{232}Cm	46.030
^{233}Cm	46.820
^{234}Cm	46.350
^{235}Cm	47.730
^{236}Cm	47.630
^{237}Cm	49.250
^{238}Cm	49.550
^{239}Cm	51.480
^{240}Cm	52.070
^{241}Cm	54.130
^{242}Cm	55.080
^{243}Cm	57.450
^{244}Cm	58.550
^{245}Cm	60.990
^{246}Cm	62.380
^{247}Cm	65.130
^{248}Cm	66.690
^{249}Cm	69.740
^{250}Cm	71.690
^{251}Cm	75.160
^{252}Cm	77.140
^{253}Cm	80.410
^{254}Cm	82.850

Isotope	Mass Excess
^{255}Cm	86.430
^{256}Cm	88.980
^{205}Bk	106.140 †
^{206}Bk	103.630 †
^{207}Bk	99.930 †
^{208}Bk	96.840 †
^{209}Bk	92.620 †
^{210}Bk	89.840 †
^{211}Bk	85.820 †
^{212}Bk	83.280 †
^{213}Bk	79.420 †
^{214}Bk	77.050 †
^{215}Bk	73.420 †
^{216}Bk	71.300 †
^{217}Bk	67.980 †
^{218}Bk	66.070 †
^{219}Bk	63.050 †
^{220}Bk	61.490 †
^{221}Bk	58.800 †
^{222}Bk	57.450 †
^{223}Bk	55.320 †
^{224}Bk	55.400 †
^{225}Bk	54.310 †
^{226}Bk	54.640 †
^{227}Bk	53.780 †
^{228}Bk	54.270 †
^{229}Bk	53.460
^{230}Bk	53.970
^{231}Bk	53.150
^{232}Bk	53.620
^{233}Bk	51.970
^{234}Bk	52.330
^{235}Bk	51.760
^{236}Bk	52.790
^{237}Bk	52.600
^{238}Bk	53.880
^{239}Bk	54.120
^{240}Bk	55.720
^{241}Bk	56.260
^{242}Bk	57.970
^{243}Bk	58.890
^{244}Bk	60.920
^{245}Bk	61.990
^{246}Bk	64.060
^{247}Bk	65.430
^{248}Bk	67.830
^{249}Bk	69.350
^{250}Bk	72.070
^{251}Bk	74.010
^{252}Bk	77.190
^{253}Bk	79.130
^{254}Bk	82.040
^{255}Bk	84.490
^{256}Bk	87.720
^{257}Bk	90.260
^{206}Cf	116.790 †
^{207}Cf	114.250 †
^{208}Cf	110.230 †
^{209}Cf	107.090 †
^{210}Cf	102.510 †
^{211}Cf	99.670 †
^{212}Cf	95.280 †
^{213}Cf	92.690 †
^{214}Cf	88.470 †
^{215}Cf	86.050 †
^{216}Cf	82.060 †
^{217}Cf	79.880 †
^{218}Cf	76.200 †
^{219}Cf	74.230 †
^{220}Cf	70.850 †
^{221}Cf	69.220 †
^{222}Cf	66.180 †
^{223}Cf	64.770 †
^{224}Cf	62.280 ‡

Isotope	Mass Excess
^{225}Cf	62.290 ‡
^{226}Cf	60.840 ‡
^{227}Cf	61.110
^{228}Cf	59.890
^{229}Cf	60.310
^{230}Cf	59.130
^{231}Cf	59.570
^{232}Cf	58.380
^{233}Cf	58.780
^{234}Cf	56.710
^{235}Cf	56.990
^{236}Cf	56.070
^{237}Cf	57.040
^{238}Cf	56.510
^{239}Cf	57.720
^{240}Cf	57.630
^{241}Cf	59.180
^{242}Cf	59.390
^{243}Cf	61.040
^{244}Cf	61.640
^{245}Cf	63.620
^{246}Cf	64.360
^{247}Cf	66.370
^{248}Cf	67.420
^{249}Cf	69.770
^{250}Cf	70.970
^{251}Cf	73.640
^{252}Cf	75.270
^{253}Cf	78.420
^{254}Cf	80.040
^{255}Cf	82.890
^{256}Cf	85.040
^{257}Cf	88.220
^{258}Cf	90.450
^{211}Es	114.580 †
^{212}Es	111.390 †
^{213}Es	106.950 †
^{214}Es	104.000 †
^{215}Es	99.740 †
^{216}Es	96.970 †
^{217}Es	92.930 †
^{218}Es	90.400 †
^{219}Es	86.670 †
^{220}Es	84.350 †
^{221}Es	80.910 †
^{222}Es	78.920 †
^{223}Es	75.810 †
^{224}Es	74.040 †
^{225}Es	71.490 †
^{226}Es	71.150 †
^{227}Es	69.640 †
^{228}Es	69.550 †
^{229}Es	68.250 †
^{230}Es	68.300 †
^{231}Es	67.040 †
^{232}Es	67.110 †
^{233}Es	65.820 †
^{234}Es	65.850
^{235}Es	63.590
^{236}Es	63.490
^{237}Es	62.500
^{238}Es	63.120
^{239}Es	62.530
^{240}Es	63.400
^{241}Es	63.260
^{242}Es	64.470
^{243}Es	64.630
^{244}Es	65.940
^{245}Es	66.500
^{246}Es	68.150
^{247}Es	68.850
^{248}Es	70.520
^{249}Es	71.530
^{250}Es	73.540
^{251}Es	74.700

Isotope	Mass Excess
^{252}Es	77.060
^{253}Es	78.660
^{254}Es	81.500
^{255}Es	83.070
^{256}Es	85.590
^{257}Es	87.720
^{258}Es	90.570
^{259}Es	92.770
^{212}Fm	125.250 †
^{213}Fm	121.990 †
^{214}Fm	117.180 †
^{215}Fm	114.170 †
^{216}Fm	109.540 †
^{217}Fm	106.710 †
^{218}Fm	102.300 †
^{219}Fm	99.720 †
^{220}Fm	95.620 †
^{221}Fm	93.230 †
^{222}Fm	89.430 †
^{223}Fm	87.380 †
^{224}Fm	83.920 †
^{225}Fm	82.090 †
^{226}Fm	79.180 †
^{227}Fm	78.780 †
^{228}Fm	76.910 ‡
^{229}Fm	76.770 ‡
^{230}Fm	75.110 ‡
^{231}Fm	75.100 ‡
^{232}Fm	73.490
^{233}Fm	73.490
^{234}Fm	71.850
^{235}Fm	71.820
^{236}Fm	69.210
^{237}Fm	69.060
^{238}Fm	67.720
^{239}Fm	68.290
^{240}Fm	67.360
^{241}Fm	68.180
^{242}Fm	67.700
^{243}Fm	68.860
^{244}Fm	68.690
^{245}Fm	69.950
^{246}Fm	70.180
^{247}Fm	71.780
^{248}Fm	72.150
^{249}Fm	73.770
^{250}Fm	74.460
^{251}Fm	76.430
^{252}Fm	77.260
^{253}Fm	79.570
^{254}Fm	80.850
^{255}Fm	83.650
^{256}Fm	84.910
^{257}Fm	87.380
^{258}Fm	89.200
^{259}Fm	92.000
^{260}Fm	93.900
^{223}Md	100.180 †
^{224}Md	97.770 †
^{225}Md	94.240 †
^{226}Md	92.060 †
^{227}Md	89.100 †
^{228}Md	88.340 †
^{229}Md	86.410 †
^{230}Md	85.910 †
^{231}Md	84.180 †
^{232}Md	83.810 †
^{233}Md	82.140 †
^{234}Md	81.780 †
^{235}Md	80.070 †
^{236}Md	79.690 †
^{237}Md	76.970 †
^{238}Md	76.460 †
^{239}Md	75.060 †

Isotope	Mass Excess
^{240}Md	75.290
^{241}Md	74.300
^{242}Md	74.780
^{243}Md	74.260
^{244}Md	75.080
^{245}Md	74.860
^{246}Md	75.790
^{247}Md	75.980
^{248}Md	77.250
^{249}Md	77.570
^{250}Md	78.870
^{251}Md	79.510
^{252}Md	81.150
^{253}Md	81.940
^{254}Md	83.930
^{255}Md	85.170
^{256}Md	87.660
^{257}Md	88.870
^{258}Md	91.030
^{259}Md	92.800
^{260}Md	95.300
^{261}Md	97.150
^{223}No	113.710 †
^{224}No	109.480 †
^{225}No	107.020 †
^{226}No	103.130 †
^{227}No	100.890 †
^{228}No	97.570 †
^{229}No	96.760 †
^{230}No	94.470 †
^{231}No	93.910 †
^{232}No	91.830 †
^{233}No	91.400 †
^{234}No	89.370 ‡
^{235}No	88.950 ‡
^{236}No	86.890 ‡
^{237}No	86.450 ‡
^{238}No	83.380
^{239}No	82.810
^{240}No	81.070
^{241}No	81.250
^{242}No	79.920
^{243}No	80.350
^{244}No	79.490
^{245}No	80.260
^{246}No	79.720
^{247}No	80.590
^{248}No	80.450
^{249}No	81.680
^{250}No	81.680
^{251}No	82.920
^{252}No	83.240
^{253}No	84.830
^{254}No	85.300
^{255}No	87.240
^{256}No	88.170
^{257}No	90.620
^{258}No	91.520
^{259}No	93.620
^{260}No	95.090
^{261}No	97.530
^{262}No	99.080
^{229}Lr	108.330 †
^{230}Lr	107.160 †
^{231}Lr	104.820 †
^{232}Lr	103.890 †
^{233}Lr	101.730 †
^{234}Lr	100.930 †
^{235}Lr	98.830 †
^{236}Lr	98.030 †
^{237}Lr	95.870 †
^{238}Lr	95.070 †
^{239}Lr	91.800 †
^{240}Lr	90.850 †

Isotope	Mass Excess
^{241}Lr	89.030 †
^{242}Lr	88.870 †
^{243}Lr	87.480 †
^{244}Lr	87.570
^{245}Lr	86.660
^{246}Lr	87.100
^{247}Lr	86.510
^{248}Lr	87.040
^{249}Lr	86.870
^{250}Lr	87.770
^{251}Lr	87.720
^{252}Lr	88.620
^{253}Lr	88.900
^{254}Lr	90.160
^{255}Lr	90.590
^{256}Lr	92.210
^{257}Lr	93.110
^{258}Lr	95.260
^{259}Lr	96.110
^{260}Lr	97.880
^{261}Lr	99.330
^{262}Lr	101.450
^{263}Lr	102.980
^{230}Rf	117.620 †
^{231}Rf	116.380 †
^{232}Rf	113.690 †
^{233}Rf	112.700 †
^{234}Rf	110.190 †
^{235}Rf	109.320 †
^{236}Rf	106.850 †
^{237}Rf	105.990 †
^{238}Rf	103.470 †
^{239}Rf	102.600 †
^{240}Rf	98.930 ‡
^{241}Rf	97.910 ‡
^{242}Rf	95.750 ‡
^{243}Rf	95.530
^{244}Rf	93.800
^{245}Rf	93.840
^{246}Rf	92.590
^{247}Rf	92.990
^{248}Rf	92.060
^{249}Rf	92.550
^{250}Rf	92.050
^{251}Rf	92.900
^{252}Rf	92.530
^{253}Rf	93.370
^{254}Rf	93.340
^{255}Rf	94.550
^{256}Rf	94.660
^{257}Rf	96.230
^{258}Rf	96.830
^{259}Rf	98.930
^{260}Rf	99.480
^{261}Rf	101.190
^{262}Rf	102.340
^{263}Rf	104.410
^{264}Rf	105.630
^{235}Ha	120.830 †
^{236}Ha	119.590 †
^{237}Ha	117.050 †
^{238}Ha	115.810 †
^{239}Ha	113.200 †
^{240}Ha	111.960 †
^{241}Ha	108.110 †
^{242}Ha	106.710 †
^{243}Ha	104.470 †
^{244}Ha	103.920 †
^{245}Ha	102.120 †
^{246}Ha	101.830 †
^{247}Ha	100.530 †
^{248}Ha	100.590 †
^{249}Ha	99.620 †
^{250}Ha	99.770

Isotope	Mass Excess
^{251}Ha	99.240
^{252}Ha	99.760
^{253}Ha	99.350
^{254}Ha	99.850
^{255}Ha	99.780
^{256}Ha	100.660
^{257}Ha	100.730
^{258}Ha	101.990
^{259}Ha	102.550
^{260}Ha	104.360
^{261}Ha	104.860
^{262}Ha	106.240
^{263}Ha	107.360
^{264}Ha	109.120
^{265}Ha	110.310
^{236}Sg	129.970 †
^{237}Sg	128.680 †
^{238}Sg	125.800 †
^{239}Sg	124.510 †
^{240}Sg	121.570 †
^{241}Sg	120.290 †
^{242}Sg	116.150 †
^{243}Sg	114.710 †
^{244}Sg	112.150 †
^{245}Sg	111.540 †
^{246}Sg	109.420 †
^{247}Sg	109.070 ‡
^{248}Sg	107.450 ‡
^{249}Sg	107.460
^{250}Sg	106.160
^{251}Sg	106.260
^{252}Sg	105.400
^{253}Sg	105.870
^{254}Sg	105.140
^{255}Sg	105.600
^{256}Sg	105.210
^{257}Sg	106.050
^{258}Sg	105.790
^{259}Sg	107.000
^{260}Sg	107.250
^{261}Sg	109.000
^{262}Sg	109.190
^{263}Sg	110.540
^{264}Sg	111.350
^{265}Sg	113.060
^{266}Sg	113.940
^{240}Ns	135.100 †
^{241}Ns	132.010 †
^{242}Ns	130.320 †
^{243}Ns	125.770 †
^{244}Ns	123.910 †
^{245}Ns	121.240 †
^{246}Ns	120.290 †
^{247}Ns	118.080 †
^{248}Ns	117.390 †
^{249}Ns	115.720 †
^{250}Ns	115.400 †
^{251}Ns	114.060 †
^{252}Ns	113.820 †
^{253}Ns	112.930 †
^{254}Ns	113.080
^{255}Ns	112.300
^{256}Ns	112.410
^{257}Ns	111.990
^{258}Ns	112.490
^{259}Ns	112.190
^{260}Ns	113.090
^{261}Ns	113.330
^{262}Ns	114.800
^{263}Ns	114.950
^{264}Ns	115.940
^{265}Ns	116.750
^{266}Ns	118.130
^{267}Ns	118.990

Isotope	Mass Excess
^{241}Hs	144.500 †
^{242}Hs	141.180 †
^{243}Hs	139.530 †
^{244}Hs	135.110 †
^{245}Hs	133.320 †
^{246}Hs	130.390 †
^{247}Hs	129.400 †
^{248}Hs	126.910 †
^{249}Hs	126.180 †
^{250}Hs	124.180 †
^{251}Hs	123.820 †
^{252}Hs	122.140 †
^{253}Hs	121.870 †
^{254}Hs	120.630 †
^{255}Hs	120.740 †
^{256}Hs	119.630 †
^{257}Hs	119.740 †
^{258}Hs	118.980
^{259}Hs	119.450
^{260}Hs	118.840
^{261}Hs	119.690
^{262}Hs	119.570
^{263}Hs	120.950
^{264}Hs	120.780
^{265}Hs	121.790
^{266}Hs	122.230
^{267}Hs	123.600
^{268}Hs	124.120
^{246}Mt	144.620 †
^{247}Mt	141.720 †
^{248}Mt	140.420 †
^{249}Mt	137.920 †
^{250}Mt	136.890 †
^{251}Mt	134.840 †
^{252}Mt	134.160 †
^{253}Mt	132.420 †
^{254}Mt	131.870 †
^{255}Mt	130.530 †
^{256}Mt	130.330 †
^{257}Mt	129.160 †
^{258}Mt	129.020 †
^{259}Mt	128.170 †
^{260}Mt	128.370 †
^{261}Mt	127.690 †
^{262}Mt	128.250 †
^{263}Mt	128.010 †
^{264}Mt	129.030 †
^{265}Mt	128.810 †
^{266}Mt	129.590 †
^{267}Mt	129.900 †
^{268}Mt	131.010 †
^{269}Mt	131.430 †
^{247}110	155.180 †
^{248}110	152.120 †
^{249}110	150.820 †
^{250}110	148.090 †
^{251}110	147.060 †
^{252}110	144.680 †
^{253}110	143.960 †
^{254}110	141.880 †
^{255}110	141.360 †
^{256}110	139.610 †
^{257}110	139.390 †
^{258}110	137.860 †
^{259}110	137.800 †
^{260}110	136.570 †
^{261}110	136.810 †
^{262}110	135.790 †
^{263}110	136.320 †
^{264}110	135.630 †
^{265}110	136.500 †
^{266}110	135.960 ‡
^{267}110	136.860 ‡
^{268}110	136.680

Isotope	Mass Excess	
$^{269}110$	137.860	
$^{270}110$	137.860	
$^{252}111$	158.010	†
$^{253}111$	155.580	†
$^{254}111$	154.530	†
$^{255}111$	152.390	†
$^{256}111$	151.590	†
$^{257}111$	149.750	†
$^{258}111$	149.230	†
$^{259}111$	147.630	†
$^{260}111$	147.330	†
$^{261}111$	146.010	†
$^{262}111$	145.970	†
$^{263}111$	144.890	†
$^{264}111$	145.130	†
$^{265}111$	144.330	†
$^{266}111$	144.840	†
$^{267}111$	144.250	†
$^{268}111$	144.920	†
$^{269}111$	144.610	†
$^{270}111$	145.540	†
$^{271}111$	145.450	†
$^{253}112$	167.620	†
$^{254}112$	164.870	†
$^{255}112$	163.770	†
$^{256}112$	161.310	†
$^{257}112$	160.470	†
$^{258}112$	158.290	†
$^{259}112$	157.720	†
$^{260}112$	155.800	†
$^{261}112$	155.490	†
$^{262}112$	153.830	†
$^{263}112$	153.770	†
$^{264}112$	152.380	†
$^{265}112$	152.570	†
$^{266}112$	151.430	‡
$^{267}112$	151.860	‡
$^{268}112$	150.960	‡
$^{269}112$	151.630	‡
$^{270}112$	150.980	
$^{271}112$	151.880	
$^{272}112$	151.460	