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Atlases of globally-predicted small molecule data. I: Internuclear separation.

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ABSTRACT

A table of globally-predicted data of internuclear separation is presented, the first of a series on molecular properties. This paper explores a novel frequency compensation of neural network inputs and a new measure of the asymmetry in the globally-predicted data.

INTRODUCTION

This particular paper deals with internuclear separation (r_e) but subsequent papers will deal with other diatomic properties including ionization potential (*IP*) and dissociation potential (D_o) as well as triatomic properties such as heat of atomization (ΔHa) and *IP*.

By collecting and analyzing this type of data, a useful reference could be at hand for scientists in numerous fields. Astrophysicists can implement the data in analyzing the spectroscopy of atmospheres of the earth, other planets, and stars[1] along with stellar and interstellar plasmas.[2] Engineers could use this data in their studies of combustion to build a better engine or better incinerator contributing to cleaner air.

Some of this data has already been critically analyzed, tabulated, and well documented.[3] The reason for this present work is that people who study or require data on small molecules not available in Ref. 3 can go to one source of compiled data instead of hunting down numerous sources in a myriad of journals or networking to find unpublished materials. In addition, calculating or measuring properties of diatomic molecules is very expensive. Mining the tabulated data to make predictions of these properties would at least give a rough estimate which might fulfill their needs.

In this paper some methods in calculating this data are introduced, even though not all are implemented for r_e. The final table of globally-predicted r_e data is presented as an appendix.

PREVIOUS WORK

In the past, work has been done on testing neural networks on molecular data, but without making any predictions.[4] More recently, work has been done on predicting molecular data using neural networks, but only partial sets were predicted and with inadequate statistical analysis.[5] In addition, work has been done using the least squares method to predict molecular data, but only partial sets were predicted.[1,6]

THEORY

Diatomic molecules have some inherent potential energy properties, which include internuclear separation (r_e), *IP*, and vibrational frequency (ω_e). Fig. 1 shows how these properties and several others are related to each other.[6]

Known diatomic molecular data are massaged by least squares methods or neural networks to make predictions of all diatomic molecular data. Each datum is indexed according to where each atom of the diatomic molecule lies on the periodic table. Therefore, each datum has two row numbers (R1 and R2) and two column numbers (C1 and C2). It is required that the globally predicted data be symmetric. For example, the data for NaCl must be the same data for ClNa. So, the tabulated diatomic molecular data used must be symmetric so that each datum for heteronuclear molecules appears twice, with independent variables (R_1, C_1, R_2, C_2) and (R_2, C_2, R_1, C_1). Homonuclear molecules ($R_1 = R_2$ and $C_1 = C_2$) appear once.

METHOD

A learning set of symmetrized data, which consists of 88% of the tabulated data, is fed into a computer. Then when the computer learns the set well enough to "predict" it, a validation set of symmetrized data, which consists of the remaining 12% of the tabulated data, is sent through as an independent control check. Once the model is validated, global predictions can be made for all molecules.

What is required is that all the predicted data are symmetric. This is partially accomplished by adding reverse-order tabulated-data entries, as described earlier. A supplementary way to make the data symmetric is to give the computer not just the rows and columns as inputs, but also their squares and cubes (R_1, R_1^2, R_1^3, C_1, C_1^2, C_1^3...). This is known as the 12-base system. Experience has shown that this 12-base system provides more symmetrical predictions.

To test the extent to which the tabulated data are in fact symmetric, the centroids are calculated. This is also done for the validation set and for the global predictions with results in Table 1. Yre_redo1 is the SAU neural-net model; 13-1-1 is the University of Memphis neural-net model.[4]

Another requirement is that the predicted learning set data are not compressed away from the high and low ends of the tabulated data range. The computer must be forced to spread the predictions to the ends of the domain where the data are. To achieve this a frequency compensation may be used. Otherwise, the low predictions are too high and the high predictions are too low.

In the case of r_e, the learning set data was not compressed, but to illustrate this process frequency compensation for the ω_e data is provided. First, the tabulated data are first sorted by size. Each datum is then assigned a rank number. Fig. 2 shows a graph of tabulated data vs. rank number with a straight part of the curve isolated. Then identical data are added until the whole curve becomes approximately linear with the same slope as the isolated part (Fig. 3). The same process will applied to *IP* as shown in Figs. 4-6.

DATA

The tabulated diatomic-molecular data for r_e and ω_e are from Ref. 3. The diatomic-molecular *IP* are from Ref. 7. No rare-gas pairs and alkali-metal atoms were included in the ω_e data set; the row numbers were restricted from 2 to 6. No transition elements were included in the *IP* set.

RESULTS

First, predictions are made for the learning set. The average difference, its σ, the average of the absolute difference, and its σ are calculated. The average of the percent differences is found to be –0.263 with a standard deviation of 4.482 [i.e., (-0.263 ± 4.482)%]. The average of the absolute percent differences is found to be 3.102 with a standard deviation of 3.240 (Table 1). Next predictions are made for the validation set and the same details are calculated for the validation set. The σs of the two sets are compared to see if they agree within a factor of 3. The σs are within that factor, and so the global predictions are made.

When the computer is done with the global predictions, the molecular names are assigned to each. The impossible molecules are then eliminated (for example a molecule having an atom with *R*=2, *C*=5). The differences of entries and their reverse order are calculated (for example the datum NaCl minus ClNa). The average of these differences should equal zero but it does not because of residual asymmetry. The centroids are calculated to find out how asymmetric the predictions are. The goal is to see if the predicted data are symmetric and if not, how large the centroids are. The *C* centroid is –0.0660 and the *R* centroid is 0.0317 (Table 1).

The σ of the average is then calculated. The distribution curve is plotted (Fig. 7). These results came out well enough that work will continue in generating the next atlases using this method.

A comparison of r_e from tabulated data, values from Memphis,[4] a Least Squares fit performed in the Southern Adventist University laboratory,[6] and the atlas of neural networks predictions are in Table 2 in the appendix. In summary though, the average difference between the tabulated data and the Memphis values is 3%. The average difference between the tabulated data and SAU's neural network is 3.102%, and between the tabulated data and SAU's least-squares-method is 7%.

DISSCUSSION

The first of a series of globally-predicted data for diatomic and triatomic molecules has been presented. The r_e was derived from neural networks and least squares method. The average error is estimated on the basis of the results above to be 0.095 Å. One recommendation is for someone to go through the literature and check with other calculations of small molecules to compare our data with.

The prediction in the table lead to the conclusion that if you read a journal and believe what it says regarding certain data, you will often be wrong. If you wait till somewhat like Huber and Herzberg publishes critically tabulated data,[3] you will be wrong very less often.

This paper deals with only one of many properties of diatomic molecules – namely internuclear separation. These series of papers will continue to focus on a certain property of diatomic molecules and present them in one place.

REFERENCES

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CAPTIONS

Fig 1: Schematic energy-level diagram for a diatomic molecule. The horizontal axis is the distance between nuclei and the vertical axis is the energy with zero established at infinite separation in the ground electronic state. The electronic states are shown by the curves. The vibrational states are shown by widely-spaced horizontal lines, while the rotational states are shown by closely-spaced horizontal lines. The figure shows internuclear separation (r_e), disassociation energy D_0^{o}, ionization potential, and various other constants for the neutral and ionized molecules.

Fig. 2: Tabulated data plotted on rank number for ω_e. The steeper portions of the curve indicate that there are very few data with the lowest and highest values.

Fig. 3: Tabulated data plotted on rank number for ω_e after frequency compensation. The stairsteps are caused by the introduction of large numbers of duplicate data. Note that about 2000 data points have been added to the training set. The straight line is included to show that the data set is now approximately linear. The slope had an intercept slightly below zero.

Fig. 4: Tabulated and predicted data for *IP* vs. ordered data count. The smother curve represents the tabulated data. The steeper portions of the curve indicate that there are fewer data with the lowest and highest values. The other curve represents the predictions made by the neural network for the identical molecules (which are in the training set).

Fig. 5: Same as Fig. 4 except after frequency compensation which results in an inflated data count on the horizontal axis. The smooth curve represents the augmented tabulated

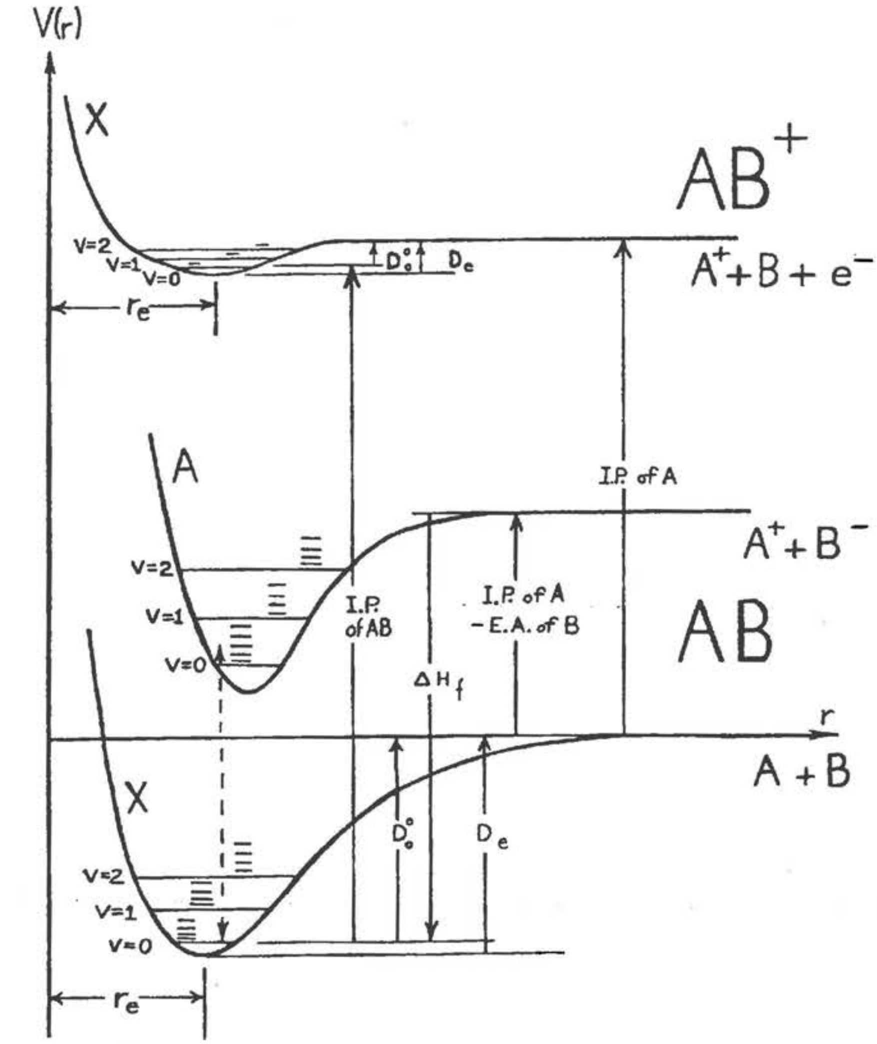
data. The other curve represents the predictions made by the neural network for the identical molecules (which are in the training set).

Fig. 6: Same as Fig. 5 except with straight lines included to show that it is closer to being linear.

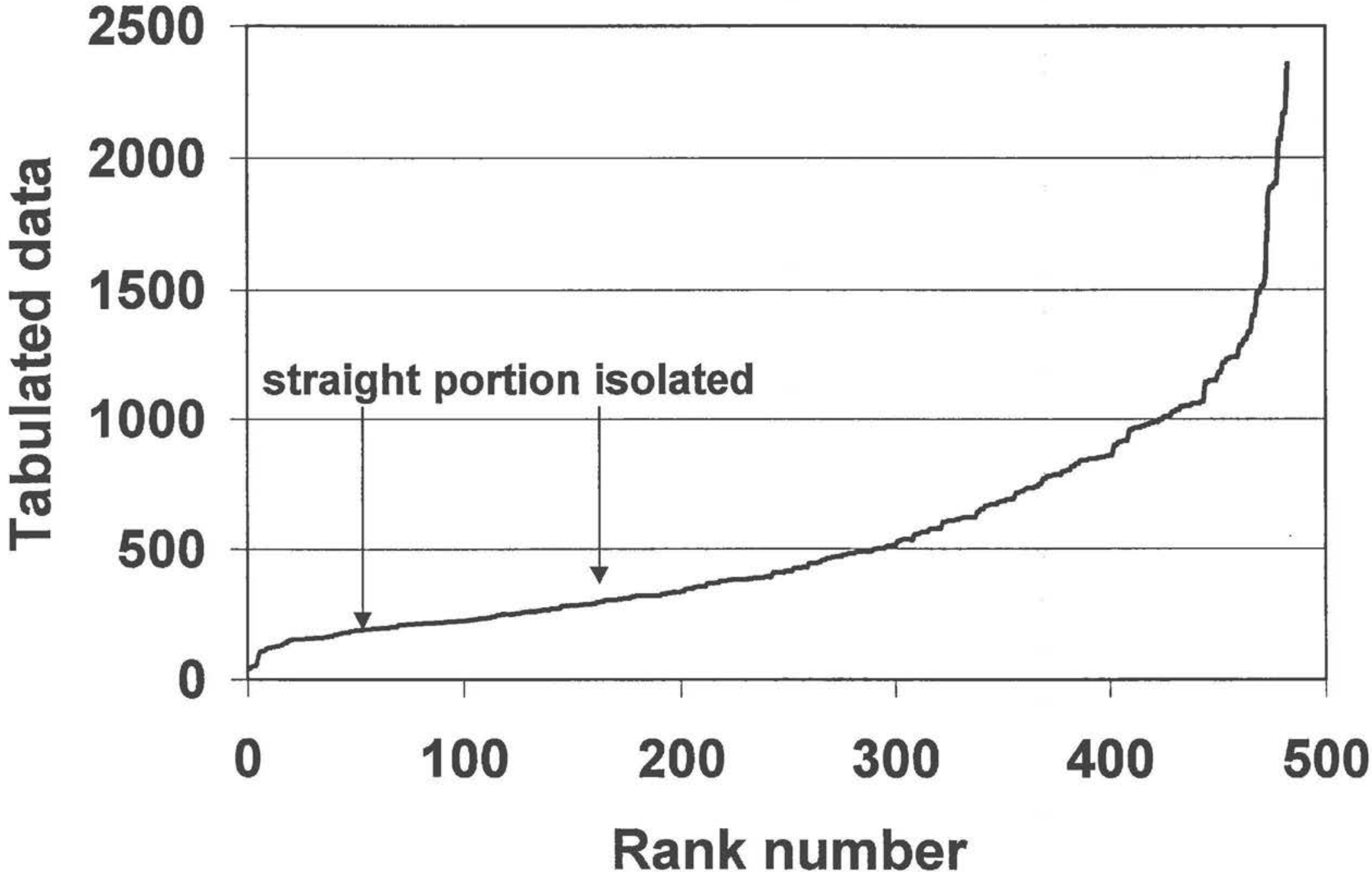
Fig. 7: The solid line is the distribution of differences of globally-predicted data for molecules AB and data for the same molecules in reverse order BA. The differences were arbitrarily grouped into domains of width 0.100 ("bins"). The numbers of differences in each bin are plotted on the bin centers. For example, there are 76 (AB, BA) pairs with differences between –0.499 and –0.400, and this figure (76) is plotted on –0.4495. There is a similar point at +0.4495. The curve was fitted through the points by the computer. The standard deviation of the distribution is about 0.17. This is not related to errors described elsewhere. The dotted line is a representative gaussian curve for comparison.

Table 1. Statistical analyses of the neural networks

	SAU Yre_redo1	Memphis 13-13-1
1. Learning set		
Number of points	307	150
<*C*1-*C*2> tabulated data centroid	1.286E-15	
<*R*1-*R*2> tabulated data centroid	1.967E-17	
Minimum *R*	2	1
Maximum *R*	6	7
Minimum *C*	1	1
Maximum *C*	17	17
Minimum tabulated datum	1.15	
Maximum tabulated datum	5.1	
Minimum prediction	1.220	
Maximum prediction	4.787	
<*C*1-*C*2> predictions centroid	0.0043	
<*R*1-*R*2> predictions centroid	-0.0031	
Average % difference	-0.263	-1
Standard deviation	4.482	
Average absolute % difference	3.102	3
Standard deviation	3.240	
Median	2.086	
2. Validation set		
Number or data	35	49
Average % difference	0.274	-2
Standard deviation	11.513	
Average absolute % difference	7.613	5
Standard deviation	8.542	
Median	4.307	
3. Global predictions		
Number of real predictions	2145	
<*C*1-*C*2> centroid difference	-0.0660	
<*R*1-*R*2> centroid difference	0.0317	
Minimum *R*	2	
Maximum *R*	6	
Minimum *C*	1	
Maximum *C*	17	
Minimum prediction	1.153	
Maximum prediction	6.438	



V(r)
X
AB+
V=2
V=1
V=0
D°o
De
A+ + B + e−
re
A
I.P. of A
A+ + B−
V=2
V=1
V=0
I.P. of AB
I.P. of A − E.A. of B
AB
ΔHf
r
A + B
X
D°o
De
V=2
V=1
V=0
re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1500
1000
500
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straight portion isolated
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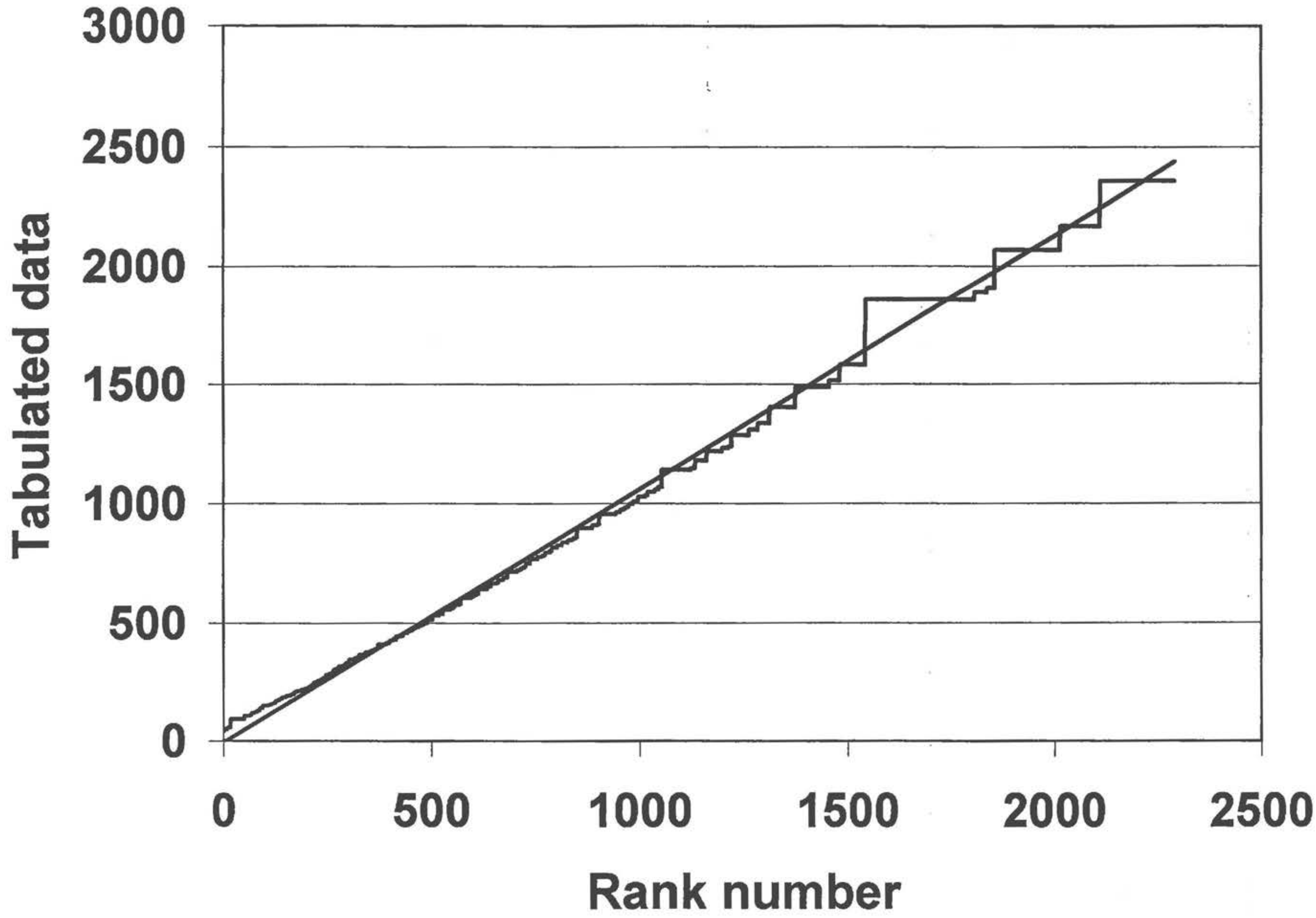
200
300
400
500
Rank number



Tabulated data
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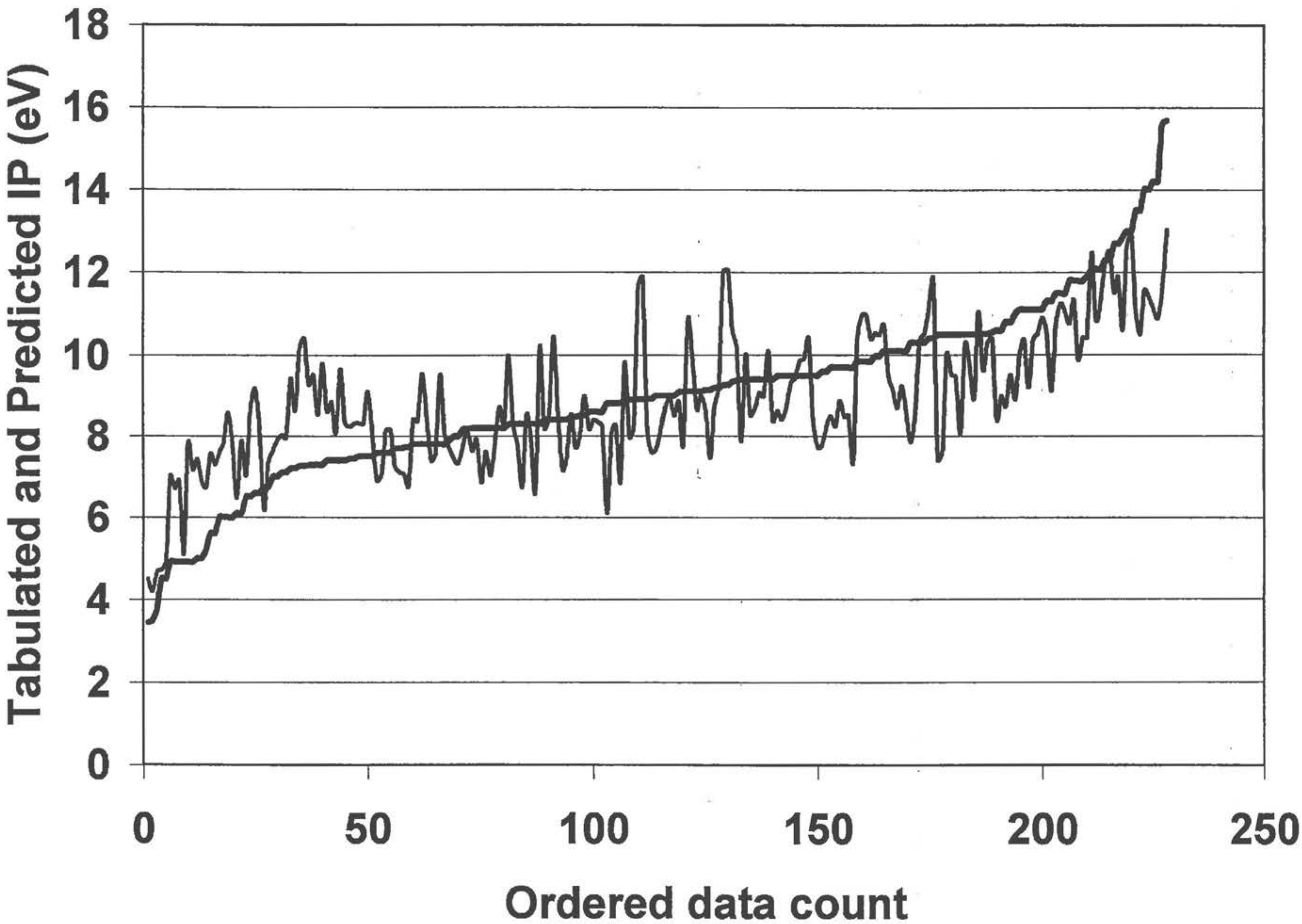
2500
2000
1500
1000
500
0
0
500
1000
1500
2000
2500
Rank number


Tabulated and Predicted IP (eV)
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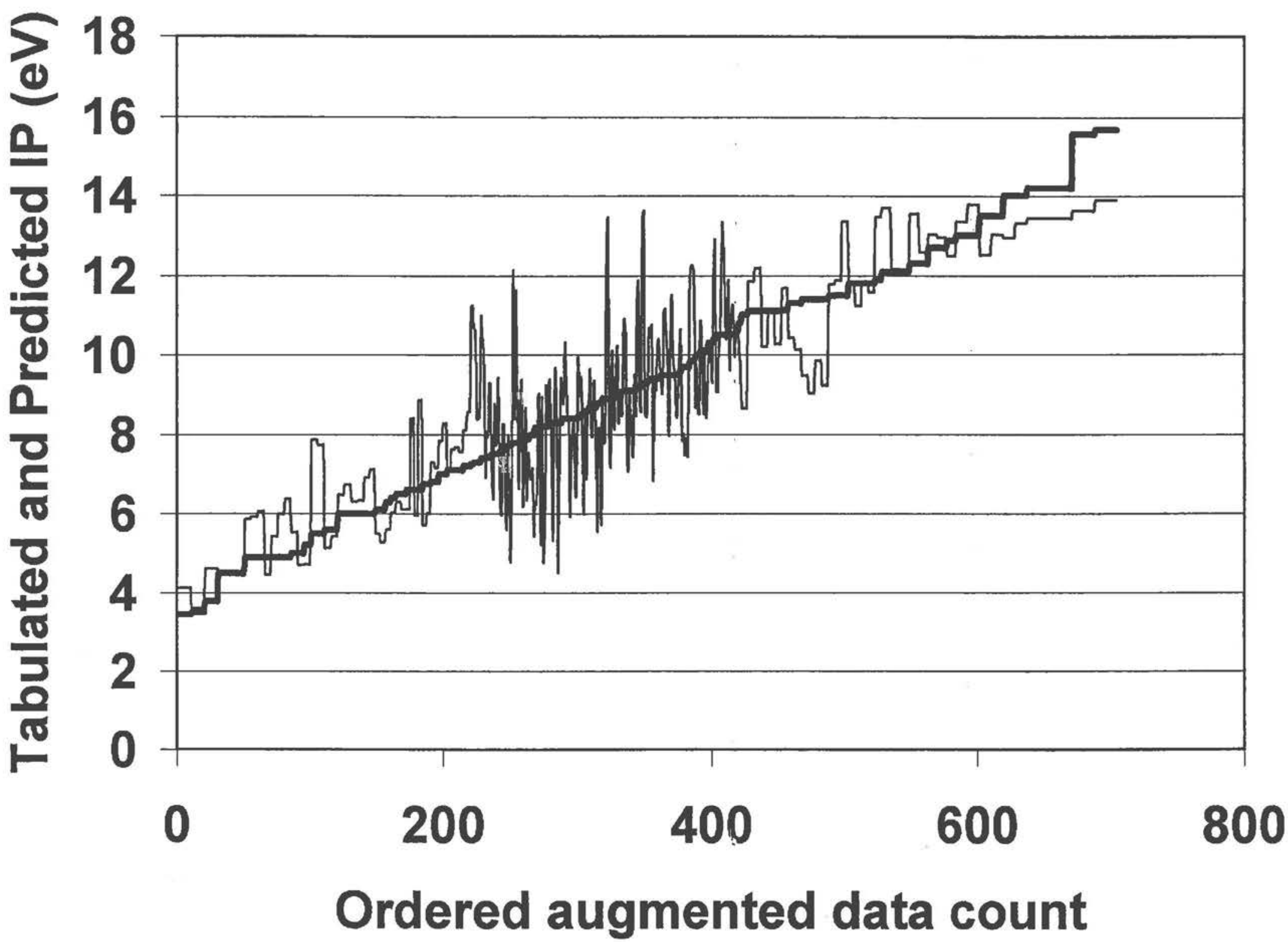
2
4
6
8
10
12
14
16
18
0
50
100
150
200
250
Ordered data count


Tabulated and Predicted IP (eV)
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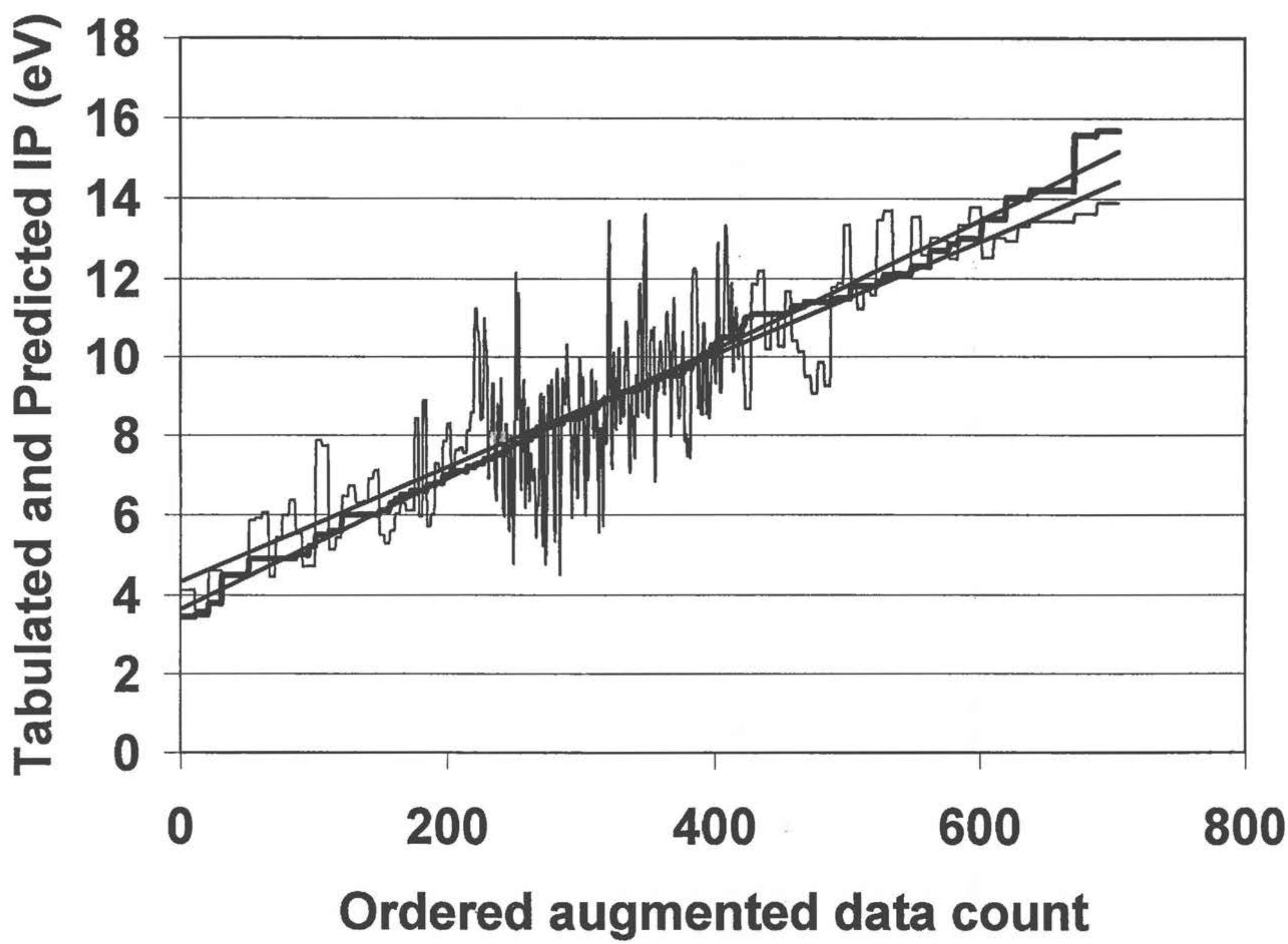
2
4
6
8
10
12
14
16
18
0
200
400
600
800
Ordered augmented data count


Tabulated and Predicted IP (eV)
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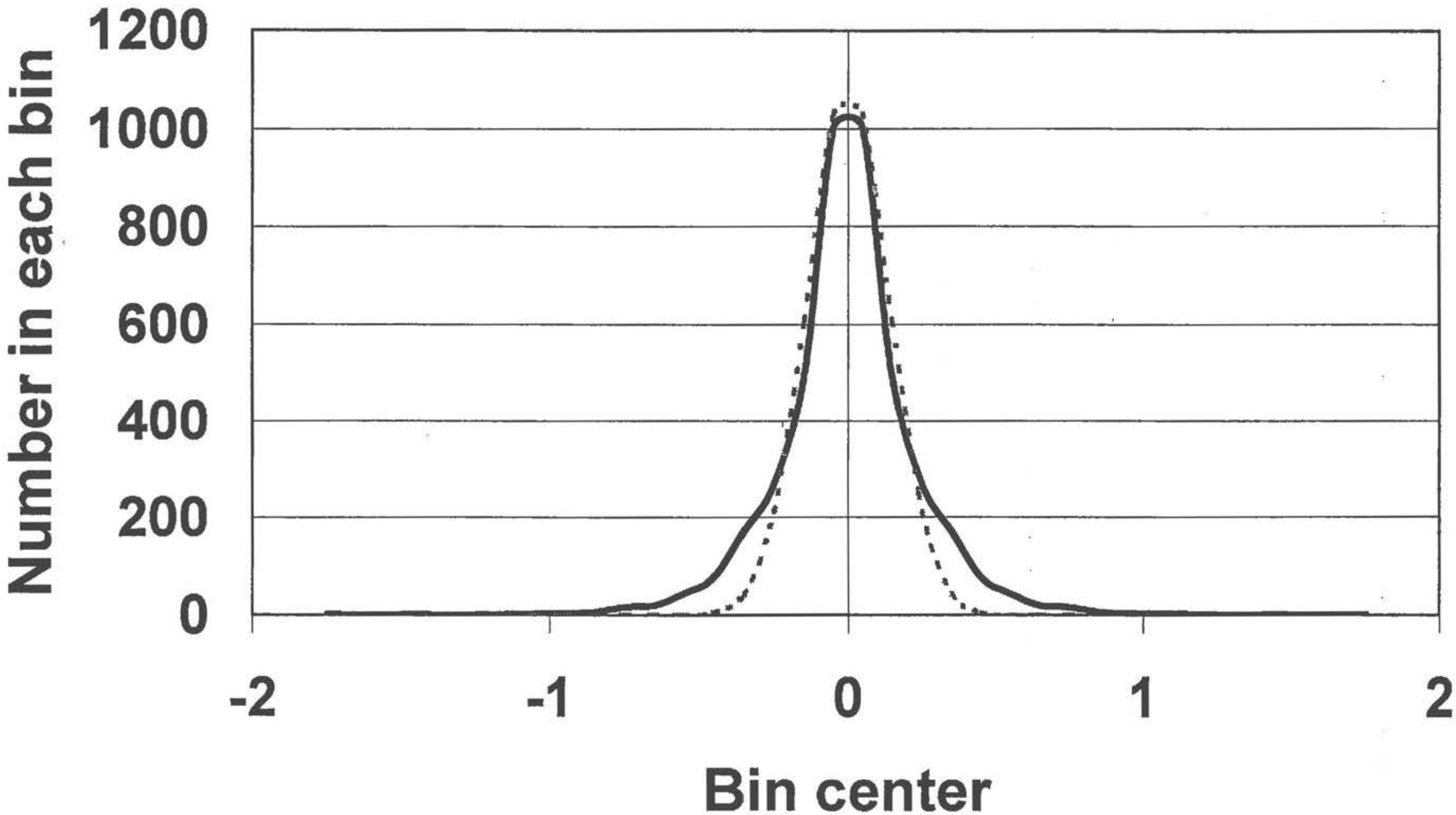
2
4
6
8
10
12
14
16
18
0
200
400
600
800
Ordered augmented data count



Number in each bin
1200
1000
800
600
400
200
0
-2
-1
0
1
2
Bin center

Table 2. Internuclear separation: tabulated data, forecasts by neural networks, least squares

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
116C	7	17	2	14								DF	2.14	
116Ge	7	16	4	14								DF	2.61	
116Pb	7	16	6	14								DF	2.88	
117Al	7	17	3	13								CG	2.71	
117As	7	17	4	15								EG	2.75	
117B	7	17	2	13								CG	2.45	
117Bi	7	17	6	15								EG	3.04	
117Cs	7	17	6	1								AG	3.64	
117Fr	7	17	7	1								AG	3.76	
117Ga	7	17	4	13								CG	2.90	
117In	7	17	5	13								CG	3.05	
117K	7	17	4	1								AG	3.31	
117Li	7	17	2	1								AG	2.75	
117Na	7	17	3	1								AG	3.08	
117P	7	17	3	15								EG	2.54	
117Rb	7	17	5	1								AG	3.49	
117Sb	7	17	5	15								EG	2.91	
AgAg	5	11	5	11		2.82	2.82	2.82						
AgAl	5	11	3	13	2.47	2.41	2.45	2.43	2.47					
AgAs	5	11	4	15		2.33	2.43	2.38						
AgAt	5	11	6	17		2.73	2.51	2.62						
AgAu	5	11	6	11		2.68	2.97	2.83						
AgB	5	11	2	13		1.86	1.95	1.90						
AgBa	5	11	6	2		2.92	3.46	3.19						
AgBe	5	11	2	2		2.03	2.12	2.08						
AgBi	5	11	6	15		2.63	2.74	2.69						
AgBr	5	11	4	17	2.39	2.37	2.40	2.38	2.41					
AgC	5	11	2	14		1.81	1.92	1.87						
AgCa	5	11	4	2		2.94	2.90	2.92						
AgCd	5	11	5	12		2.86	2.90	2.88						
AgCl	5	11	3	17	2.28	2.26	2.31	2.28	2.29					
AgCo	5	11	4	9		2.50	2.39	2.45						
AgCr	5	11	4	6		2.34	2.34	2.34						
AgCs	5	11	6	1		3.51	4.03	3.77						
AgCu	5	11	4	11		2.65	2.54	2.59						
AgF	5	11	2	17	1.98	1.89	1.86	1.87	1.92					
AgFe	5	11	4	8		2.42	2.35	2.38						
AgGa	5	11	4	13		2.61	2.61	2.61						
AgGe	5	11	4	14		2.48	2.55	2.51						
AgHf	5	11	6	4		2.43	2.90	2.66						
AgHg	5	11	6	12		2.74	3.05	2.89						
AgI	5	11	5	17	2.54	2.58	2.52	2.55	2.54					
AgIn	5	11	5	13		2.82	2.91	2.86						
AgIr	5	11	6	9		2.49	2.77	2.63						
AgK	5	11	4	1		3.54	3.27	3.41						
AgLa	5	11	6	3		2.60	3.12	2.86						
AgLi	5	11	2	1		2.31	2.34	2.33						
AgMg	5	11	3	2		2.66	2.70	2.68						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
AgMn	5	11	4	7		2.36	2.32	2.34						
AgMo	5	11	5	6		2.46	2.58	2.52						
AgN	5	11	2	15		1.75	1.86	1.81						
AgNa	5	11	3	1		3.14	3.03	3.09						
AgNb	5	11	5	5		2.48	2.64	2.56						
AgNi	5	11	4	10		2.58	2.46	2.52						
AgO	5	11	2	16	2	1.75	1.83	1.79						
AgOs	5	11	6	8		2.40	2.71	2.55						
AgP	5	11	3	15		2.18	2.31	2.24						
AgPb	5	11	6	14		2.70	2.95	2.82						
AgPd	5	11	5	10		2.74	2.73	2.74						
AgPo	5	11	6	16		2.60	2.54	2.57						
AgPt	5	11	6	10		2.59	2.87	2.73						
AgRb	5	11	5	1		3.83	3.76	3.79						
AgRe	5	11	6	7		2.34	2.68	2.51						
AgRh	5	11	5	9		2.64	2.65	2.64						
AgRu	5	11	5	8		2.55	2.59	2.57						
AgS	5	11	3	16		2.13	2.25	2.19						
AgSb	5	11	5	15		2.56	2.65	2.60						
AgSc	5	11	4	3		2.62	2.66	2.64						
AgSe	5	11	4	16		2.25	2.35	2.30						
AgSi	5	11	3	14		2.30	2.40	2.35						
AgSn	5	11	5	14		2.71	2.82	2.76						
AgSr	5	11	5	2		3.13	3.28	3.20						
AgTa	5	11	6	5		2.34	2.76	2.55						
AgTc	5	11	5	7		2.48	2.56	2.52						
AgTe	5	11	5	16		2.46	2.50	2.48						
AgTi	5	11	4	4		2.45	2.49	2.47						
AgTl	5	11	6	13		2.75	3.05	2.90						
AgV	5	11	4	5		2.36	2.39	2.38						
AgW	5	11	6	6		2.32	2.69	2.51						
AgY	5	11	5	3		2.77	2.97	2.87						
AgZn	5	11	4	12		2.66	2.60	2.63						
AgZr	5	11	5	4		2.58	2.77	2.67						
Al117	3	13	7	17								CG	2.71	
AlAg	3	13	5	11	2.47	2.45	2.41	2.43	2.47					
AlAl	3	13	3	13	2.47	2.16	2.16	2.16	2.72	33	2.35			
AlAs	3	13	4	15		2.14	2.10	2.12						
AlAt	3	13	6	17		2.69	2.74	2.71				CG	2.58	
AlAu	3	13	6	11	2.34	2.31	2.53	2.42	2.35					
AlB	3	13	2	13		1.70	1.73	1.71		23	1.90			
AlBa	3	13	6	2		2.42	2.98	2.70						
AlBe	3	13	2	2		1.83	1.94	1.88		23	2.10			
AlBi	3	13	6	15		2.36	2.51	2.43						
AlBr	3	13	4	17	2.29	2.26	2.25	2.25	2.28			CG	2.23	
AlC	3	13	2	14		1.66	1.69	1.67		23	1.75			
AlCa	3	13	4	2		2.49	2.59	2.54						
AlCd	3	13	5	12		2.49	2.46	2.47						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
AlCl	3	13	3	17	2.13	2.11	2.09	2.10	2.09	33	2.08	CG	1.98	2.03
AlCo	3	13	4	9		2.20	2.13	2.16						
AlCr	3	13	4	6		2.06	2.10	2.08						
AlCs	3	13	6	1		2.80	3.41	3.11						
AlCu	3	13	4	11		2.34	2.23	2.28						
AlF	3	13	2	17	1.65	1.72	1.69	1.70	1.66	23	1.65	CG	1.63	1.64
AlFe	3	13	4	8		2.13	2.09	2.11						
AlGa	3	13	4	13		2.33	2.27	2.30						
AlGe	3	13	4	14		2.25	2.21	2.23						
AlHf	3	13	6	4		2.07	2.52	2.30						
AlHg	3	13	6	12		2.37	2.59	2.48						
AlI	3	13	5	17	2.54	2.54	2.53	2.53	2.46			CG	2.42	
AlIn	3	13	5	13		2.48	2.46	2.47						
AlIr	3	13	6	9		2.15	2.38	2.27						
AlK	3	13	4	1		2.90	2.90	2.90						
AlLa	3	13	6	3		2.20	2.70	2.45						
AlLi	3	13	2	1		2.06	2.13	2.10		23	2.35			
AlMg	3	13	3	2		2.30	2.45	2.38		33	2.51			
AlMn	3	13	4	7		2.08	2.08	2.08						
AlMo	3	13	5	6		2.13	2.25	2.19						
AlN	3	13	2	15	1.79	1.60	1.62	1.61		23	1.67			
AlNa	3	13	3	1		2.65	2.74	2.69		33	2.71			
AlNb	3	13	5	5		2.14	2.31	2.22						
AlNi	3	13	4	10		2.27	2.18	2.23						
AlO	3	13	2	16	1.62	1.59	1.58	1.59	1.58	23	1.63			
AlOs	3	13	6	8		2.08	2.34	2.21						
AlP	3	13	3	15		1.98	2.00	1.99		33	2.14			
AlPb	3	13	6	14		2.38	2.59	2.48						
AlPd	3	13	5	10		2.37	2.34	2.36						
AlPo	3	13	6	16		2.43	2.48	2.46						
AlPt	3	13	6	10		2.23	2.45	2.34						
AlRb	3	13	5	1		3.05	3.21	3.13						
AlRe	3	13	6	7		2.02	2.32	2.17						
AlRh	3	13	5	9		2.29	2.28	2.29						
AlRu	3	13	5	8		2.21	2.24	2.23						
AlS	3	13	3	16	2.03	1.95	1.94	1.94	2.05	33	2.09			
AlSb	3	13	5	15		2.34	2.31	2.33						
AlSc	3	13	4	3		2.26	2.38	2.32						
AlSe	3	13	4	16		2.09	2.05	2.07						
AlSi	3	13	3	14		2.08	2.10	2.09		33	2.22			
AlSn	3	13	5	14		2.42	2.41	2.41						
AlSr	3	13	5	2		2.60	2.83	2.71						
AlTa	3	13	6	5		2.01	2.40	2.21						
AlTc	3	13	5	7		2.15	2.23	2.19						
AlTe	3	13	5	16		2.33	2.27	2.30						
AlTi	3	13	4	4		2.13	2.24	2.18						
AlTl	3	13	6	13		2.39	2.62	2.51						
AlV	3	13	4	5		2.07	2.15	2.11						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
AlW	3	13	6	6		2.00	2.34	2.17						
AlY	3	13	5	3		2.35	2.58	2.46						
AlZn	3	13	4	12		2.36	2.27	2.32						
AlZr	3	13	5	4		2.21	2.41	2.31						
As117	4	15	7	17								EG	2.75	
AsAg	4	15	5	11		2.43	2.33	2.38						
AsAl	4	15	3	13		2.10	2.14	2.12						
AsAs	4	15	4	15	2.10	2.15	2.15	2.15	2.11			EE	2.17	
AsAt	4	15	6	17		2.66	2.86	2.76				EG	2.63	
AsAu	4	15	6	11		2.37	2.44	2.40						
AsB	4	15	2	13		1.67	1.71	1.69						
AsBa	4	15	6	2		2.54	2.88	2.71						
AsBe	4	15	2	2		1.69	1.88	1.79						
AsBi	4	15	6	15		2.47	2.51	2.49				EE	2.45	
AsBr	4	15	4	17		2.25	2.37	2.31				EG	2.31	
AsC	4	15	2	14		1.66	1.69	1.67						
AsCa	4	15	4	2		2.43	2.54	2.48						
AsCd	4	15	5	12		2.47	2.39	2.43						
AsCl	4	15	3	17		2.15	2.19	2.17				EG	2.09	
AsCo	4	15	4	9		2.12	2.06	2.09						
AsCr	4	15	4	6		1.99	2.03	2.01						
AsCs	4	15	6	1		2.99	3.29	3.14						
AsCu	4	15	4	11		2.25	2.18	2.22						
AsF	4	15	2	17	1.74	1.75	1.76	1.76	1.76			EG	1.77	
AsFe	4	15	4	8		2.05	2.02	2.04						
AsGa	4	15	4	13		2.27	2.25	2.26						
AsGe	4	15	4	14		2.22	2.22	2.22						
AsHf	4	15	6	4		2.15	2.43	2.29						
AsHg	4	15	6	12		2.43	2.51	2.47						
AsI	4	15	5	17		2.46	2.67	2.56				EG	2.49	
AsIn	4	15	5	13		2.47	2.42	2.45						
AsIr	4	15	6	9		2.20	2.29	2.25						
AsK	4	15	4	1		2.83	2.86	2.85						
AsLa	4	15	6	3		2.29	2.61	2.45						
AsLi	4	15	2	1		1.89	2.07	1.98						
AsMg	4	15	3	2		2.16	2.39	2.27						
AsMn	4	15	4	7		2.01	2.01	2.01						
AsMo	4	15	5	6		2.13	2.17	2.15						
AsN	4	15	2	15	1.62	1.63	1.64	1.64				EE	1.68	
AsNa	4	15	3	1		2.47	2.68	2.57						
AsNb	4	15	5	5		2.15	2.23	2.19						
AsNi	4	15	4	10		2.19	2.12	2.15						
AsO	4	15	2	16	1.62	1.66	1.62	1.64						
AsOs	4	15	6	8		2.13	2.25	2.19						
AsP	4	15	3	15	2.00	2.02	2.03	2.02				EE	1.96	
AsPb	4	15	6	14		2.47	2.55	2.51						
AsPd	4	15	5	10		2.35	2.26	2.31						
AsPo	4	15	6	16		2.51	2.56	2.53						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
AsPt	4	15	6	10		2.28	2.36	2.32						
AsRb	4	15	5	1		3.13	3.13	3.13						
AsRe	4	15	6	7		2.08	2.24	2.16						
AsRh	4	15	5	9		2.27	2.20	2.24						
AsRu	4	15	5	8		2.20	2.16	2.18						
AsS	4	15	3	16		2.03	1.99	2.01						
AsSb	4	15	5	15		2.36	2.35	2.35				EE	2.32	
AsSc	4	15	4	3		2.20	2.32	2.26						
AsSe	4	15	4	16		2.14	2.13	2.13						
AsSi	4	15	3	14		2.07	2.11	2.09						
AsSn	4	15	5	14		2.43	2.40	2.41						
AsSr	4	15	5	2		2.65	2.75	2.70						
AsTa	4	15	6	5		2.08	2.32	2.20						
AsTc	4	15	5	7		2.15	2.15	2.15						
AsTe	4	15	5	16		2.34	2.35	2.35						
AsTi	4	15	4	4		2.07	2.17	2.12						
AsTl	4	15	6	13		2.46	2.55	2.51						
AsV	4	15	4	5		2.00	2.08	2.04						
AsW	4	15	6	6		2.06	2.26	2.16						
AsY	4	15	5	3		2.38	2.50	2.44						
AsZn	4	15	4	12		2.28	2.23	2.26						
AsZr	4	15	5	4		2.22	2.33	2.28						
AtAg	6	17	5	11		2.51	2.73	2.62						
AtAl	6	17	3	13		2.74	2.69	2.71				CG	2.58	
AtAs	6	17	4	15		2.86	2.66	2.76				EG	2.63	
AtAt	6	17	6	17		2.74	2.74	2.74				GG	2.89	
AtAu	6	17	6	11		2.49	2.73	2.61						
AtB	6	17	2	13		2.13	2.10	2.11				CG	2.31	
AtBa	6	17	6	2		2.66	3.02	2.84						
AtBe	6	17	2	2		1.98	2.16	2.07						
AtBi	6	17	6	15		2.79	2.66	2.72				EG	2.92	
AtBr	6	17	4	17		2.75	2.54	2.65				GG	2.60	
AtC	6	17	2	14		2.14	2.10	2.12						
AtCa	6	17	4	2		2.39	2.88	2.64						
AtCd	6	17	5	12		2.67	2.83	2.75						
AtCl	6	17	3	17		2.61	2.48	2.54				GG	2.40	
AtCo	6	17	4	9		2.21	2.41	2.31						
AtCr	6	17	4	6		1.99	2.31	2.15						
AtCs	6	17	6	1		3.20	3.43	3.31				AG	3.49	
AtCu	6	17	4	11		2.49	2.62	2.56						
AtF	6	17	2	17		2.01	2.01	2.01				GG	2.11	
AtFe	6	17	4	8		2.10	2.34	2.22						
AtFr	6	17	7	1								AG	3.62	
AtGa	6	17	4	13		2.78	2.79	2.79				CG	2.77	
AtGe	6	17	4	14		2.87	2.77	2.82						
AtHf	6	17	6	4		2.20	2.59	2.40						
AtHg	6	17	6	12		2.62	2.81	2.71						
AtI	6	17	5	17		2.85	2.66	2.76				GG	2.76	

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
AtIn	6	17	5	13		2.81	2.88	2.85				CG	2.92	
AtIr	6	17	6	9		2.25	2.54	2.40						
AtK	6	17	4	1		2.79	3.28	3.03				AG	3.17	
AtLa	6	17	6	3		2.37	2.76	2.56						
AtLi	6	17	2	1		2.25	2.38	2.32				AG	2.61	
AtMg	6	17	3	2		2.37	2.76	2.56						
AtMn	6	17	4	7		2.03	2.31	2.17						
AtMo	6	17	5	6		2.04	2.42	2.23						
AtN	6	17	2	15		2.12	2.05	2.08						
AtNa	6	17	3	1		2.75	3.12	2.94				AG	2.93	
AtNb	6	17	5	5		2.05	2.47	2.26						
AtNi	6	17	4	10		2.34	2.51	2.42						
AtO	6	17	2	16		2.05	1.99	2.02						
AtOs	6	17	6	8		2.16	2.48	2.32						
AtP	6	17	3	15		2.78	2.60	2.69				EG	2.42	
AtPb	6	17	6	14		2.79	2.77	2.78						
AtPd	6	17	5	10		2.36	2.62	2.49						
AtPo	6	17	6	16		2.73	2.60	2.67						
AtPt	6	17	6	10		2.36	2.63	2.50						
AtRb	6	17	5	1		2.96	3.46	3.21				AG	3.35	
AtRe	6	17	6	7		2.11	2.44	2.28						
AtRh	6	17	5	9		2.23	2.53	2.38						
AtRu	6	17	5	8		2.13	2.46	2.29						
AtS	6	17	3	16		2.69	2.48	2.59						
AtSb	6	17	5	15		2.92	2.71	2.82				EG	2.79	
AtSc	6	17	4	3		2.17	2.63	2.40						
AtSe	6	17	4	16		2.79	2.54	2.66						
AtSi	6	17	3	14		2.80	2.69	2.74						
AtSn	6	17	5	14		2.91	2.84	2.87						
AtSr	6	17	5	2		2.51	3.03	2.77						
AtTa	6	17	6	5		2.12	2.49	2.31						
AtTc	6	17	5	7		2.07	2.42	2.24						
AtTe	6	17	5	16		2.86	2.61	2.73						
AtTi	6	17	4	4		2.05	2.46	2.26						
AtTl	6	17	6	13		2.73	2.83	2.78						
AtV	6	17	4	5		2.00	2.36	2.18						
AtW	6	17	6	6		2.09	2.45	2.27						
AtY	6	17	5	3		2.26	2.75	2.51						
AtZn	6	17	4	12		2.65	2.72	2.69						
AtZr	6	17	5	4		2.12	2.58	2.35						
AuAg	6	11	5	11		2.97	2.68	2.83						
AuAl	6	11	3	13	2.34	2.53	2.31	2.42	2.35					
AuAs	6	11	4	15		2.44	2.37	2.40						
AuAt	6	11	6	17		2.73	2.49	2.61						
AuAu	6	11	6	11	2.47	2.93	2.93	2.93	2.48					
AuB	6	11	2	13		1.96	1.88	1.92						
AuBa	6	11	6	2		3.30	3.35	3.33						
AuBe	6	11	2	2		2.14	2.03	2.08						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
AuBi	6	11	6	15		2.74	2.80	2.77						
AuBr	6	11	4	17		2.51	2.46	2.48						
AuC	6	11	2	14		1.90	1.86	1.88						
AuCa	6	11	4	2		3.09	2.67	2.88						
AuCd	6	11	5	12		3.00	2.76	2.88						
AuCl	6	11	3	17		2.39	2.35	2.37						
AuCo	6	11	4	9		2.58	2.24	2.41						
AuCr	6	11	4	6		2.41	2.19	2.30						
AuCs	6	11	6	1		4.11	3.87	3.99						
AuCu	6	11	4	11		2.74	2.38	2.56						
AuF	6	11	2	17		1.96	1.90	1.93						
AuFe	6	11	4	8		2.50	2.20	2.35						
AuGa	6	11	4	13		2.70	2.47	2.58						
AuGe	6	11	4	14		2.58	2.43	2.51						
AuHf	6	11	6	4		2.67	2.81	2.74						
AuHg	6	11	6	12		2.98	3.02	3.00						
AuI	6	11	5	17		2.66	2.57	2.62						
AuIn	6	11	5	13		2.94	2.79	2.87						
AuIr	6	11	6	9		2.72	2.71	2.71						
AuK	6	11	4	1		3.77	2.99	3.38						
AuLa	6	11	6	3		2.89	3.02	2.96						
AuLi	6	11	2	1		2.46	2.22	2.34						
AuMg	6	11	3	2	2.45	2.79	2.51	2.65						
AuMn	6	11	4	7		2.43	2.18	2.31						
AuMo	6	11	5	6		2.59	2.43	2.51						
AuN	6	11	2	15		1.83	1.82	1.83						
AuNa	6	11	3	1		3.33	2.79	3.06						
AuNb	6	11	5	5		2.63	2.49	2.56						
AuNi	6	11	4	10		2.67	2.31	2.49						
AuO	6	11	2	16		1.82	1.82	1.82						
AuOs	6	11	6	8		2.62	2.64	2.63						
AuP	6	11	3	15		2.30	2.23	2.27						
AuPb	6	11	6	14		2.88	2.99	2.93						
AuPd	6	11	5	10		2.89	2.59	2.74						
AuPo	6	11	6	16		2.63	2.58	2.60						
AuPt	6	11	6	10		2.83	2.81	2.82						
AuRb	6	11	5	1		4.26	3.46	3.86						
AuRe	6	11	6	7		2.55	2.61	2.58						
AuRh	6	11	5	9		2.78	2.51	2.64						
AuRu	6	11	5	8		2.69	2.45	2.57						
AuS	6	11	3	16		2.25	2.23	2.24						
AuSb	6	11	5	15		2.63	2.64	2.63						
AuSc	6	11	4	3		2.73	2.46	2.60						
AuSe	6	11	4	16		2.37	2.35	2.36						
AuSi	6	11	3	14		2.42	2.29	2.36						
AuSn	6	11	5	14		2.80	2.75	2.78						
AuSr	6	11	5	2		3.40	3.04	3.22						
AuTa	6	11	6	5		2.56	2.69	2.63						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
AuTc	6	11	5	7		2.62	2.42	2.52						
AuTe	6	11	5	16		2.52	2.55	2.54						
AuTi	6	11	4	4		2.53	2.32	2.43						
AuTl	6	11	6	13		2.97	3.06	3.01						
AuV	6	11	4	5		2.44	2.23	2.34						
AuW	6	11	6	6		2.53	2.62	2.58						
AuY	6	11	5	3		2.97	2.78	2.87						
AuZn	6	11	4	12		2.76	2.44	2.60						
AuZr	6	11	5	4		2.74	2.60	2.67						
B117	2	13	7	17								CG	2.45	
BaAg	6	2	5	11		3.46	2.92	3.19						
BaAl	6	2	3	13		2.98	2.42	2.70						
BaAs	6	2	4	15		2.88	2.54	2.71						
BaAt	6	2	6	17		3.02	2.66	2.84						
BaAu	6	2	6	11		3.35	3.30	3.33						
BaB	6	2	2	13		2.24	2.02	2.13						
BaBa	6	2	6	2		3.71	3.71	3.71						
BaBe	6	2	2	2		2.45	2.23	2.34						
BaBi	6	2	6	15		3.23	3.12	3.18						
BaBr	6	2	4	17		2.77	2.73	2.75						
BaC	6	2	2	14		2.17	2.01	2.09						
BaCa	6	2	4	2		3.53	2.75	3.14						
BaCd	6	2	5	12		3.54	3.01	3.27						
BaCl	6	2	3	17		2.62	2.60	2.61						
BaCo	6	2	4	9		2.94	2.36	2.65						
BaCr	6	2	4	6		2.70	2.29	2.49						
BaCs	6	2	6	1		4.78	4.33	4.56						
BaCu	6	2	4	11		3.19	2.50	2.85						
BaF	6	2	2	17		2.11	2.04	2.08	2.10					
BaFe	6	2	4	8		2.82	2.31	2.57						
BAg	2	13	5	11		1.95	1.86	1.90						
BaGa	6	2	4	13		3.21	2.58	2.89						
BaGe	6	2	4	14		3.07	2.57	2.82						
BaHf	6	2	6	4		2.94	3.10	3.02						
BaHg	6	2	6	12		3.46	3.42	3.44						
BaI	6	2	5	17		2.95	2.85	2.90						
BaIn	6	2	5	13		3.51	3.04	3.27						
BaIr	6	2	6	9		3.04	3.03	3.04						
BaK	6	2	4	1		4.46	3.05	3.75						
BAl	2	13	3	13		1.73	1.70	1.71		23	1.90			
BaLa	6	2	6	3		3.21	3.34	3.27						
BaLi	6	2	2	1		2.86	2.45	2.66						
BaMg	6	2	3	2		3.18	2.60	2.89						
BaMn	6	2	4	7		2.74	2.28	2.51						
BaMo	6	2	5	6		2.89	2.62	2.75						
BaN	6	2	2	15		2.07	1.99	2.03						
BaNa	6	2	3	1		3.89	2.88	3.39						
BaNb	6	2	5	5		2.93	2.67	2.80						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
BaNi	6	2	4	10		3.08	2.43	2.75						
BaO	6	2	2	16	1.94	2.03	2.00	2.01	1.96					
BaOs	6	2	6	8		2.91	2.94	2.92						
BaP	6	2	3	15		2.70	2.39	2.55						
BaPb	6	2	6	14		3.41	3.36	3.38						
BaPd	6	2	5	10		3.32	2.81	3.07						
BaPo	6	2	6	16		3.03	2.85	2.94						
BaPt	6	2	6	10		3.20	3.16	3.18						
BaRb	6	2	5	1		5.08	3.66	4.37						
BaRe	6	2	6	7		2.82	2.89	2.86						
BaRh	6	2	5	9		3.17	2.72	2.94						
BaRu	6	2	5	8		3.03	2.65	2.84						
BaS	6	2	3	16	2.51	2.58	2.47	2.52	2.55					
BAs	2	13	4	15		1.71	1.67	1.69						
BaSb	6	2	5	15		3.12	2.91	3.02						
BaSc	6	2	4	3		3.08	2.55	2.81						
BaSe	6	2	4	16		2.73	2.61	2.67						
BaSi	6	2	3	14		2.86	2.40	2.63						
BaSn	6	2	5	14		3.35	3.00	3.18						
BaSr	6	2	5	2		3.89	3.23	3.56						
BAt	2	13	6	17		2.10	2.13	2.11				CG	2.31	
BaTa	6	2	6	5		2.82	2.97	2.89						
BaTc	6	2	5	7		2.93	2.61	2.77						
BaTe	6	2	5	16		2.92	2.86	2.89						
BaTi	6	2	4	4		2.84	2.41	2.63						
BaTl	6	2	6	13		3.49	3.46	3.47						
BAu	2	13	6	11		1.88	1.96	1.92						
BaV	6	2	4	5		2.73	2.33	2.53						
BaW	6	2	6	6		2.78	2.90	2.84						
BaY	6	2	5	3		3.34	2.95	3.15						
BaZn	6	2	4	12		3.25	2.56	2.90						
BaZr	6	2	5	4		3.06	2.77	2.92						
BB	2	13	2	13	1.59	1.39	1.39	1.39	1.52	22	1.53			
BBa	2	13	6	2		2.02	2.24	2.13						
BBe	2	13	2	2		1.60	1.58	1.59		22	1.76			
BBi	2	13	6	15		1.88	1.97	1.92						
BBr	2	13	4	17	1.89	1.81	1.80	1.80	1.90			CG	1.96	
BC	2	13	2	14		1.34	1.36	1.35		22	1.37			
BCa	2	13	4	2		2.05	1.98	2.01						
BCd	2	13	5	12		1.97	1.90	1.93						
BCl	2	13	3	17	1.71	1.66	1.68	1.67	1.66	23	1.66	CG	1.72	1.69
BCo	2	13	4	9		1.79	1.67	1.73						
BCr	2	13	4	6		1.70	1.65	1.68						
BCs	2	13	6	1		2.31	2.49	2.40						
BCu	2	13	4	11		1.87	1.74	1.81						
BeAg	2	2	5	11		2.12	2.03	2.08						
BeAl	2	2	3	13		1.94	1.83	1.88		23	2.10			
BeAs	2	2	4	15		1.88	1.69	1.79						

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks: Southern, In order r_e	Southern, Reversed r_e	$\langle r_e \rangle$	Memphis r_e	Predictions by method of least squares: Area	r_e	Area	r_e	$\langle r_e \rangle$
BeAt	2	2	6	17		2.16	1.98	2.07						
BeAu	2	2	6	11	2.06	2.03	2.14	2.08						
BeB	2	2	2	13		1.58	1.60	1.59		22	1.76			
BeBa	2	2	6	2		2.23	2.45	2.34						
BeBe	2	2	2	2		2.05	2.05	2.05						
BeBi	2	2	6	15		2.01	2.00	2.01						
BeBr	2	2	4	17		1.92	1.80	1.86						
BeC	2	2	2	14		1.50	1.54	1.52		22	1.56			
BeCa	2	2	4	2		2.29	2.17	2.23						
BeCd	2	2	5	12		2.16	2.04	2.10						
BeCl	2	2	3	17	1.80	1.76	1.74	1.75		23	1.80			
BeCo	2	2	4	9		1.97	1.84	1.90						
BeCr	2	2	4	6		1.87	1.83	1.85						
BeCs	2	2	6	1		2.58	2.71	2.65						
BeCu	2	2	4	11		2.06	1.89	1.98						
BeF	2	2	2	17	1.36	1.43	1.44	1.44		22	1.37			
BeFe	2	2	4	8		1.92	1.82	1.87						
BeGa	2	2	4	13		2.06	1.86	1.96						
BeGe	2	2	4	14		1.98	1.78	1.88						
BeHf	2	2	6	4		1.90	2.14	2.02						
BeHg	2	2	6	12		2.06	2.17	2.12						
BeI	2	2	5	17		2.11	1.93	2.02						
BeIn	2	2	5	13		2.15	2.01	2.08						
BeIr	2	2	6	9		1.91	2.05	1.98						
BeK	2	2	4	1		2.66	2.37	2.52						
BeLa	2	2	6	3		2.02	2.27	2.14						
BeLi	2	2	2	1		2.37	2.27	2.32		22	2.33			
BeMg	2	2	3	2		2.24	2.19	2.22						
BeMn	2	2	4	7		1.88	1.82	1.85						
BeMo	2	2	5	6		1.90	1.94	1.92						
BeN	2	2	2	15		1.42	1.46	1.44		22	1.44			
BeNa	2	2	3	1		2.58	2.41	2.50		23	2.53			
BeNb	2	2	5	5		1.93	1.98	1.95						
BeNi	2	2	4	10		2.02	1.87	1.94						
BeO	2	2	2	16	1.33	1.37	1.43	1.40	1.30	22	1.37			
BeOs	2	2	6	8		1.86	2.02	1.94						
BeP	2	2	3	15		1.75	1.66	1.71		23	1.85			
BePb	2	2	6	14		2.04	2.10	2.07						
BePd	2	2	5	10		2.07	2.00	2.03						
BePo	2	2	6	16		2.03	1.95	1.99						
BePt	2	2	6	10		1.97	2.10	2.03						
BeRb	2	2	5	1		2.73	2.55	2.64						
BeRe	2	2	6	7		1.83	2.01	1.92						
BeRh	2	2	5	9		2.01	1.96	1.99						
BeRu	2	2	5	8		1.95	1.94	1.95						
BeS	2	2	3	16	1.74	1.68	1.63	1.66	1.78	23	1.80			
BeSb	2	2	5	15		2.02	1.83	1.93						
BeSc	2	2	4	3		2.08	2.03	2.05						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
BeSe	2	2	4	16		1.82	1.66	1.74						
BeSi	2	2	3	14		1.86	1.75	1.81		23	1.95			
BeSn	2	2	5	14		2.10	1.93	2.01						
BeSr	2	2	5	2		2.35	2.32	2.33						
BeTa	2	2	6	5		1.84	2.06	1.95						
BeTc	2	2	5	7		1.92	1.93	1.92						
BeTe	2	2	5	16		2.00	1.80	1.90						
BeTi	2	2	4	4		1.96	1.93	1.94						
BeTl	2	2	6	13		2.07	2.16	2.12						
BeV	2	2	4	5		1.89	1.87	1.88						
BeW	2	2	6	6		1.82	2.02	1.92						
BeY	2	2	5	3		2.12	2.16	2.14						
BeZn	2	2	4	12		2.08	1.89	1.99						
BeZr	2	2	5	4		1.99	2.05	2.02						
BF	2	13	2	17	1.26	1.32	1.35	1.34	1.31					
BFe	2	13	4	8		1.74	1.65	1.70						
BGa	2	13	4	13		1.85	1.77	1.81						
BGe	2	13	4	14		1.79	1.73	1.76						
BHf	2	13	6	4		1.75	1.95	1.85						
BHg	2	13	6	12		1.91	2.00	1.96						
BI	2	13	5	17		2.02	1.99	2.00				CG	2.16	
Bi117	6	15	7	17								EG	3.04	
BiAg	6	15	5	11		2.74	2.63	2.69						
BiAl	6	15	3	13		2.51	2.36	2.43						
BiAs	6	15	4	15		2.51	2.47	2.49				EE	2.45	
BiAt	6	15	6	17		2.66	2.79	2.72				EG	2.92	
BiAu	6	15	6	11		2.80	2.74	2.77						
BiB	6	15	2	13		1.97	1.88	1.92						
BiBa	6	15	6	2		3.12	3.23	3.18						
BiBe	6	15	2	2		2.00	2.01	2.01						
BiBi	6	15	6	15		2.75	2.75	2.75				EE	2.74	
BiBr	6	15	4	17	2.61	2.52	2.56	2.54				EG	2.60	
BiC	6	15	2	14		1.94	1.89	1.91						
BiCa	6	15	4	2		2.73	2.73	2.73						
BiCd	6	15	5	12		2.80	2.73	2.77						
BiCl	6	15	3	17		2.42	2.44	2.43				EG	2.38	
BiCo	6	15	4	9		2.37	2.22	2.30						
BiCr	6	15	4	6		2.20	2.17	2.18						
BiCs	6	15	6	1		3.84	3.77	3.80						
BiCu	6	15	4	11		2.56	2.39	2.47						
BiF	6	15	2	17		1.96	1.99	1.97				EG	2.06	
BiFe	6	15	4	8		2.28	2.17	2.23						
BiGa	6	15	4	13		2.63	2.53	2.58						
BiGe	6	15	4	14		2.59	2.53	2.56						
BiHf	6	15	6	4		2.54	2.69	2.62						
BiHg	6	15	6	12		2.88	2.84	2.86						
BiI	6	15	5	17	2.80	2.64	2.73	2.69				EG	2.78	
BiIn	6	15	5	13		2.81	2.79	2.80						

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks: Southern, In order r_e	Southern, Reversed r_e	Southern, $\langle r_e \rangle$	Memphis r_e	Predictions by method of least squares: Area	r_e	Area	r_e	$\langle r_e \rangle$
BiIr	6	15	6	9		2.59	2.55	2.57						
BiK	6	15	4	1		3.26	3.11	3.18						
BiLa	6	15	6	3		2.75	2.90	2.82						
BiLi	6	15	2	1		2.28	2.22	2.25						
BiMg	6	15	3	2		2.51	2.53	2.52						
BiMn	6	15	4	7		2.22	2.15	2.19						
BiMo	6	15	5	6		2.37	2.38	2.38						
BIn	2	13	5	13		1.96	1.90	1.93						
BiN	6	15	2	15		1.90	1.86	1.88				EE	1.96	
BiNa	6	15	3	1		2.93	2.85	2.89						
BiNb	6	15	5	5		2.40	2.45	2.43						
BiNi	6	15	4	10		2.47	2.30	2.38						
BiO	6	15	2	16	1.93	1.90	1.86	1.88						
BiOs	6	15	6	8		2.50	2.49	2.49						
BiP	6	15	3	15		2.40	2.31	2.36				EE	2.25	
BiPb	6	15	6	14		2.86	2.86	2.86						
BiPd	6	15	5	10		2.65	2.53	2.59						
BiPo	6	15	6	16		2.64	2.67	2.65						
BiPt	6	15	6	10		2.70	2.64	2.67						
BIr	2	13	6	9		1.77	1.86	1.82						
BiRb	6	15	5	1		3.74	3.55	3.64						
BiRe	6	15	6	7		2.43	2.47	2.45						
BiRh	6	15	5	9		2.55	2.44	2.49						
BiRu	6	15	5	8		2.46	2.38	2.42						
BiS	6	15	3	16	2.32	2.36	2.28	2.32						
BiSb	6	15	5	15		2.66	2.69	2.68				EE	2.61	
BiSc	6	15	4	3		2.45	2.49	2.47						
BiSe	6	15	4	16		2.46	2.41	2.44						
BiSi	6	15	3	14		2.47	2.36	2.42						
BiSn	6	15	5	14		2.75	2.78	2.77						
BiSr	6	15	5	2		3.06	3.07	3.06						
BiTa	6	15	6	5		2.44	2.56	2.50						
BiTc	6	15	5	7		2.40	2.36	2.38						
BiTe	6	15	5	16		2.58	2.60	2.59						
BiTi	6	15	4	4		2.29	2.33	2.31						
BiTl	6	15	6	13		2.90	2.89	2.89						
BiV	6	15	4	5		2.21	2.22	2.22						
BiW	6	15	6	6		2.41	2.49	2.45						
BiY	6	15	5	3		2.70	2.77	2.73						
BiZn	6	15	4	12		2.62	2.48	2.55						
BiZr	6	15	5	4		2.50	2.57	2.54						
BK	2	13	4	1		2.34	2.17	2.25						
BLa	2	13	6	3		1.85	2.07	1.96						
BLi	2	13	2	1		1.79	1.72	1.75		22	2.04			
BMg	2	13	3	2		1.93	1.91	1.92		23	2.077			
BMn	2	13	4	7		1.71	1.64	1.68						
BMo	2	13	5	6		1.76	1.76	1.76						
BN	2	13	2	15	1.28	1.29	1.31	1.30		22	1.27			

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
BNa	2	13	3	1		2.19	2.09	2.14		23	2.30			
BNb	2	13	5	5		1.77	1.80	1.78						
BNi	2	13	4	10		1.83	1.71	1.77						
BO	2	13	2	16	1.20	1.26	1.28	1.27	1.25	22	1.24			
BOs	2	13	6	8		1.73	1.83	1.78						
BP	2	13	3	15		1.58	1.59	1.59		23	1.68			
BPb	2	13	6	14		1.90	2.01	1.95						
BPd	2	13	5	10		1.90	1.82	1.86						
BPo	2	13	6	16		1.92	1.96	1.94						
BPt	2	13	6	10		1.83	1.91	1.87						
BrAg	4	17	5	11	2.39	2.40	2.37	2.38	2.41					
BrAl	4	17	3	13	2.29	2.25	2.26	2.25	2.28			CG	2.23	
BrAs	4	17	4	15		2.37	2.25	2.31				EG	2.31	
BrAt	4	17	6	17		2.54	2.75	2.65				GG	2.60	
BrAu	4	17	6	11		2.46	2.51	2.48						
BRb	2	13	5	1		2.44	2.34	2.39						
BrB	4	17	2	13	1.89	1.80	1.81	1.80	1.90			CG	1.96	
BrBa	4	17	6	2		2.73	2.77	2.75						
BrBe	4	17	2	2		1.80	1.92	1.86						
BrBi	4	17	6	15	2.61	2.56	2.52	2.54				EG	2.60	
BrBr	4	17	4	17	2.28	2.35	2.35	2.35	2.34			GG	2.32	
BrC	4	17	2	14		1.79	1.78	1.79						
BrCa	4	17	4	2		2.38	2.49	2.44						
BrCd	4	17	5	12		2.48	2.43	2.45						
BrCl	4	17	3	17	2.14	2.23	2.20	2.22	2.12			GG	2.11	
BrCo	4	17	4	9		2.07	2.11	2.09						
BrCr	4	17	4	6		1.93	2.05	1.99						
BrCs	4	17	6	1	3.07	3.28	3.11	3.19	3.06			AG	3.12	
BrCu	4	17	4	11	2.17	2.24	2.25	2.25	2.14					
BRe	2	13	6	7		1.69	1.82	1.76						
BrF	4	17	2	17	1.76	1.76	1.74	1.75	1.79			GG	1.83	
BrFe	4	17	4	8		2.00	2.06	2.03						
BrFr	4	17	7	1								AG	3.24	
BrGa	4	17	4	13	2.35	2.36	2.34	2.35	2.43			CG	2.42	
BrGe	4	17	4	14		2.38	2.31	2.34						
BRh	2	13	5	9		1.85	1.78	1.81						
BrHf	4	17	6	4		2.26	2.41	2.33						
BrHg	4	17	6	12		2.54	2.58	2.56						
BrI	4	17	5	17	2.47	2.48	2.56	2.52	2.45			GG	2.48	
BrIn	4	17	5	13	2.54	2.52	2.46	2.49	2.52			CG	2.57	
BrIr	4	17	6	9		2.27	2.36	2.31						
BrK	4	17	4	1	2.82	2.79	2.78	2.79	2.73			AG	2.79	
BrLa	4	17	6	3		2.43	2.55	2.49						
BrLi	4	17	2	1	2.17	2.03	2.09	2.06	2.19			AG	2.23	
BrMg	4	17	3	2		2.17	2.41	2.29						
BrMn	4	17	4	7		1.95	2.04	2.00						
BrMo	4	17	5	6		2.09	2.15	2.12						
BrN	4	17	2	15	1.78	1.77	1.72	1.75	1.81					

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks: Southern, In order r_e	Southern, Reversed r_e	$<r_e>$	Memphis r_e	Predictions by method of least squares: Area	r_e	Area	r_e	$<r_e>$
BrNa	4	17	3	1	2.50	2.50	2.68	2.59	2.58			AG	2.56	
BrNb	4	17	5	5		2.12	2.19	2.16						
BrNi	4	17	4	10		2.16	2.18	2.17						
BrO	4	17	2	16		1.75	1.67	1.71						
BrOs	4	17	6	8		2.20	2.30	2.25						
BrP	4	17	3	15		2.26	2.16	2.21				EG	2.11	
BrPb	4	17	6	14		2.60	2.58	2.59						
BrPd	4	17	5	10		2.31	2.29	2.30						
BrPo	4	17	6	16		2.52	2.53	2.53						
BrPt	4	17	6	10		2.36	2.43	2.40						
BrRb	4	17	5	1	2.94	3.17	2.94	3.06	2.95			AG	2.97	
BrRe	4	17	6	7		2.15	2.28	2.21						
BrRh	4	17	5	9		2.22	2.22	2.22						
BrRu	4	17	5	8		2.15	2.17	2.16						
BrS	4	17	3	16		2.27	2.10	2.18						
BrSb	4	17	5	15		2.50	2.39	2.44				EG	2.47	
BrSc	4	17	4	3		2.15	2.29	2.22						
BrSe	4	17	4	16		2.37	2.22	2.29						
BrSi	4	17	3	14		2.26	2.23	2.25						
BrSn	4	17	5	14		2.52	2.44	2.48						
BrSr	4	17	5	2		2.66	2.62	2.64						
BrTa	4	17	6	5		2.17	2.32	2.25						
BrTc	4	17	5	7		2.10	2.14	2.12						
BrTe	4	17	5	16		2.48	2.38	2.43						
BrTi	4	17	4	4		2.02	2.17	2.09						
BrTl	4	17	6	13	2.62	2.59	2.61	2.60	2.60					
BRu	2	13	5	8		1.80	1.75	1.78						
BrV	4	17	4	5		1.95	2.09	2.02						
BrW	4	17	6	6		2.14	2.28	2.21						
BrY	4	17	5	3		2.37	2.41	2.39						
BrZn	4	17	4	12		2.32	2.31	2.31						
BrZr	4	17	5	4		2.20	2.28	2.24						
BS	2	13	3	16	1.61	1.55	1.56	1.55	1.63	23	1.65			
BSb	2	13	5	15		1.86	1.82	1.84						
BSc	2	13	4	3		1.87	1.84	1.86						
BSe	2	13	4	16		1.67	1.65	1.66						
BSi	2	13	3	14		1.66	1.66	1.66		23	1.77			
BSn	2	13	5	14		1.92	1.88	1.90						
BSr	2	13	5	2		2.12	2.12	2.12						
BTa	2	13	6	5		1.70	1.88	1.79						
BTc	2	13	5	7		1.77	1.74	1.76						
BTe	2	13	5	16		1.86	1.81	1.83						
BTi	2	13	4	4		1.77	1.75	1.76						
BTl	2	13	6	13		1.92	2.02	1.97						
BV	2	13	4	5		1.72	1.69	1.70						
BW	2	13	6	6		1.68	1.84	1.76						
BY	2	13	5	3		1.94	1.97	1.95						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
BZn	2	13	4	12		1.88	1.77	1.82						
BZr	2	13	5	4		1.83	1.86	1.85						
C116	2	14	7	17								DF	2.14	
CaAg	4	2	5	11		2.90	2.94	2.92						
CaAl	4	2	3	13		2.59	2.49	2.54						
CaAs	4	2	4	15		2.54	2.43	2.48						
CaAt	4	2	6	17		2.88	2.39	2.64						
CaAu	4	2	6	11		2.67	3.09	2.88						
CaB	4	2	2	13		1.98	2.05	2.01						
CaBa	4	2	6	2		2.75	3.53	3.14						
CaBe	4	2	2	2		2.17	2.29	2.23						
CaBi	4	2	6	15		2.73	2.73	2.73						
CaBr	4	2	4	17		2.49	2.38	2.44						
CaC	4	2	2	14		1.92	2.01	1.96						
CaCa	4	2	4	2		2.91	2.91	2.91	4.09					
CaCd	4	2	5	12		2.97	3.00	2.99						
CaCl	4	2	3	17	2.44	2.34	2.34	2.34	2.37					
CaCo	4	2	4	9		2.58	2.48	2.53						
CaCr	4	2	4	6		2.37	2.41	2.39						
CaCs	4	2	6	1		3.25	4.08	3.66						
CaCu	4	2	4	11		2.79	2.61	2.70						
CaF	4	2	2	17	1.97	1.93	1.89	1.91						
CaFe	4	2	4	8		2.48	2.43	2.45						
CAg	2	14	5	11		1.92	1.81	1.87						
CaGa	4	2	4	13		2.81	2.64	2.73						
CaGe	4	2	4	14		2.70	2.56	2.63						
CaHf	4	2	6	4		2.33	2.97	2.65						
CaHg	4	2	6	12		2.76	3.15	2.96						
CaI	4	2	5	17		2.76	2.46	2.61						
CaIn	4	2	5	13		2.97	2.98	2.98						
CaIr	4	2	6	9		2.45	2.88	2.67						
CaK	4	2	4	1		3.47	3.24	3.36						
CAl	2	14	3	13		1.69	1.66	1.67		23	1.75			
CaLa	4	2	6	3		2.48	3.19	2.83						
CaLi	4	2	2	1		2.49	2.52	2.51						
CaMg	4	2	3	2		2.70	2.76	2.73						
CaMn	4	2	4	7		2.40	2.40	2.40						
CaMo	4	2	5	6		2.43	2.68	2.56						
CaN	4	2	2	15		1.83	1.95	1.89						
CaNa	4	2	3	1		3.17	3.06	3.12						
CaNb	4	2	5	5		2.44	2.73	2.59						
CaNi	4	2	4	10		2.69	2.55	2.62						
CaO	4	2	2	16	1.82	1.81	1.92	1.87						
CaOs	4	2	6	8		2.35	2.81	2.58						
CaP	4	2	3	15		2.34	2.34	2.34						
CaPb	4	2	6	14		2.77	2.98	2.88						
CaPd	4	2	5	10		2.79	2.86	2.82						
CaPo	4	2	6	16		2.75	2.51	2.63						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
CaPt	4	2	6	10		2.56	2.98	2.77						
CaRb	4	2	5	1		3.62	3.78	3.70						
CaRe	4	2	6	7		2.28	2.77	2.53						
CaRh	4	2	5	9		2.66	2.77	2.72						
CaRu	4	2	5	8		2.55	2.70	2.63						
CaS	4	2	3	16	2.32	2.26	2.30	2.28	2.36					
CAs	2	14	4	15		1.69	1.66	1.67						
CaSb	4	2	5	15		2.76	2.65	2.71						
CaSc	4	2	4	3		2.61	2.69	2.65						
CaSe	4	2	4	16		2.43	2.36	2.39						
CaSi	4	2	3	14		2.49	2.43	2.46						
CaSn	4	2	5	14		2.89	2.85	2.87						
CaSr	4	2	5	2		3.01	3.32	3.17						
CAt	2	14	6	17		2.10	2.14	2.12						
CaTa	4	2	6	5		2.26	2.85	2.55						
CaTc	4	2	5	7		2.47	2.67	2.57						
CaTe	4	2	5	16		2.68	2.50	2.59						
CaTi	4	2	4	4		2.45	2.54	2.50						
CaTl	4	2	6	13		2.79	3.13	2.96						
CAu	2	14	6	11		1.86	1.90	1.88						
CaV	4	2	4	5		2.38	2.45	2.41						
CaW	4	2	6	6		2.25	2.78	2.51						
CaY	4	2	5	3		2.69	3.03	2.86						
CaZn	4	2	4	12		2.84	2.65	2.75						
CaZr	4	2	5	4		2.52	2.85	2.68						
CB	2	14	2	13		1.36	1.34	1.35		22	1.37			
CBa	2	14	6	2		2.01	2.17	2.09						
CBe	2	14	2	2		1.54	1.50	1.52		22	1.56			
CBi	2	14	6	15		1.89	1.94	1.91						
CBr	2	14	4	17		1.78	1.79	1.79						
CC	2	14	2	14	1.24	1.32	1.32	1.32	1.20	22	1.24			
CCa	2	14	4	2		2.01	1.92	1.96						
CCd	2	14	5	12		1.95	1.85	1.90						
CCl	2	14	3	17		1.64	1.65	1.65		23	1.57			
CCo	2	14	4	9		1.75	1.62	1.69						
CCr	2	14	4	6		1.67	1.60	1.63						
CCs	2	14	6	1		2.30	2.40	2.35						
CCu	2	14	4	11		1.83	1.70	1.76						
CdAg	5	12	5	11		2.90	2.86	2.88						
CdAl	5	12	3	13		2.46	2.49	2.47						
CdAs	5	12	4	15		2.39	2.47	2.43						
CdAt	5	12	6	17		2.83	2.67	2.75						
CdAu	5	12	6	11		2.76	3.00	2.88						
CdB	5	12	2	13		1.90	1.97	1.93						
CdBa	5	12	6	2		3.01	3.54	3.27						
CdBe	5	12	2	2		2.04	2.16	2.10						
CdBi	5	12	6	15		2.73	2.80	2.77						
CdBr	5	12	4	17		2.43	2.48	2.45						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
CdC	5	12	2	14		1.85	1.95	1.90						
CdCa	5	12	4	2		3.00	2.97	2.99						
CdCd	5	12	5	12		2.94	2.94	2.94						
CdCl	5	12	3	17		2.32	2.36	2.34						
CdCo	5	12	4	9		2.54	2.43	2.48						
CdCr	5	12	4	6		2.37	2.37	2.37						
CdCs	5	12	6	1	5.1	3.64	4.15	3.89						
CdCu	5	12	4	11		2.70	2.58	2.64						
CdF	5	12	2	17		1.94	1.91	1.92						
CdFe	5	12	4	8		2.46	2.38	2.42						
CdGa	5	12	4	13		2.67	2.66	2.66						
CdGe	5	12	4	14		2.54	2.60	2.57						
CdHf	5	12	6	4		2.49	2.94	2.71						
CdHg	5	12	6	12		2.83	3.08	2.95						
CdI	5	12	5	17		2.65	2.63	2.64						
CdIn	5	12	5	13		2.90	2.95	2.93						
CdIr	5	12	6	9		2.56	2.80	2.68						
CdK	5	12	4	1		3.62	3.38	3.50						
CdLa	5	12	6	3		2.67	3.17	2.92						
CdLi	5	12	2	1		2.33	2.38	2.35						
CdMg	5	12	3	2		2.69	2.76	2.73						
CdMn	5	12	4	7		2.40	2.36	2.38						
CdMo	5	12	5	6		2.51	2.61	2.56						
CdN	5	12	2	15		1.79	1.89	1.84						
CdNa	5	12	3	1		3.18	3.11	3.15						
CdNb	5	12	5	5		2.54	2.68	2.61						
CdNi	5	12	4	10		2.63	2.50	2.56						
CdO	5	12	2	16		1.80	1.86	1.83						
CdOs	5	12	6	8		2.46	2.73	2.60						
CdP	5	12	3	15		2.24	2.35	2.29						
CdPb	5	12	6	14		2.80	2.99	2.90						
CdPd	5	12	5	10		2.81	2.76	2.79						
CdPo	5	12	6	16		2.70	2.63	2.66						
CdPt	5	12	6	10		2.66	2.89	2.78						
CdRb	5	12	5	1		3.95	3.89	3.92						
CdRe	5	12	6	7		2.40	2.70	2.55						
CdRh	5	12	5	9		2.70	2.68	2.69						
CdRu	5	12	5	8		2.61	2.62	2.61						
CdS	5	12	3	16		2.20	2.29	2.24						
CdSb	5	12	5	15		2.63	2.70	2.67						
CdSc	5	12	4	3		2.67	2.71	2.69						
CdSe	5	12	4	16		2.32	2.39	2.35						
CdSi	5	12	3	14		2.36	2.44	2.40						
CdSn	5	12	5	14		2.78	2.87	2.83						
CdSr	5	12	5	2		3.22	3.36	3.29						
CdTa	5	12	6	5		2.40	2.80	2.60						
CdTc	5	12	5	7		2.54	2.59	2.57						
CdTe	5	12	5	16		2.54	2.56	2.55						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
CdTi	5	12	4	4		2.49	2.54	2.51						
CdTl	5	12	6	13		2.84	3.09	2.97						
CdV	5	12	4	5		2.40	2.43	2.41						
CdW	5	12	6	6		2.37	2.72	2.55						
CdY	5	12	5	3		2.84	3.03	2.93						
CdZn	5	12	4	12		2.72	2.64	2.68						
CdZr	5	12	5	4		2.63	2.81	2.72						
CF	2	14	2	17	1.27	1.29	1.32	1.31		22	1.22			
CFe	2	14	4	8		1.71	1.60	1.65						
CGa	2	14	4	13		1.82	1.74	1.78						
CGe	2	14	4	14		1.76	1.71	1.74						
CHf	2	14	6	4		1.74	1.89	1.81						
CHg	2	14	6	12		1.90	1.94	1.92						
CI	2	14	5	17		1.99	1.99	1.99						
CIn	2	14	5	13		1.94	1.86	1.90						
CIr	2	14	6	9	1.68	1.76	1.80	1.78						
CK	2	14	4	1		2.30	2.10	2.20						
CLa	2	14	6	3		1.84	2.00	1.92						
ClAg	3	17	5	11	2.28	2.31	2.26	2.28	2.29					
ClAl	3	17	3	13	2.13	2.09	2.11	2.10	2.09	33	2.08	CG	1.98	2.03
ClAs	3	17	4	15		2.19	2.15	2.17				EG	2.09	
ClAt	3	17	6	17		2.48	2.61	2.54				GG	2.40	
ClAu	3	17	6	11		2.35	2.39	2.37						
ClB	3	17	2	13	1.71	1.68	1.66	1.67	1.66	23	1.66	CG	1.72	1.69
ClBa	3	17	6	2		2.60	2.62	2.61						
ClBe	3	17	2	2	1.80	1.74	1.76	1.75		23	1.80			
ClBi	3	17	6	15		2.44	2.42	2.43				EG	2.38	
ClBr	3	17	4	17	2.14	2.20	2.23	2.22	2.12			GG	2.11	
ClC	3	17	2	14		1.65	1.64	1.65		23	1.57			
ClCa	3	17	4	2	2.44	2.34	2.34	2.34	2.37					
ClCd	3	17	5	12		2.36	2.32	2.34						
ClCl	3	17	3	17	1.99	2.05	2.05	2.05	1.98	33	1.97	GG	1.91	1.94
ClCo	3	17	4	9		1.99	1.99	1.99						
ClCr	3	17	4	6		1.88	1.93	1.91						
ClCs	3	17	6	1	2.91	3.10	2.93	3.01	2.89			AG	2.85	
ClCu	3	17	4	11	2.05	2.13	2.12	2.13	2.08					
ClF	3	17	2	17	1.63	1.64	1.60	1.62	1.66	23	1.65	GG	1.62	1.63
ClFe	3	17	4	8		1.93	1.95	1.94						
ClFr	3	17	7	1								AG	2.98	
ClGa	3	17	4	13	2.20	2.21	2.22	2.21	2.26			CG	2.17	
ClGe	3	17	4	14		2.20	2.20	2.20						
ClHf	3	17	6	4		2.17	2.29	2.23						
ClHg	3	17	6	12		2.42	2.46	2.44						
CLi	2	14	2	1		1.72	1.63	1.68		22	1.82			
ClI	3	17	5	17	2.32	2.36	2.44	2.40	2.27			GG	2.27	
ClIn	3	17	5	13	2.401	2.39	2.36	2.38	2.38			CG	2.320	
ClIr	3	17	6	9		2.18	2.24	2.21						
ClK	3	17	4	1	2.67	2.73	2.60	2.67	2.59			AG	2.53	

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
ClLa	3	17	6	3		2.32	2.42	2.37						
ClLi	3	17	2	1	2.021	1.96	1.92	1.94	2.01	23	1.99	AG	1.96	1.98
ClMg	3	17	3	2	2.20	2.12	2.23	2.18		33	2.19			
ClMn	3	17	4	7		1.89	1.93	1.91						
ClMo	3	17	5	6		2.03	2.05	2.04						
ClN	3	17	2	15		1.62	1.58	1.60						
ClNa	3	17	3	1	2.36	2.44	2.48	2.46	2.45	33	2.35	AG	2.29	2.32
ClNb	3	17	5	5		2.06	2.09	2.08						
ClNi	3	17	4	10		2.07	2.05	2.06						
ClO	3	17	2	16	1.57	1.59	1.53	1.56		23	1.57			
ClOs	3	17	6	8		2.11	2.19	2.15						
ClP	3	17	3	15		2.07	2.03	2.05		33	1.95	EG	1.88	1.93
ClPb	3	17	6	14		2.47	2.47	2.47						
ClPd	3	17	5	10		2.23	2.18	2.20						
ClPo	3	17	6	16		2.42	2.43	2.43						
ClPt	3	17	6	10		2.27	2.31	2.29						
ClRb	3	17	5	1	2.79	3.07	2.78	2.92	2.79			AG	2.71	
ClRe	3	17	6	7		2.07	2.17	2.12						
ClRh	3	17	5	9		2.15	2.11	2.13						
ClRu	3	17	5	8		2.09	2.07	2.08						
ClS	3	17	3	16		2.08	1.97	2.03		33	1.94			
ClSb	3	17	5	15		2.34	2.31	2.32				EG	2.25	
ClSc	3	17	4	3	2.23	2.11	2.16	2.13	2.26					
ClSe	3	17	4	16		2.19	2.12	2.16						
ClSi	3	17	3	14	2.06	2.08	2.09	2.09						
ClSn	3	17	5	14	2.36	2.37	2.35	2.36						
ClSr	3	17	5	2		2.58	2.49	2.53						
ClTa	3	17	6	5		2.08	2.21	2.15						
ClTc	3	17	5	7		2.04	2.04	2.04						
ClTe	3	17	5	16		2.33	2.30	2.32						
ClTi	3	17	4	4		1.97	2.04	2.01						
ClTl	3	17	6	13	2.48	2.47	2.49	2.48	2.48					
ClV	3	17	4	5		1.90	1.97	1.94						
ClW	3	17	6	6		2.05	2.17	2.11						
ClY	3	17	5	3		2.31	2.29	2.30						
ClZn	3	17	4	12		2.19	2.18	2.19						
ClZr	3	17	5	4		2.15	2.17	2.16						
CMg	2	14	3	2		1.88	1.83	1.86		23	1.92			
CMn	2	14	4	7		1.68	1.59	1.63						
CMo	2	14	5	6		1.73	1.70	1.72						
CN	2	14	2	15	1.17	1.27	1.27	1.27	1.19	22	1.17			
CNa	2	14	3	1		2.13	2.01	2.07		23	2.13			
CNb	2	14	5	5		1.75	1.74	1.74						
CNi	2	14	4	10		1.79	1.66	1.73						
CO	2	14	2	16	1.13	1.24	1.24	1.24	1.21	22	1.16	DF	1.22	1.19
CoAg	4	9	5	11		2.39	2.50	2.45						
CoAl	4	9	3	13		2.13	2.20	2.16						
CoAs	4	9	4	15		2.06	2.12	2.09						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
CoAt	4	9	6	17		2.41	2.21	2.31						
CoAu	4	9	6	11		2.24	2.58	2.41						
CoB	4	9	2	13		1.67	1.79	1.73						
CoBa	4	9	6	2		2.36	2.94	2.65						
CoBe	4	9	2	2		1.84	1.97	1.90						
CoBi	4	9	6	15		2.22	2.37	2.30						
CoBr	4	9	4	17		2.11	2.07	2.09						
CoC	4	9	2	14		1.62	1.75	1.69						
CoCa	4	9	4	2		2.48	2.58	2.53						
CoCd	4	9	5	12		2.43	2.54	2.48						
CoCl	4	9	3	17		1.99	1.99	1.99						
CoCo	4	9	4	9		2.18	2.18	2.18						
CoCr	4	9	4	6		2.04	2.13	2.09						
CoCs	4	9	6	1		2.73	3.33	3.03						
CoCu	4	9	4	11		2.31	2.29	2.30						
CoF	4	9	2	17		1.68	1.63	1.65						
CoFe	4	9	4	8		2.11	2.14	2.13						
CoGa	4	9	4	13		2.28	2.31	2.30						
CoGe	4	9	4	14		2.19	2.24	2.21						
CoHf	4	9	6	4		2.03	2.53	2.28						
CoHg	4	9	6	12		2.29	2.63	2.46						
CoI	4	9	5	17		2.32	2.19	2.26						
CoIn	4	9	5	13		2.41	2.53	2.47						
CoIr	4	9	6	9		2.10	2.44	2.27						
CoK	4	9	4	1		2.88	2.86	2.87						
CoLa	4	9	6	3		2.15	2.69	2.42						
CoLi	4	9	2	1		2.08	2.15	2.11						
CoMg	4	9	3	2		2.31	2.44	2.38						
CoMn	4	9	4	7		2.06	2.12	2.09						
CoMo	4	9	5	6		2.10	2.32	2.21						
CoN	4	9	2	15		1.56	1.68	1.62						
CoNa	4	9	3	1		2.66	2.70	2.68						
CoNb	4	9	5	5		2.11	2.37	2.24						
CoNi	4	9	4	10		2.25	2.23	2.24						
CoO	4	9	2	16		1.55	1.63	1.59						
CoOs	4	9	6	8		2.03	2.38	2.21						
CoP	4	9	3	15		1.93	2.04	1.98						
CoPb	4	9	6	14		2.26	2.53	2.40						
CoPd	4	9	5	10		2.33	2.44	2.38						
CoPo	4	9	6	16		2.24	2.23	2.23						
CoPt	4	9	6	10		2.17	2.51	2.34						
CoRb	4	9	5	1		2.99	3.19	3.09						
CoRe	4	9	6	7		1.98	2.36	2.17						
CoRh	4	9	5	9		2.25	2.37	2.31						
CoRu	4	9	5	8		2.18	2.33	2.25						
COs	2	14	6	8		1.71	1.77	1.74						
CoS	4	9	3	16		1.87	1.97	1.92						
CoSb	4	9	5	15		2.23	2.28	2.25						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
CoSc	4	9	4	3		2.25	2.39	2.32						
CoSe	4	9	4	16		1.99	2.03	2.01						
CoSi	4	9	3	14		2.04	2.14	2.09						
CoSn	4	9	5	14		2.33	2.43	2.38						
CoSr	4	9	5	2		2.56	2.85	2.70						
CoTa	4	9	6	5		1.97	2.42	2.20						
CoTc	4	9	5	7		2.12	2.31	2.21						
CoTe	4	9	5	16		2.18	2.16	2.17						
CoTi	4	9	4	4		2.12	2.26	2.19						
CoTl	4	9	6	13		2.29	2.62	2.46						
CoV	4	9	4	5		2.06	2.18	2.12						
CoW	4	9	6	6		1.95	2.37	2.16						
CoY	4	9	5	3		2.31	2.62	2.46						
CoZn	4	9	4	12		2.32	2.32	2.32						
CoZr	4	9	5	4		2.18	2.46	2.32						
CP	2	14	3	15	1.56	1.56	1.57	1.56	1.52	23	1.57			
CPb	2	14	6	14		1.90	1.96	1.93						
CPd	2	14	5	10		1.88	1.76	1.82						
CPo	2	14	6	16		1.93	1.95	1.94				DF	2.03	
CPt	2	14	6	10	1.68	1.81	1.84	1.83	1.51					
CrAg	4	6	5	11		2.34	2.34	2.34						
CrAl	4	6	3	13		2.10	2.06	2.08						
CrAs	4	6	4	15		2.03	1.99	2.01						
CrAt	4	6	6	17		2.31	1.99	2.15						
CrAu	4	6	6	11		2.19	2.41	2.30						
CRb	2	14	5	1		2.41	2.27	2.34						
CrB	4	6	2	13		1.65	1.70	1.68						
CrBa	4	6	6	2		2.29	2.70	2.49						
CrBe	4	6	2	2		1.83	1.87	1.85						
CrBi	4	6	6	15		2.17	2.20	2.18						
CrBr	4	6	4	17		2.05	1.93	1.99						
CrC	4	6	2	14		1.60	1.67	1.63						
CrCa	4	6	4	2		2.41	2.37	2.39						
CrCd	4	6	5	12		2.37	2.37	2.37						
CrCl	4	6	3	17		1.93	1.88	1.91						
CrCo	4	6	4	9		2.13	2.04	2.09						
CrCr	4	6	4	6		2.00	2.00	2.00						
CrCs	4	6	6	1		2.64	3.02	2.83						
CrCu	4	6	4	11		2.26	2.14	2.20						
CRe	2	14	6	7		1.68	1.76	1.72						
CrF	4	6	2	17		1.63	1.55	1.59						
CrFe	4	6	4	8		2.07	2.01	2.04						
CrGa	4	6	4	13		2.24	2.16	2.20						
CrGe	4	6	4	14		2.15	2.09	2.12						
CRh	2	14	5	9	1.61	1.82	1.72	1.77	1.61					
CrHf	4	6	6	4		1.97	2.35	2.16						
CrHg	4	6	6	12		2.23	2.45	2.34						
CrI	4	6	5	17		2.24	2.01	2.13						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
CrIn	4	6	5	13		2.35	2.36	2.36						
CrIr	4	6	6	9		2.04	2.28	2.16						
CrK	4	6	4	1		2.79	2.60	2.69						
CrLa	4	6	6	3		2.09	2.49	2.29						
CrLi	4	6	2	1		2.07	2.03	2.05						
CrMg	4	6	3	2		2.26	2.25	2.26						
CrMn	4	6	4	7		2.02	1.99	2.00						
CrMo	4	6	5	6		2.04	2.17	2.11						
CrN	4	6	2	15		1.53	1.61	1.57						
CrNa	4	6	3	1		2.59	2.47	2.53						
CrNb	4	6	5	5		2.06	2.21	2.13						
CrNi	4	6	4	10		2.20	2.09	2.15						
CrO	4	6	2	16	1.62	1.51	1.57	1.54						
CrOs	4	6	6	8		1.98	2.24	2.11						
CrP	4	6	3	15		1.90	1.92	1.91						
CrPb	4	6	6	14		2.21	2.35	2.28						
CrPd	4	6	5	10		2.27	2.28	2.28						
CrPo	4	6	6	16		2.18	2.05	2.11						
CrPt	4	6	6	10		2.12	2.35	2.23						
CrRb	4	6	5	1		2.88	2.89	2.89						
CrRe	4	6	6	7		1.93	2.21	2.07						
CrRh	4	6	5	9		2.19	2.22	2.21						
CrRu	4	6	5	8		2.12	2.18	2.15						
CrS	4	6	3	16		1.83	1.87	1.85						
CrSb	4	6	5	15		2.18	2.13	2.16						
CrSc	4	6	4	3		2.19	2.21	2.20						
CrSe	4	6	4	16		1.95	1.91	1.93						
CrSi	4	6	3	14		2.01	2.00	2.01						
CrSn	4	6	5	14		2.28	2.27	2.28						
CrSr	4	6	5	2		2.48	2.61	2.54						
CrTa	4	6	6	5		1.92	2.26	2.09						
CrTc	4	6	5	7		2.07	2.16	2.11						
CrTe	4	6	5	16		2.13	2.02	2.07						
CrTi	4	6	4	4		2.07	2.10	2.08						
CrTl	4	6	6	13		2.24	2.44	2.34						
CRu	2	14	5	8		1.78	1.70	1.74						
CrV	4	6	4	5		2.01	2.03	2.02						
CrW	4	6	6	6		1.90	2.22	2.06						
CrY	4	6	5	3		2.25	2.42	2.33						
CrZn	4	6	4	12		2.28	2.17	2.22						
CrZr	4	6	5	4		2.12	2.29	2.20						
CS	2	14	3	16	1.53	1.54	1.53	1.54	1.52	23	1.55	DF	1.52	1.53
Cs117	6	1	7	17								AG	3.64	
CsAg	6	1	5	11		4.03	3.51	3.77						
CsAl	6	1	3	13		3.41	2.80	3.11						
CsAs	6	1	4	15		3.29	2.99	3.14						
CsAt	6	1	6	17		3.43	3.20	3.31				AG	3.49	
CsAu	6	1	6	11		3.87	4.11	3.99						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
CsB	6	1	2	13		2.49	2.31	2.40						
CSb	2	14	5	15		1.85	1.80	1.83						
CsBa	6	1	6	2		4.33	4.78	4.56						
CsBe	6	1	2	2		2.71	2.58	2.65						
CsBi	6	1	6	15		3.77	3.84	3.80						
CsBr	6	1	4	17	3.07	3.11	3.28	3.19	3.06			AG	3.12	
CsC	6	1	2	14		2.40	2.30	2.35						
CSc	2	14	4	3		1.84	1.78	1.81						
CsCa	6	1	4	2		4.08	3.25	3.66						
CsCd	6	1	5	12	5.1	4.15	3.64	3.89						
CsCl	6	1	3	17	2.91	2.93	3.10	3.01	2.89			AG	2.85	
CsCo	6	1	4	9		3.33	2.73	3.03						
CsCr	6	1	4	6		3.02	2.64	2.83						
CsCs	6	1	6	1	4.47	5.94	5.94	5.94	4.29			AA	4.51	
CsCu	6	1	4	11		3.66	2.92	3.29						
CSe	2	14	4	16	1.68	1.66	1.63	1.65	1.75			DF	1.73	
CsF	6	1	2	17	2.35	2.31	2.35	2.33	2.41			AG	2.48	
CsFe	6	1	4	8		3.17	2.66	2.92						
CsFr	6	1	7	1								AA	4.65	
CsGa	6	1	4	13		3.71	3.03	3.37						
CsGe	6	1	4	14		3.53	3.01	3.27						
CsHf	6	1	6	4		3.32	3.81	3.56						
CsHg	6	1	6	12	5	4.03	4.30	4.17						
CsI	6	1	5	17	3.32	3.33	3.46	3.40	3.33			AG	3.33	
CSi	2	14	3	14	2.25	1.63	1.62	1.63						
CsIn	6	1	5	13		4.12	3.69	3.90						
CsIr	6	1	6	9		3.45	3.70	3.57						
CsK	6	1	4	1		5.41	3.68	4.54				AA	4.15	
CsLa	6	1	6	3		3.65	4.17	3.91						
CsLi	6	1	2	1		3.22	2.87	3.05				AA	3.52	
CsMg	6	1	3	2		3.61	3.05	3.33						
CsMn	6	1	4	7		3.06	2.63	2.85						
CsMo	6	1	5	6		3.26	3.08	3.17						
CsN	6	1	2	15		2.29	2.28	2.28						
CSn	2	14	5	14		1.90	1.85	1.87						
CsNa	6	1	3	1		4.57	3.43	4.00				AA	3.89	
CsNb	6	1	5	5		3.30	3.15	3.23						
CsNi	6	1	4	10		3.50	2.82	3.16						
CsO	6	1	2	16		2.24	2.29	2.26						
CsOs	6	1	6	8		3.28	3.56	3.42						
CsP	6	1	3	15		3.06	2.79	2.93						
CsPb	6	1	6	14		4.00	4.20	4.10						
CsPd	6	1	5	10		3.83	3.36	3.59						
CsPo	6	1	6	16		3.49	3.45	3.47						
CsPt	6	1	6	10		3.66	3.89	3.77						
CSr	2	14	5	2		2.10	2.06	2.08						
CsRb	6	1	5	1		6.44	4.65	5.54				AA	4.35	
CsRe	6	1	6	7		3.16	3.50	3.33						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
CsRh	6	1	5	9		3.61	3.22	3.42						
CsRu	6	1	5	8		3.43	3.13	3.28						
CsS	6	1	3	16		2.91	2.90	2.90						
CsSb	6	1	5	15		3.62	3.52	3.57						
CsSc	6	1	4	3		3.48	2.97	3.23						
CsSe	6	1	4	16		3.09	3.09	3.09						
CsSi	6	1	3	14		3.27	2.79	3.03						
CsSn	6	1	5	14		3.92	3.63	3.78						
CsSr	6	1	5	2		4.58	3.96	4.27						
CsTa	6	1	6	5		3.16	3.60	3.38						
CsTc	6	1	5	7		3.31	3.08	3.19						
CsTe	6	1	5	16		3.34	3.45	3.40				DF	1.89	
CsTi	6	1	4	4		3.19	2.80	2.99						
CsTl	6	1	6	13		4.09	4.37	4.23						
CsV	6	1	4	5		3.05	2.69	2.87						
CsW	6	1	6	6		3.12	3.51	3.31						
CsY	6	1	5	3		3.83	3.55	3.69						
CsZn	6	1	4	12		3.75	3.00	3.37						
CsZr	6	1	5	4		3.46	3.30	3.38						
CTa	2	14	6	5		1.68	1.81	1.75						
CTc	2	14	5	7		1.74	1.69	1.72						
CTe	2	14	5	16		1.85	1.80	1.82						
CTi	2	14	4	4		1.74	1.69	1.72						
CTl	2	14	6	13		1.91	1.97	1.94						
CuAg	4	11	5	11		2.54	2.65	2.59						
CuAl	4	11	3	13		2.23	2.34	2.28						
CuAs	4	11	4	15		2.18	2.25	2.22						
CuAt	4	11	6	17		2.62	2.49	2.56						
CuAu	4	11	6	11		2.38	2.74	2.56						
CuB	4	11	2	13		1.74	1.87	1.81						
CuBa	4	11	6	2		2.50	3.19	2.85						
CuBe	4	11	2	2		1.89	2.06	1.98						
CuBi	4	11	6	15		2.39	2.56	2.47						
CuBr	4	11	4	17	2.17	2.25	2.24	2.25	2.14					
CuC	4	11	2	14		1.70	1.83	1.76						
CuCa	4	11	4	2		2.61	2.79	2.70						
CuCd	4	11	5	12		2.58	2.70	2.64						
CuCl	4	11	3	17	2.05	2.12	2.13	2.13	2.08					
CuCo	4	11	4	9		2.29	2.31	2.30						
CuCr	4	11	4	6		2.14	2.26	2.20						
CuCs	4	11	6	1		2.92	3.66	3.29						
CuCu	4	11	4	11	2.22	2.43	2.43	2.43	2.22					
CuF	4	11	2	17	1.74	1.78	1.73	1.75	1.76					
CuFe	4	11	4	8		2.22	2.26	2.24						
CuGa	4	11	4	13		2.41	2.46	2.44						
CuGe	4	11	4	14		2.31	2.38	2.35						
CuHf	4	11	6	4		2.13	2.70	2.42						
CuHg	4	11	6	12		2.44	2.80	2.62						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
CuI	4	11	5	17	2.34	2.49	2.42	2.46						
CuIn	4	11	5	13		2.56	2.69	2.62						
CuIr	4	11	6	9		2.21	2.58	2.40						
CuK	4	11	4	1		3.06	3.13	3.10						
CuLa	4	11	6	3		2.27	2.89	2.58						
CuLi	4	11	2	1		2.14	2.27	2.20						
CuMg	4	11	3	2	2.06	2.41	2.62	2.52						
CuMn	4	11	4	7		2.16	2.25	2.20						
CuMo	4	11	5	6		2.21	2.45	2.33						
CuN	4	11	2	15		1.64	1.76	1.70						
CuNa	4	11	3	1		2.79	2.93	2.86						
CuNb	4	11	5	5		2.22	2.51	2.37						
CuNi	4	11	4	10		2.37	2.36	2.36						
CuO	4	11	2	16		1.63	1.70	1.67						
CuOs	4	11	6	8		2.14	2.52	2.33						
CuP	4	11	3	15		2.03	2.16	2.09						
CuPb	4	11	6	14		2.42	2.72	2.57						
CuPd	4	11	5	10		2.46	2.57	2.52						
CuPo	4	11	6	16		2.42	2.43	2.43						
CuPt	4	11	6	10		2.30	2.65	2.48						
CuRb	4	11	5	1		3.21	3.51	3.36						
CuRe	4	11	6	7		2.08	2.50	2.29						
CuRh	4	11	5	9		2.37	2.50	2.44						
CuRu	4	11	5	8		2.29	2.45	2.37						
CuS	4	11	3	16		1.98	2.07	2.03						
CuSb	4	11	5	15		2.38	2.43	2.41						
CuSc	4	11	4	3		2.36	2.56	2.46						
CuSe	4	11	4	16		2.11	2.15	2.13						
CuSi	4	11	3	14		2.14	2.27	2.21						
CuSn	4	11	5	14		2.48	2.59	2.54						
CuSr	4	11	5	2		2.72	3.08	2.90						
CuTa	4	11	6	5		2.07	2.58	2.32						
CuTc	4	11	5	7		2.23	2.44	2.33						
CuTe	4	11	5	16	2.35	2.33	2.32	2.33						
CuTi	4	11	4	4		2.22	2.41	2.31						
CuTl	4	11	6	13		2.45	2.80	2.63						
CuV	4	11	4	5		2.15	2.31	2.23						
CuW	4	11	6	6		2.06	2.51	2.29						
CuY	4	11	5	3		2.45	2.81	2.63						
CuZn	4	11	4	12		2.45	2.47	2.46						
CuZr	4	11	5	4		2.30	2.62	2.46						
CV	2	14	4	5		1.69	1.63	1.66						
CW	2	14	6	6		1.67	1.77	1.72						
CY	2	14	5	3		1.91	1.91	1.91						
CZn	2	14	4	12		1.84	1.73	1.78						
CZr	2	14	5	4		1.81	1.80	1.81						
FAg	2	17	5	11	1.98	1.86	1.89	1.87	1.92					
FAl	2	17	3	13	1.65	1.69	1.72	1.70	1.66	23	1.65	CG	1.63	1.64

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
FAs	2	17	4	15	1.74	1.76	1.75	1.76	1.76			EG	1.77	
FAt	2	17	6	17		2.01	2.01	2.01				GG	2.11	
FAu	2	17	6	11		1.90	1.96	1.93						
FB	2	17	2	13	1.26	1.35	1.32	1.34	1.31					
FBa	2	17	6	2		2.04	2.11	2.08	2.10					
FBe	2	17	2	2	1.36	1.44	1.43	1.44		22	1.37			
FBi	2	17	6	15		1.99	1.96	1.97				EG	2.06	
FBr	2	17	4	17	1.76	1.74	1.76	1.75	1.79			GG	1.83	
FC	2	17	2	14	1.27	1.32	1.29	1.31		22	1.22			
FCa	2	17	4	2	1.97	1.89	1.93	1.91						
FCd	2	17	5	12		1.91	1.94	1.92						
FCl	2	17	3	17	1.63	1.60	1.64	1.62	1.66	23	1.65	GG	1.62	1.63
FCo	2	17	4	9		1.63	1.68	1.65						
FCr	2	17	4	6		1.55	1.63	1.59						
FCs	2	17	6	1	2.35	2.35	2.31	2.33	2.41			AG	2.48	
FCu	2	17	4	11	1.74	1.73	1.78	1.75	1.76					
FeAg	4	8	5	11		2.35	2.42	2.38						
FeAl	4	8	3	13		2.09	2.13	2.11						
FeAs	4	8	4	15		2.02	2.05	2.04						
FeAt	4	8	6	17		2.34	2.10	2.22						
FeAu	4	8	6	11		2.20	2.50	2.35						
FeB	4	8	2	13		1.65	1.74	1.70						
FeBa	4	8	6	2		2.31	2.82	2.57						
FeBe	4	8	2	2		1.82	1.92	1.87						
FeBi	4	8	6	15		2.17	2.28	2.23						
FeBr	4	8	4	17		2.06	2.00	2.03						
FeC	4	8	2	14		1.60	1.71	1.65						
FeCa	4	8	4	2		2.43	2.48	2.45						
FeCd	4	8	5	12		2.38	2.46	2.42						
FeCl	4	8	3	17		1.95	1.93	1.94						
FeCo	4	8	4	9		2.14	2.11	2.13						
FeCr	4	8	4	6		2.01	2.07	2.04						
FeCs	4	8	6	1		2.66	3.17	2.92						
FeCu	4	8	4	11		2.26	2.22	2.24						
FeF	4	8	2	17		1.64	1.58	1.61						
FeFe	4	8	4	8		2.08	2.08	2.08						
FeGa	4	8	4	13		2.24	2.24	2.24						
FeGe	4	8	4	14		2.15	2.17	2.16						
FeHf	4	8	6	4		1.99	2.44	2.21						
FeHg	4	8	6	12		2.24	2.54	2.39						
FeI	4	8	5	17		2.26	2.10	2.18						
FeIn	4	8	5	13		2.36	2.44	2.40						
FeIr	4	8	6	9		2.05	2.36	2.21						
FeK	4	8	4	1		2.82	2.73	2.78						
FeLa	4	8	6	3		2.10	2.59	2.35						
FeLi	4	8	2	1		2.06	2.09	2.07						
FeMg	4	8	3	2		2.27	2.35	2.31						
FeMn	4	8	4	7		2.03	2.06	2.04						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
FeMo	4	8	5	6		2.06	2.25	2.15						
FeN	4	8	2	15		1.53	1.65	1.59						
FeNa	4	8	3	1		2.61	2.59	2.60						
FeNb	4	8	5	5		2.07	2.29	2.18						
FeNi	4	8	4	10		2.21	2.16	2.19						
FeO	4	8	2	16		1.52	1.60	1.56						
FeOs	4	8	6	8		1.99	2.31	2.15						
FeP	4	8	3	15		1.89	1.98	1.94						
FePb	4	8	6	14		2.21	2.44	2.33						
FePd	4	8	5	10		2.28	2.36	2.32						
FePo	4	8	6	16		2.19	2.14	2.16						
FePt	4	8	6	10		2.13	2.43	2.28						
FeRb	4	8	5	1		2.92	3.05	2.98						
FeRe	4	8	6	7		1.94	2.29	2.11						
FeRh	4	8	5	9		2.20	2.30	2.25						
FeRu	4	8	5	8		2.13	2.26	2.19						
FeS	4	8	3	16		1.83	1.92	1.88						
FeSb	4	8	5	15		2.18	2.21	2.19						
FeSc	4	8	4	3		2.20	2.30	2.25						
FeSe	4	8	4	16		1.96	1.97	1.96						
FeSi	4	8	3	14		2.00	2.07	2.04						
FeSn	4	8	5	14		2.28	2.35	2.32						
FeSr	4	8	5	2		2.50	2.73	2.62						
FeTa	4	8	6	5		1.93	2.35	2.14						
FeTc	4	8	5	7		2.08	2.23	2.16						
FeTe	4	8	5	16		2.14	2.09	2.11						
FeTi	4	8	4	4		2.08	2.18	2.13						
FeTl	4	8	6	13		2.25	2.53	2.39						
FeV	4	8	4	5		2.02	2.11	2.06						
FeW	4	8	6	6		1.92	2.30	2.11						
FeY	4	8	5	3		2.27	2.52	2.39						
FeZn	4	8	4	12		2.28	2.25	2.26						
FeZr	4	8	5	4		2.13	2.38	2.26						
FF	2	17	2	17	1.41	1.34	1.34	1.34	1.36	22	1.48	GG	1.34	1.41
FFe	2	17	4	8		1.58	1.64	1.61						
FFr	2	17	7	1								AG	2.60	
FGa	2	17	4	13	1.77	1.79	1.84	1.81	1.82			CG	1.82	
FGe	2	17	4	14	1.75	1.78	1.82	1.80						
FHf	2	17	6	4		1.74	1.88	1.81						
FHg	2	17	6	12		1.96	2.01	1.98						
FI	2	17	5	17	1.91	1.90	1.91	1.90	1.95			GG	1.99	
FIn	2	17	5	13	1.99	1.93	1.96	1.95	1.95			CG	1.97	
FIr	2	17	6	9		1.77	1.85	1.81						
FK	2	17	4	1	2.17	2.16	2.11	2.14	2.10			AG	2.15	
FLa	2	17	6	3		1.85	1.97	1.91						
FLi	2	17	2	1	1.56	1.61	1.55	1.58	1.57	22	1.54	AG	1.59	1.57
FMg	2	17	3	2	1.75	1.76	1.82	1.79	1.75	23	1.77			
FMn	2	17	4	7		1.55	1.63	1.59						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
FMo	2	17	5	6		1.65	1.73	1.69						
FN	2	17	2	15	1.32	1.28	1.24	1.26	1.28					
FNa	2	17	3	1	1.93	2.00	1.99	2.00	1.97	23	1.94	AG	1.92	1.93
FNb	2	17	5	5		1.67	1.75	1.71						
FNi	2	17	4	10		1.68	1.72	1.70						
FO	2	17	2	16		1.26	1.22	1.24		22	1.33			
FOs	2	17	6	8		1.71	1.81	1.76						
FP	2	17	3	15	1.59	1.66	1.61	1.63		23	1.55	EG	1.57	1.56
FPb	2	17	6	14	2.06	2.00	2.01	2.01						
FPd	2	17	5	10		1.80	1.83	1.82						
FPo	2	17	6	16		1.98	1.93	1.95						
FPt	2	17	6	10		1.83	1.90	1.87						
Fr117	7	1	7	17								AG	3.76	
FrAt	7	1	6	17								AG	3.62	
FRb	2	17	5	1	2.27	2.35	2.24	2.30	2.30			AG	2.33	
FrBr	7	1	4	17								AG	3.24	
FrCl	7	1	3	17								AG	2.98	
FrCs	7	1	6	1								AA	4.65	
FRe	2	17	6	7		1.68	1.79	1.74						
FrF	7	1	2	17								AG	2.60	
FrFr	7	1	7	1								AA	4.79	
FRh	2	17	5	9		1.74	1.78	1.76						
FrI	7	1	5	17								AG	3.45	
FrK	7	1	4	1								AA	4.29	
FrLi	7	1	2	1								AA	3.66	
FrNa	7	1	3	1								AA	4.03	
FrRb	7	1	5	1								AA	4.49	
FRu	2	17	5	8		1.69	1.74	1.72						
FS	2	17	3	16	1.60	1.64	1.54	1.59		23	1.58			
FSb	2	17	5	15	1.92	1.90	1.89	1.89	1.91			EG	1.93	
FSc	2	17	4	3	1.79	1.72	1.80	1.76	1.77					
FSe	2	17	4	16		1.76	1.68	1.72						
FSi	2	17	3	14	1.6	1.68	1.69	1.68						
FSn	2	17	5	14	1.94	1.92	1.95	1.93						
FSr	2	17	5	2	2.08	2.04	2.04	2.04	2.00					
FTa	2	17	6	5		1.69	1.82	1.75						
FTc	2	17	5	7		1.66	1.72	1.69						
FTe	2	17	5	16		1.89	1.83	1.86						
FTi	2	17	4	4		1.62	1.71	1.67						
FTl	2	17	6	13	2.08	2.00	2.03	2.01	2.09					
FV	2	17	4	5		1.57	1.66	1.61						
FW	2	17	6	6		1.67	1.79	1.73						
FY	2	17	5	3	1.93	1.85	1.91	1.88	1.91					
FZn	2	17	4	12		1.77	1.82	1.80						
FZr	2	17	5	4		1.73	1.81	1.77						
Ga117	4	13	7	17								CG	2.90	
GaAg	4	13	5	11		2.61	2.61	2.61						
GaAl	4	13	3	13		2.27	2.33	2.30						

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks: Southern, In order r_e	Southern, Reversed r_e	Southern $<r_e>$	Memphis r_e	Predictions by method of least squares: Area	r_e	Area	r_e	$<r_e>$
GaAs	4	13	4	15		2.25	2.27	2.26						
GaAt	4	13	6	17		2.79	2.78	2.79				CG	2.77	
GaAu	4	13	6	11		2.47	2.70	2.58						
GaB	4	13	2	13		1.77	1.85	1.81						
GaBa	4	13	6	2		2.58	3.21	2.89						
GaBe	4	13	2	2		1.86	2.06	1.96						
GaBi	4	13	6	15		2.53	2.63	2.58						
GaBr	4	13	4	17	2.35	2.34	2.36	2.35	2.43			CG	2.42	
GaC	4	13	2	14		1.74	1.82	1.78						
GaCa	4	13	4	2		2.64	2.81	2.73						
GaCd	4	13	5	12		2.66	2.67	2.66						
GaCl	4	13	3	17	2.20	2.22	2.21	2.21	2.26			CG	2.17	
GaCo	4	13	4	9		2.31	2.28	2.30						
GaCr	4	13	4	6		2.16	2.24	2.20						
GaCs	4	13	6	1		3.03	3.71	3.37						
GaCu	4	13	4	11		2.46	2.41	2.44						
GaF	4	13	2	17	1.77	1.84	1.79	1.81	1.82			CG	1.82	
GaFe	4	13	4	8		2.24	2.24	2.24						
GaGa	4	13	4	13		2.46	2.46	2.46						
GaGe	4	13	4	14		2.37	2.40	2.38						
GaHf	4	13	6	4		2.19	2.69	2.44						
GaHg	4	13	6	12		2.53	2.77	2.65						
GaI	4	13	5	17	2.57	2.60	2.62	2.61	2.64			CG	2.61	
GaIn	4	13	5	13		2.65	2.67	2.66						
GaIr	4	13	6	9		2.28	2.54	2.41						
GaK	4	13	4	1		3.10	3.18	3.14						
GaLa	4	13	6	3		2.33	2.89	2.61						
GaLi	4	13	2	1		2.10	2.27	2.18						
GaMg	4	13	3	2		2.40	2.63	2.52						
GaMn	4	13	4	7		2.18	2.23	2.20						
GaMo	4	13	5	6		2.25	2.42	2.34						
GaN	4	13	2	15		1.69	1.75	1.72						
GaNa	4	13	3	1		2.78	2.96	2.87						
GaNb	4	13	5	5		2.27	2.48	2.38						
GaNi	4	13	4	10		2.39	2.35	2.37						
GaO	4	13	2	16		1.70	1.71	1.70						
GaOs	4	13	6	8		2.20	2.49	2.34						
GaP	4	13	3	15		2.10	2.16	2.13						
GaPb	4	13	6	14		2.55	2.74	2.64						
GaPd	4	13	5	10		2.52	2.53	2.53						
GaPo	4	13	6	16		2.58	2.58	2.58						
GaPt	4	13	6	10		2.38	2.62	2.50						
GaRb	4	13	5	1		3.30	3.54	3.42						
GaRe	4	13	6	7		2.14	2.47	2.31						
GaRh	4	13	5	9		2.43	2.46	2.45						
GaRu	4	13	5	8		2.34	2.42	2.38						
GaS	4	13	3	16		2.07	2.09	2.08						
GaSb	4	13	5	15		2.48	2.47	2.48						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
GaSc	4	13	4	3		2.38	2.57	2.47						
GaSe	4	13	4	16		2.20	2.20	2.20						
GaSi	4	13	3	14		2.19	2.28	2.23						
GaSn	4	13	5	14		2.58	2.60	2.59						
GaSr	4	13	5	2		2.78	3.09	2.94						
GaTa	4	13	6	5		2.13	2.56	2.34						
GaTc	4	13	5	7		2.28	2.40	2.34						
GaTe	4	13	5	16		2.44	2.40	2.42						
GaTi	4	13	4	4		2.24	2.40	2.32						
GaTl	4	13	6	13		2.56	2.79	2.68						
GaV	4	13	4	5		2.17	2.30	2.24						
GaW	4	13	6	6		2.11	2.49	2.30						
GaY	4	13	5	3		2.50	2.80	2.65						
GaZn	4	13	4	12		2.49	2.46	2.48						
GaZr	4	13	5	4		2.34	2.60	2.47						
Ge116	4	14	7	16								DF	2.61	
GeAg	4	14	5	11		2.55	2.48	2.51						
GeAl	4	14	3	13		2.21	2.25	2.23						
GeAs	4	14	4	15		2.22	2.22	2.22						
GeAt	4	14	6	17		2.77	2.87	2.82						
GeAu	4	14	6	11		2.43	2.58	2.51						
GeB	4	14	2	13		1.73	1.79	1.76						
GeBa	4	14	6	2		2.57	3.07	2.82						
GeBe	4	14	2	2		1.78	1.98	1.88						
GeBi	4	14	6	15		2.53	2.59	2.56						
GeBr	4	14	4	17		2.31	2.38	2.34						
GeC	4	14	2	14		1.71	1.76	1.74						
GeCa	4	14	4	2		2.56	2.70	2.63						
GeCd	4	14	5	12		2.60	2.54	2.57						
GeCl	4	14	3	17		2.20	2.20	2.20						
GeCo	4	14	4	9		2.24	2.19	2.21						
GeCr	4	14	4	6		2.09	2.15	2.12						
GeCs	4	14	6	1		3.01	3.53	3.27						
GeCu	4	14	4	11		2.38	2.31	2.35						
GeF	4	14	2	17	1.75	1.82	1.78	1.80						
GeFe	4	14	4	8		2.17	2.15	2.16						
GeGa	4	14	4	13		2.40	2.37	2.38						
GeGe	4	14	4	14		2.32	2.32	2.32						
GeHf	4	14	6	4		2.18	2.57	2.37						
GeHg	4	14	6	12		2.50	2.65	2.58						
GeI	4	14	5	17		2.56	2.67	2.61						
GeIn	4	14	5	13		2.59	2.56	2.58						
GeIr	4	14	6	9		2.25	2.43	2.34						
GeK	4	14	4	1		2.99	3.05	3.02						
GeLa	4	14	6	3		2.32	2.77	2.54						
GeLi	4	14	2	1		2.01	2.19	2.10						
GeMg	4	14	3	2		2.30	2.53	2.41						
GeMn	4	14	4	7		2.11	2.13	2.12						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
GeMo	4	14	5	6		2.21	2.31	2.26						
GeN	4	14	2	15		1.68	1.70	1.69						
GeNa	4	14	3	1		2.65	2.84	2.75						
GeNb	4	14	5	5		2.22	2.37	2.30						
GeNi	4	14	4	10		2.32	2.24	2.28						
GeO	4	14	2	16	1.62	1.69	1.67	1.68	1.66			DF	1.68	
GeOs	4	14	6	8		2.17	2.38	2.28						
GeP	4	14	3	15		2.07	2.10	2.09						
GePb	4	14	6	14		2.54	2.66	2.60						
GePd	4	14	5	10		2.46	2.41	2.44						
GePo	4	14	6	16		2.58	2.59	2.59				DF	2.49	
GePt	4	14	6	10		2.34	2.50	2.42						
GeRb	4	14	5	1		3.23	3.37	3.30						
GeRe	4	14	6	7		2.12	2.36	2.24						
GeRh	4	14	5	9		2.37	2.34	2.36						
GeRu	4	14	5	8		2.29	2.30	2.29						
GeS	4	14	3	16	2.01	2.06	2.04	2.05	2.07			DF	1.98	
GeSb	4	14	5	15		2.45	2.42	2.43						
GeSc	4	14	4	3		2.31	2.46	2.39						
GeSe	4	14	4	16	2.13	2.19	2.17	2.18	2.22			DF	2.19	
GeSi	4	14	3	14		2.15	2.20	2.17						
GeSn	4	14	5	14		2.53	2.51	2.52						
GeSr	4	14	5	2		2.73	2.94	2.84						
GeTa	4	14	6	5		2.11	2.45	2.28						
GeTc	4	14	5	7		2.23	2.29	2.26						
GeTe	4	14	5	16	2.34	2.42	2.39	2.40	2.43			DF	2.36	
GeTi	4	14	4	4		2.17	2.30	2.24						
GeTl	4	14	6	13		2.54	2.68	2.61						
GeV	4	14	4	5		2.11	2.21	2.16						
GeW	4	14	6	6		2.09	2.39	2.24						
GeY	4	14	5	3		2.45	2.67	2.56						
GeZn	4	14	4	12		2.42	2.36	2.39						
GeZr	4	14	5	4		2.30	2.48	2.39						
HfAg	6	4	5	11		2.90	2.43	2.66						
HfAl	6	4	3	13		2.52	2.07	2.30						
HfAs	6	4	4	15		2.43	2.15	2.29						
HfAt	6	4	6	17		2.59	2.20	2.40						
HfAu	6	4	6	11		2.81	2.67	2.74						
HfB	6	4	2	13		1.95	1.75	1.85						
HfBa	6	4	6	2		3.10	2.94	3.02						
HfBe	6	4	2	2		2.14	1.90	2.02						
HfBi	6	4	6	15		2.69	2.54	2.62						
HfBr	6	4	4	17		2.41	2.26	2.33						
HfC	6	4	2	14		1.89	1.74	1.81						
HfCa	6	4	4	2		2.97	2.33	2.65						
HfCd	6	4	5	12		2.94	2.49	2.71						
HfCl	6	4	3	17		2.29	2.17	2.23						
HfCo	6	4	4	9		2.53	2.03	2.28						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
HfCr	6	4	4	6		2.35	1.97	2.16						
HfCs	6	4	6	1		3.81	3.32	3.56						
HfCu	6	4	4	11		2.70	2.13	2.42						
HfF	6	4	2	17		1.88	1.74	1.81						
HfFe	6	4	4	8		2.44	1.99	2.21						
HfGa	6	4	4	13		2.69	2.19	2.44						
HfGe	6	4	4	14		2.57	2.18	2.37						
HfHf	6	4	6	4		2.54	2.54	2.54						
HfHg	6	4	6	12		2.88	2.75	2.82						
HfI	6	4	5	17		2.55	2.34	2.44						
HfIn	6	4	5	13		2.90	2.51	2.70						
HfIr	6	4	6	9		2.60	2.49	2.55						
HfK	6	4	4	1		3.60	2.55	3.08						
HfLa	6	4	6	3		2.74	2.70	2.72						
HfLi	6	4	2	1		2.46	2.07	2.27						
HfMg	6	4	3	2		2.72	2.22	2.47						
HfMn	6	4	4	7		2.38	1.97	2.17						
HfMo	6	4	5	6		2.50	2.21	2.35						
HfN	6	4	2	15		1.81	1.71	1.76						
HfNa	6	4	3	1		3.23	2.42	2.83						
HfNb	6	4	5	5		2.53	2.25	2.39						
HfNi	6	4	4	10		2.62	2.08	2.35						
HfO	6	4	2	16	1.72	1.78	1.71	1.75	1.76					
HfOs	6	4	6	8		2.51	2.42	2.47						
HfP	6	4	3	15		2.29	2.04	2.17						
HfPb	6	4	6	14		2.82	2.71	2.76						
HfPd	6	4	5	10		2.80	2.35	2.58						
HfPo	6	4	6	16		2.55	2.35	2.45						
HfPt	6	4	6	10		2.71	2.58	2.64						
HfRb	6	4	5	1		3.98	2.94	3.46						
HfRe	6	4	6	7		2.44	2.39	2.42						
HfRh	6	4	5	9		2.69	2.28	2.49						
HfRu	6	4	5	8		2.60	2.23	2.41						
HfS	6	4	3	16		2.21	2.08	2.15						
HfSb	6	4	5	15		2.61	2.40	2.51						
HfSc	6	4	4	3		2.64	2.17	2.41						
HfSe	6	4	4	16		2.33	2.18	2.26						
HfSi	6	4	3	14		2.42	2.06	2.24						
HfSn	6	4	5	14		2.78	2.47	2.63						
HfSr	6	4	5	2		3.22	2.65	2.94						
HfTa	6	4	6	5		2.44	2.44	2.44						
HfTc	6	4	5	7		2.53	2.20	2.37						
HfTe	6	4	5	16		2.48	2.35	2.42						
HfTi	6	4	4	4		2.46	2.07	2.26						
HfTl	6	4	6	13		2.89	2.77	2.83						
HfV	6	4	4	5		2.37	2.00	2.19						
HfW	6	4	6	6		2.42	2.40	2.41						
HfY	6	4	5	3		2.84	2.46	2.65						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
HfZn	6	4	4	12		2.73	2.18	2.45						
HfZr	6	4	5	4		2.63	2.33	2.48						
HgAg	6	12	5	11		3.05	2.74	2.89						
HgAl	6	12	3	13		2.59	2.37	2.48						
HgAs	6	12	4	15		2.51	2.43	2.47						
HgAt	6	12	6	17		2.81	2.62	2.71						
HgAu	6	12	6	11		3.02	2.98	3.00						
HgB	6	12	2	13		2.00	1.91	1.96						
HgBa	6	12	6	2		3.42	3.46	3.44						
HgBe	6	12	2	2		2.17	2.06	2.12						
HgBi	6	12	6	15		2.84	2.88	2.86						
HgBr	6	12	4	17		2.58	2.54	2.56						
HgC	6	12	2	14		1.94	1.90	1.92						
HgCa	6	12	4	2		3.15	2.76	2.96						
HgCd	6	12	5	12		3.08	2.83	2.95						
HgCl	6	12	3	17		2.46	2.42	2.44						
HgCo	6	12	4	9		2.63	2.29	2.46						
HgCr	6	12	4	6		2.45	2.23	2.34						
HgCs	6	12	6	1	5	4.30	4.03	4.17						
HgCu	6	12	4	11		2.80	2.44	2.62						
HgF	6	12	2	17		2.01	1.96	1.98						
HgFe	6	12	4	8		2.54	2.24	2.39						
HgGa	6	12	4	13		2.77	2.53	2.65						
HgGe	6	12	4	14		2.65	2.50	2.58						
HgHf	6	12	6	4		2.75	2.88	2.82						
HgHg	6	12	6	12		3.09	3.09	3.09						
HgI	6	12	5	17		2.73	2.67	2.70						
HgIn	6	12	5	13		3.02	2.87	2.94						
HgIr	6	12	6	9		2.80	2.76	2.78						
HgK	6	12	4	1	4.9	3.87	3.10	3.49						
HgLa	6	12	6	3		2.98	3.11	3.04						
HgLi	6	12	2	1		2.50	2.27	2.38						
HgMg	6	12	3	2		2.84	2.58	2.71						
HgMn	6	12	4	7		2.48	2.22	2.35						
HgMo	6	12	5	6		2.65	2.49	2.57						
HgN	6	12	2	15		1.88	1.86	1.87						
HgNa	6	12	3	1	4.7	3.39	2.88	3.14						
HgNb	6	12	5	5		2.69	2.55	2.62						
HgNi	6	12	4	10		2.72	2.36	2.54						
HgO	6	12	2	16		1.88	1.86	1.87						
HgOs	6	12	6	8		2.70	2.69	2.69						
HgP	6	12	3	15		2.37	2.29	2.33						
HgPb	6	12	6	14		2.98	3.06	3.02						
HgPd	6	12	5	10		2.96	2.64	2.80						
HgPo	6	12	6	16		2.71	2.66	2.69						
HgPt	6	12	6	10		2.92	2.86	2.89						
HgRb	6	12	5	1		4.43	3.60	4.02						
HgRe	6	12	6	7		2.63	2.66	2.64						

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks Southern In order r_e	Reversed r_e	$<r_e>$	Memphis r_e	Predictions by method of least squares Area	r_e	Area	r_e	$<r_e>$
HgRh	6	12	5	9		2.85	2.55	2.70						
HgRu	6	12	5	8		2.75	2.50	2.62						
HgS	6	12	3	16		2.32	2.28	2.30						
HgSb	6	12	5	15		2.71	2.71	2.71						
HgSc	6	12	4	3		2.78	2.53	2.66						
HgSe	6	12	4	16		2.44	2.41	2.42						
HgSi	6	12	3	14		2.49	2.35	2.42						
HgSn	6	12	5	14		2.88	2.83	2.85						
HgSr	6	12	5	2		3.50	3.15	3.32						
HgTa	6	12	6	5		2.64	2.75	2.69						
HgTc	6	12	5	7		2.68	2.47	2.57						
HgTe	6	12	5	16		2.60	2.62	2.61						
HgTi	6	12	4	4		2.58	2.38	2.48						
HgTl	6	12	6	13		3.07	3.13	3.10						
HgV	6	12	4	5		2.48	2.28	2.38						
HgW	6	12	6	6		2.60	2.68	2.64						
HgY	6	12	5	3		3.05	2.85	2.95						
HgZn	6	12	4	12		2.82	2.50	2.66						
HgZr	6	12	5	4		2.80	2.66	2.73						
IAg	5	17	5	11	2.54	2.52	2.58	2.55	2.54					
IAl	5	17	3	13	2.54	2.53	2.54	2.53	2.46			CG	2.42	
IAs	5	17	4	15		2.67	2.46	2.56				EG	2.49	
IAt	5	17	6	17		2.66	2.85	2.76				GG	2.76	
IAu	5	17	6	11		2.57	2.66	2.62						
IB	5	17	2	13		1.99	2.02	2.00				CG	2.16	
IBa	5	17	6	2		2.85	2.95	2.90						
IBe	5	17	2	2		1.93	2.11	2.02						
IBi	5	17	6	15	2.80	2.73	2.64	2.69				EG	2.78	
IBr	5	17	4	17	2.47	2.56	2.48	2.52	2.45			GG	2.48	
IC	5	17	2	14		1.99	1.99	1.99						
ICa	5	17	4	2		2.46	2.76	2.61						
ICd	5	17	5	12		2.63	2.65	2.64						
ICl	5	17	3	17	2.32	2.44	2.36	2.40	2.27			GG	2.27	
ICo	5	17	4	9		2.19	2.32	2.26						
ICr	5	17	4	6		2.01	2.24	2.13						
ICs	5	17	6	1	3.32	3.46	3.33	3.40	3.33			AG	3.33	
ICu	5	17	4	11	2.34	2.42	2.49	2.46						
IF	5	17	2	17	1.91	1.91	1.90	1.90	1.95			GG	1.99	
IFe	5	17	4	8		2.10	2.26	2.18						
IFr	5	17	7	1								AG	3.45	
IGa	5	17	4	13	2.57	2.62	2.60	2.61	2.64			CG	2.61	
IGe	5	17	4	14		2.67	2.56	2.61						
IHf	5	17	6	4		2.34	2.55	2.44						
IHg	5	17	6	12		2.67	2.73	2.70						
II	5	17	5	17	2.67	2.67	2.67	2.67	2.62			GG	2.63	
IIn	5	17	5	13	2.75	2.72	2.68	2.70	2.74			CG	2.76	
IIr	5	17	6	9		2.36	2.49	2.42						
IK	5	17	4	1	3.05	2.89	3.12	3.00	2.94			AG	3.00	

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
ILa	5	17	6	3		2.52	2.71	2.61						
ILi	5	17	2	1	2.39	2.19	2.33	2.26	2.42			AG	2.44	
IMg	5	17	3	2		2.32	2.68	2.50						
IMn	5	17	4	7		2.04	2.23	2.14						
IMo	5	17	5	6		2.13	2.33	2.23						
IN	5	17	2	15		1.97	1.92	1.95						
In117	5	13	7	17								CG	3.05	
INa	5	17	3	1	2.71	2.69	3.02	2.85	2.77			AG	2.76	
InAg	5	13	5	11		2.91	2.82	2.86						
InAl	5	13	3	13		2.46	2.48	2.47						
InAs	5	13	4	15		2.42	2.47	2.45						
InAt	5	13	6	17		2.88	2.81	2.85				CG	2.92	
InAu	5	13	6	11		2.79	2.94	2.87						
INb	5	17	5	5		2.16	2.37	2.27						
InB	5	13	2	13		1.90	1.96	1.93						
InBa	5	13	6	2		3.04	3.51	3.27						
InBe	5	13	2	2		2.01	2.15	2.08						
InBi	5	13	6	15		2.79	2.81	2.80						
InBr	5	13	4	17	2.54	2.46	2.52	2.49	2.52			CG	2.57	
InC	5	13	2	14		1.86	1.94	1.90						
InCa	5	13	4	2		2.98	2.97	2.98						
InCd	5	13	5	12		2.95	2.90	2.93						
InCl	5	13	3	17	2.401	2.36	2.39	2.38	2.38			CG	2.320	
InCo	5	13	4	9		2.53	2.41	2.47						
InCr	5	13	4	6		2.36	2.35	2.36						
InCs	5	13	6	1		3.69	4.12	3.90						
InCu	5	13	4	11		2.69	2.56	2.62						
InF	5	13	2	17	1.99	1.96	1.93	1.95	1.95			CG	1.97	
InFe	5	13	4	8		2.44	2.36	2.40						
InGa	5	13	4	13		2.67	2.65	2.66						
InGe	5	13	4	14		2.56	2.59	2.58						
InHf	5	13	6	4		2.51	2.90	2.70						
InHg	5	13	6	12		2.87	3.02	2.94						
INi	5	17	4	10		2.30	2.40	2.35						
InI	5	13	5	17	2.75	2.68	2.72	2.70	2.74			CG	2.76	
InIn	5	13	5	13		2.92	2.92	2.92						
InIr	5	13	6	9		2.58	2.75	2.66						
InK	5	13	4	1		3.59	3.39	3.49						
InLa	5	13	6	3		2.70	3.14	2.92						
InLi	5	13	2	1		2.29	2.37	2.33						
InMg	5	13	3	2		2.65	2.76	2.71						
InMn	5	13	4	7		2.38	2.34	2.36						
InMo	5	13	5	6		2.51	2.58	2.55						
InN	5	13	2	15		1.82	1.89	1.85						
InNa	5	13	3	1		3.13	3.12	3.12						
InNb	5	13	5	5		2.54	2.65	2.60						
InNi	5	13	4	10		2.62	2.48	2.55						
InO	5	13	2	16		1.83	1.85	1.84						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
InOs	5	13	6	8		2.48	2.68	2.58						
InP	5	13	3	15		2.27	2.34	2.31						
InPb	5	13	6	14		2.86	2.97	2.91						
InPd	5	13	5	10		2.81	2.73	2.77						
InPo	5	13	6	16		2.76	2.68	2.72						
InPt	5	13	6	10		2.69	2.84	2.76						
InRb	5	13	5	1		3.97	3.88	3.93						
InRe	5	13	6	7		2.42	2.66	2.54						
InRh	5	13	5	9		2.71	2.64	2.67						
InRu	5	13	5	8		2.61	2.58	2.60						
InS	5	13	3	16		2.24	2.28	2.26						
InSb	5	13	5	15		2.67	2.69	2.68						
InSc	5	13	4	3		2.65	2.70	2.68						
InSe	5	13	4	16		2.35	2.39	2.37						
InSi	5	13	3	14		2.38	2.44	2.41						
InSn	5	13	5	14		2.81	2.85	2.83						
InSr	5	13	5	2		3.23	3.34	3.28						
InTa	5	13	6	5		2.42	2.76	2.59						
InTc	5	13	5	7		2.54	2.56	2.55						
InTe	5	13	5	16		2.58	2.58	2.58						
InTi	5	13	4	4		2.47	2.53	2.50						
InTl	5	13	6	13		2.89	3.04	2.97						
InV	5	13	4	5		2.38	2.41	2.40						
InW	5	13	6	6		2.39	2.68	2.54						
InY	5	13	5	3		2.84	3.00	2.92						
InZn	5	13	4	12		2.71	2.63	2.67						
InZr	5	13	5	4		2.64	2.79	2.71						
IO	5	17	2	16	1.87	1.93	1.85	1.89						
IOs	5	17	6	8		2.27	2.43	2.35						
IP	5	17	3	15		2.56	2.40	2.48				EG	2.28	
IPb	5	17	6	14		2.77	2.72	2.74						
IPd	5	17	5	10		2.40	2.49	2.45						
IPo	5	17	6	16		2.67	2.64	2.65						
IPt	5	17	6	10		2.46	2.57	2.52						
IrAg	6	9	5	11		2.77	2.49	2.63						
IrAl	6	9	3	13		2.38	2.15	2.27						
IrAs	6	9	4	15		2.29	2.20	2.25						
IrAt	6	9	6	17		2.54	2.25	2.40						
IrAu	6	9	6	11		2.71	2.72	2.71						
IRb	5	17	5	1	3.18	3.24	3.26	3.25	3.19			AG	3.18	
IrB	6	9	2	13		1.86	1.77	1.82						
IrBa	6	9	6	2		3.03	3.04	3.04						
IrBe	6	9	2	2		2.05	1.91	1.98						
IrBi	6	9	6	15		2.55	2.59	2.57						
IrBr	6	9	4	17		2.36	2.27	2.31						
IrC	6	9	2	14	1.68	1.80	1.76	1.78						
IrCa	6	9	4	2		2.88	2.45	2.67						
IrCd	6	9	5	12		2.80	2.56	2.68						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
IrCl	6	9	3	17		2.24	2.18	2.21						
IrCo	6	9	4	9		2.44	2.10	2.27						
IrCr	6	9	4	6		2.28	2.04	2.16						
IrCs	6	9	6	1		3.70	3.45	3.57						
IrCu	6	9	4	11		2.58	2.21	2.40						
IRe	5	17	6	7		2.22	2.40	2.31						
IrF	6	9	2	17		1.85	1.77	1.81						
IrFe	6	9	4	8		2.36	2.05	2.21						
IrGa	6	9	4	13		2.54	2.28	2.41						
IrGe	6	9	4	14		2.43	2.25	2.34						
IRh	5	17	5	9		2.30	2.41	2.35						
IrHf	6	9	6	4		2.49	2.60	2.55						
IrHg	6	9	6	12		2.76	2.80	2.78						
IrI	6	9	5	17		2.49	2.36	2.42						
IrIn	6	9	5	13		2.75	2.58	2.66						
IrIr	6	9	6	9		2.53	2.53	2.53						
IrK	6	9	4	1		3.47	2.70	3.09						
IrLa	6	9	6	3		2.68	2.77	2.73						
IrLi	6	9	2	1		2.35	2.08	2.22						
IrMg	6	9	3	2		2.63	2.31	2.47						
IrMn	6	9	4	7		2.30	2.04	2.17						
IrMo	6	9	5	6		2.43	2.27	2.35						
IrN	6	9	2	15		1.73	1.72	1.73						
IrNa	6	9	3	1		3.11	2.55	2.83						
IrNb	6	9	5	5		2.46	2.32	2.39						
IrNi	6	9	4	10		2.52	2.15	2.33						
IrO	6	9	2	16		1.72	1.71	1.72						
IrOs	6	9	6	8		2.45	2.47	2.46						
IrP	6	9	3	15		2.17	2.09	2.13						
IrPb	6	9	6	14		2.67	2.76	2.72						
IrPd	6	9	5	10		2.70	2.41	2.55						
IrPo	6	9	6	16		2.45	2.38	2.41						
IrPt	6	9	6	10		2.63	2.62	2.62						
IrRb	6	9	5	1		3.85	3.10	3.47						
IrRe	6	9	6	7		2.39	2.44	2.41						
IrRh	6	9	5	9		2.61	2.34	2.47						
IrRu	6	9	5	8		2.52	2.29	2.40						
IrS	6	9	3	16		2.12	2.09	2.10						
IrSb	6	9	5	15		2.47	2.44	2.46						
IrSc	6	9	4	3		2.57	2.27	2.42						
IrSe	6	9	4	16		2.23	2.20	2.21						
IrSi	6	9	3	14		2.28	2.13	2.21						
IrSn	6	9	5	14		2.62	2.54	2.58						
IrSr	6	9	5	2		3.13	2.77	2.95						
IrTa	6	9	6	5		2.39	2.50	2.44						
IrTc	6	9	5	7		2.46	2.26	2.36						
IrTe	6	9	5	16		2.37	2.37	2.37						
IrTi	6	9	4	4		2.39	2.16	2.27						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	<r_e>	r_e	Area	r_e	Area	r_e	<r_e>
IrTl	6	9	6	13		2.75	2.83	2.79						
IRu	5	17	5	8		2.21	2.35	2.28						
IrV	6	9	4	5		2.31	2.08	2.19						
IrW	6	9	6	6		2.36	2.45	2.40						
IrY	6	9	5	3		2.76	2.55	2.66						
IrZn	6	9	4	12		2.59	2.26	2.43						
IrZr	6	9	5	4		2.56	2.41	2.48						
IS	5	17	3	16		2.52	2.30	2.41						
ISb	5	17	5	15		2.76	2.55	2.65				EG	2.65	
ISc	5	17	4	3		2.22	2.53	2.38						
ISe	5	17	4	16		2.62	2.38	2.50						
ISi	5	17	3	14		2.56	2.50	2.53						
ISn	5	17	5	14		2.77	2.64	2.70						
ISr	5	17	5	2		2.70	2.87	2.79						
ITa	5	17	6	5		2.24	2.45	2.35						
ITc	5	17	5	7		2.15	2.32	2.24						
ITe	5	17	5	16		2.71	2.51	2.61						
ITi	5	17	4	4		2.09	2.38	2.23						
ITl	5	17	6	13	2.81	2.75	2.76	2.75						
IV	5	17	4	5		2.02	2.28	2.15						
IW	5	17	6	6		2.21	2.41	2.31						
IY	5	17	5	3		2.41	2.63	2.52						
IZn	5	17	4	12		2.53	2.56	2.55						
IZr	5	17	5	4		2.24	2.47	2.35						
K117	4	1	7	17								AG	3.31	
KAg	4	1	5	11		3.27	3.54	3.41						
KAl	4	1	3	13		2.90	2.90	2.90						
KAs	4	1	4	15		2.86	2.83	2.85						
KAt	4	1	6	17		3.28	2.79	3.03				AG	3.17	
KAu	4	1	6	11		2.99	3.77	3.38						
KB	4	1	2	13		2.17	2.34	2.25						
KBa	4	1	6	2		3.05	4.46	3.75						
KBe	4	1	2	2		2.37	2.66	2.52						
KBi	4	1	6	15		3.11	3.26	3.18						
KBr	4	1	4	17	2.82	2.78	2.79	2.79	2.73			AG	2.79	
KC	4	1	2	14		2.10	2.30	2.20						
KCa	4	1	4	2		3.24	3.47	3.36						
KCd	4	1	5	12		3.38	3.62	3.50						
KCl	4	1	3	17	2.67	2.60	2.73	2.67	2.59			AG	2.53	
KCo	4	1	4	9		2.86	2.88	2.87						
KCr	4	1	4	6		2.60	2.79	2.69						
KCs	4	1	6	1		3.68	5.41	4.54				AA	4.15	
KCu	4	1	4	11		3.13	3.06	3.10						
KF	4	1	2	17	2.17	2.11	2.16	2.14	2.10			AG	2.15	
KFe	4	1	4	8		2.73	2.82	2.78						
KFr	4	1	7	1								AA	4.29	
KGa	4	1	4	13		3.18	3.10	3.14						
KGe	4	1	4	14		3.05	2.99	3.02						

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
						r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
KHf	4	1	6	4		2.55	3.60	3.08						
KHg	4	1	6	12	4.9	3.10	3.87	3.49						
KI	4	1	5	17	3.05	3.12	2.89	3.00	2.94			AG	3.00	
KIn	4	1	5	13		3.39	3.59	3.49						
KIr	4	1	6	9		2.70	3.47	3.09						
KK	4	1	4	1	3.91	3.95	3.95	3.95	3.77			AA	3.78	
KLa	4	1	6	3		2.72	3.92	3.32						
KLi	4	1	2	1		2.75	2.96	2.86				AA	3.15	
KMg	4	1	3	2		2.99	3.25	3.12						
KMn	4	1	4	7		2.64	2.78	2.71						
KMo	4	1	5	6		2.67	3.17	2.92						
KN	4	1	2	15		2.01	2.23	2.12						
KNa	4	1	3	1	3.580	3.57	3.68	3.62				AA	3.52	
KNb	4	1	5	5		2.69	3.24	2.96						
KNi	4	1	4	10		3.00	2.97	2.99						
KO	4	1	2	16		1.98	2.20	2.09						
KOs	4	1	6	8		2.58	3.37	2.98						
KP	4	1	3	15		2.62	2.71	2.66						
KPb	4	1	6	14		3.14	3.62	3.38						
KPd	4	1	5	10		3.12	3.42	3.27						
KPo	4	1	6	16		3.14	2.94	3.04						
KPt	4	1	6	10		2.85	3.62	3.23						
KRb	4	1	5	1		4.16	4.82	4.49				AA	3.98	
KRe	4	1	6	7		2.50	3.32	2.91						
KRh	4	1	5	9		2.96	3.29	3.13						
KRu	4	1	5	8		2.82	3.20	3.01						
KS	4	1	3	16		2.52	2.68	2.60						
KSb	4	1	5	15		3.15	3.15	3.15						
KSc	4	1	4	3		2.88	3.16	3.02						
KSe	4	1	4	16		2.73	2.75	2.74						
KSi	4	1	3	14		2.78	2.82	2.80						
KSn	4	1	5	14		3.30	3.42	3.36						
KSr	4	1	5	2		3.38	4.09	3.74						
KTa	4	1	6	5		2.47	3.42	2.94						
KTc	4	1	5	7		2.72	3.16	2.94						
KTe	4	1	5	16		3.05	2.94	2.99						
KTi	4	1	4	4		2.69	2.96	2.83						
KTl	4	1	6	13		3.15	3.84	3.50						
KV	4	1	4	5		2.61	2.85	2.73						
KW	4	1	6	6		2.46	3.33	2.89						
KY	4	1	5	3		2.98	3.66	3.32						
KZn	4	1	4	12		3.20	3.12	3.16						
KZr	4	1	5	4		2.78	3.40	3.09						
LaAg	6	3	5	11		3.12	2.60	2.86						
LaAl	6	3	3	13		2.70	2.20	2.45						
LaAs	6	3	4	15		2.61	2.29	2.45						
LaAt	6	3	6	17		2.76	2.37	2.56						
LaAu	6	3	6	11		3.02	2.89	2.96						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
LaB	6	3	2	13		2.07	1.85	1.96						
LaBa	6	3	6	2		3.34	3.21	3.27						
LaBe	6	3	2	2		2.27	2.02	2.14						
LaBi	6	3	6	15		2.90	2.75	2.82						
LaBr	6	3	4	17		2.55	2.43	2.49						
LaC	6	3	2	14		2.00	1.84	1.92						
LaCa	6	3	4	2		3.19	2.48	2.83						
LaCd	6	3	5	12		3.17	2.67	2.92						
LaCl	6	3	3	17		2.42	2.32	2.37						
LaCo	6	3	4	9		2.69	2.15	2.42						
LaCr	6	3	4	6		2.49	2.09	2.29						
LaCs	6	3	6	1		4.17	3.65	3.91						
LaCu	6	3	4	11		2.89	2.27	2.58						
LaF	6	3	2	17		1.97	1.85	1.91						
LaFe	6	3	4	8		2.59	2.10	2.35						
LaGa	6	3	4	13		2.89	2.33	2.61						
LaGe	6	3	4	14		2.77	2.32	2.54						
LaHf	6	3	6	4		2.70	2.74	2.72						
LaHg	6	3	6	12		3.11	2.98	3.04						
LaI	6	3	5	17		2.71	2.52	2.61						
LaIn	6	3	5	13		3.14	2.70	2.92						
LaIr	6	3	6	9		2.77	2.68	2.73						
LaK	6	3	4	1		3.92	2.72	3.32						
LaLa	6	3	6	3		2.92	2.92	2.92						
LaLi	6	3	2	1		2.62	2.21	2.41						
LaMg	6	3	3	2		2.90	2.35	2.63						
LaMn	6	3	4	7		2.52	2.08	2.30						
LaMo	6	3	5	6		2.65	2.35	2.50						
LaN	6	3	2	15		1.91	1.82	1.87						
LaNa	6	3	3	1		3.48	2.58	3.03						
LaNb	6	3	5	5		2.68	2.40	2.54						
LaNi	6	3	4	10		2.80	2.20	2.50						
LaO	6	3	2	16	1.83	1.88	1.82	1.85	1.84					
LaOs	6	3	6	8		2.67	2.61	2.64						
LaP	6	3	3	15		2.45	2.17	2.31						
LaPb	6	3	6	14		3.05	2.93	2.99						
LaPd	6	3	5	10		3.01	2.51	2.76						
LaPo	6	3	6	16		2.74	2.53	2.63						
LaPt	6	3	6	10		2.90	2.78	2.84						
LaRb	6	3	5	1		4.38	3.19	3.79						
LaRe	6	3	6	7		2.59	2.57	2.58						
LaRh	6	3	5	9		2.88	2.44	2.66						
LaRu	6	3	5	8		2.77	2.38	2.57						
LaS	6	3	3	16		2.36	2.22	2.29	2.39					
LaSb	6	3	5	15		2.81	2.58	2.70						
LaSc	6	3	4	3		2.81	2.31	2.56						
LaSe	6	3	4	16		2.49	2.33	2.41						
LaSi	6	3	3	14		2.59	2.18	2.39						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
LaSn	6	3	5	14		3.00	2.66	2.83						
LaSr	6	3	5	2		3.48	2.85	3.17						
LaTa	6	3	6	5		2.59	2.63	2.61						
LaTc	6	3	5	7		2.69	2.35	2.52						
LaTe	6	3	5	16		2.65	2.53	2.59						
LaTi	6	3	4	4		2.61	2.19	2.40						
LaTl	6	3	6	13		3.12	3.01	3.07						
LaV	6	3	4	5		2.51	2.12	2.32						
LaW	6	3	6	6		2.56	2.58	2.57						
LaY	6	3	5	3		3.03	2.63	2.83						
LaZn	6	3	4	12		2.93	2.32	2.62						
LaZr	6	3	5	4		2.80	2.49	2.64						
Li117	2	1	7	17								AG	2.75	
LiAg	2	1	5	11		2.34	2.31	2.33						
LiAl	2	1	3	13		2.13	2.06	2.10		23	2.35			
LiAs	2	1	4	15		2.07	1.89	1.98						
LiAt	2	1	6	17		2.38	2.25	2.32				AG	2.61	
LiAu	2	1	6	11		2.22	2.46	2.34						
LiB	2	1	2	13		1.72	1.79	1.75		22	2.04			
LiBa	2	1	6	2		2.45	2.86	2.66						
LiBe	2	1	2	2		2.27	2.37	2.32		22	2.33			
LiBi	2	1	6	15		2.22	2.28	2.25						
LiBr	2	1	4	17	2.17	2.09	2.03	2.06	2.19			AG	2.23	
LiC	2	1	2	14		1.63	1.72	1.68		22	1.82			
LiCa	2	1	4	2		2.52	2.49	2.51						
LiCd	2	1	5	12		2.38	2.33	2.35						
LiCl	2	1	3	17	2.021	1.92	1.96	1.94	2.01	23	1.99	AG	1.96	1.98
LiCo	2	1	4	9		2.15	2.08	2.11						
LiCr	2	1	4	6		2.03	2.07	2.05						
LiCs	2	1	6	1		2.87	3.22	3.05				AA	3.52	
LiCu	2	1	4	11		2.27	2.14	2.20						
LiF	2	1	2	17	1.56	1.55	1.61	1.58	1.57	22	1.54	AG	1.59	1.57
LiFe	2	1	4	8		2.09	2.06	2.07						
LiFr	2	1	7	1								AA	3.66	
LiGa	2	1	4	13		2.27	2.10	2.18						
LiGe	2	1	4	14		2.19	2.01	2.10						
LiHf	2	1	6	4		2.07	2.46	2.27						
LiHg	2	1	6	12	3	2.27	2.50	2.38						
LiI	2	1	5	17	2.39	2.33	2.19	2.26	2.42			AG	2.44	
LiIn	2	1	5	13		2.37	2.29	2.33						
LiIr	2	1	6	9		2.08	2.35	2.22						
LiK	2	1	4	1		2.96	2.75	2.86				AA	3.15	
LiLa	2	1	6	3		2.21	2.62	2.41						
LiLi	2	1	2	1	2.67	2.65	2.65	2.65	2.03	22	2.68	AA	2.53	2.60
LiMg	2	1	3	2		2.46	2.53	2.49		23	2.56			
LiMn	2	1	4	7		2.05	2.05	2.05						
LiMo	2	1	5	6		2.07	2.21	2.14						
LiN	2	1	2	15		1.54	1.63	1.59		22	1.67			

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks: Southern, In order r_e	Southern, Reversed r_e	Southern $\langle r_e \rangle$	Memphis r_e	Predictions by method of least squares: Area	r_e	Area	r_e	$\langle r_e \rangle$
LiNa	2	1	3	1	2.81	2.88	2.81	2.84		23	2.81	AA	2.89	2.85
LiNb	2	1	5	5		2.10	2.25	2.18						
LiNi	2	1	4	10		2.21	2.11	2.16						
LiO	2	1	2	16		1.48	1.60	1.54		22	1.57			
LiOs	2	1	6	8		2.02	2.31	2.17						
LiP	2	1	3	15		1.92	1.87	1.89		23	2.07			
LiPb	2	1	6	14		2.25	2.40	2.33						
LiPd	2	1	5	10		2.27	2.28	2.27						
LiPo	2	1	6	16		2.24	2.21	2.23						
LiPt	2	1	6	10		2.15	2.40	2.28						
LiRb	2	1	5	1		3.06	2.98	3.02				AA	3.36	
LiRe	2	1	6	7		1.98	2.29	2.14						
LiRh	2	1	5	9		2.20	2.23	2.21						
LiRu	2	1	5	8		2.13	2.20	2.17						
LiS	2	1	3	16		1.84	1.83	1.84		23	2.01			
LiSb	2	1	5	15		2.24	2.07	2.15						
LiSc	2	1	4	3		2.27	2.31	2.29						
LiSe	2	1	4	16		2.00	1.87	1.94						
LiSi	2	1	3	14		2.04	1.97	2.01		23	2.19			
LiSn	2	1	5	14		2.32	2.19	2.25						
LiSr	2	1	5	2		2.59	2.68	2.64						
LiTa	2	1	6	5		2.00	2.36	2.18						
LiTc	2	1	5	7		2.09	2.19	2.14						
LiTe	2	1	5	16		2.21	2.03	2.12						
LiTi	2	1	4	4		2.13	2.19	2.16						
LiTl	2	1	6	13		2.28	2.48	2.38						
LiV	2	1	4	5		2.06	2.11	2.08						
LiW	2	1	6	6		1.97	2.31	2.14						
LiY	2	1	5	3		2.33	2.48	2.40						
LiZn	2	1	4	12		2.29	2.14	2.22						
LiZr	2	1	5	4		2.18	2.34	2.26						
MgAg	3	2	5	11		2.70	2.66	2.68						
MgAl	3	2	3	13		2.45	2.30	2.38		33	2.51			
MgAs	3	2	4	15		2.39	2.16	2.27						
MgAt	3	2	6	17		2.76	2.37	2.56						
MgAu	3	2	6	11	2.45	2.51	2.79	2.65						
MgB	3	2	2	13		1.91	1.93	1.92		23	2.077			
MgBa	3	2	6	2		2.60	3.18	2.89						
MgBe	3	2	2	2		2.19	2.24	2.22						
MgBi	3	2	6	15		2.53	2.51	2.52						
MgBr	3	2	4	17		2.41	2.17	2.29						
MgC	3	2	2	14		1.83	1.88	1.86		23	1.92			
MgCa	3	2	4	2		2.76	2.70	2.73						
MgCd	3	2	5	12		2.76	2.69	2.73						
MgCl	3	2	3	17	2.20	2.23	2.12	2.18		33	2.19			
MgCo	3	2	4	9		2.44	2.31	2.38						
MgCr	3	2	4	6		2.25	2.26	2.26						
MgCs	3	2	6	1		3.05	3.61	3.33						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
MgCu	3	2	4	11		2.62	2.41	2.52						
MgF	3	2	2	17	1.75	1.82	1.76	1.79	1.75	23	1.77			
MgFe	3	2	4	8		2.35	2.27	2.31						
MgGa	3	2	4	13		2.63	2.40	2.52						
MgGe	3	2	4	14		2.53	2.30	2.41						
MgHf	3	2	6	4		2.22	2.72	2.47						
MgHg	3	2	6	12		2.58	2.84	2.71						
MgI	3	2	5	17		2.68	2.32	2.50						
MgIn	3	2	5	13		2.76	2.65	2.71						
MgIr	3	2	6	9		2.31	2.63	2.47						
MgK	3	2	4	1		3.25	2.99	3.12						
MgLa	3	2	6	3		2.35	2.90	2.63						
MgLi	3	2	2	1		2.53	2.46	2.49		23	2.56			
MgMg	3	2	3	2		2.61	2.61	2.61	3.93					
MgMn	3	2	4	7		2.29	2.25	2.27						
MgMo	3	2	5	6		2.30	2.47	2.39						
MgN	3	2	2	15		1.75	1.80	1.77		23	1.82			
MgNa	3	2	3	1		3.05	2.88	2.97		33	2.89			
MgNb	3	2	5	5		2.31	2.52	2.42						
MgNi	3	2	4	10		2.54	2.36	2.45						
MgO	3	2	2	16	1.75	1.71	1.76	1.73	1.68	23	1.77			
MgOs	3	2	6	8		2.23	2.57	2.40						
MgP	3	2	3	15		2.21	2.10	2.16		33	2.28			
MgPb	3	2	6	14		2.57	2.69	2.63						
MgPd	3	2	5	10		2.61	2.60	2.60						
MgPo	3	2	6	16		2.57	2.37	2.47						
MgPt	3	2	6	10		2.41	2.71	2.56						
MgRb	3	2	5	1		3.36	3.37	3.37						
MgRe	3	2	6	7		2.17	2.55	2.36						
MgRh	3	2	5	9		2.50	2.54	2.52						
MgRu	3	2	5	8		2.40	2.49	2.44						
MgS	3	2	3	16	2.14	2.12	2.04	2.08		33	2.22			
MgSb	3	2	5	15		2.58	2.34	2.46						
MgSc	3	2	4	3		2.48	2.51	2.50						
MgSe	3	2	4	16		2.30	2.08	2.19						
MgSi	3	2	3	14		2.35	2.22	2.28		33	2.38			
MgSn	3	2	5	14		2.68	2.52	2.60						
MgSr	3	2	5	2		2.83	3.01	2.92						
MgTa	3	2	6	5		2.15	2.61	2.38						
MgTc	3	2	5	7		2.33	2.46	2.40						
MgTe	3	2	5	16		2.53	2.23	2.38						
MgTi	3	2	4	4		2.34	2.38	2.36						
MgTl	3	2	6	13		2.60	2.81	2.71						
MgV	3	2	4	5		2.27	2.30	2.28						
MgW	3	2	6	6		2.14	2.56	2.35						
MgY	3	2	5	3		2.54	2.77	2.66						
MgZn	3	2	4	12		2.66	2.43	2.55						
MgZr	3	2	5	4		2.39	2.62	2.50						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
MnAg	4	7	5	11		2.32	2.36	2.34						
MnAl	4	7	3	13		2.08	2.08	2.08						
MnAs	4	7	4	15		2.01	2.01	2.01						
MnAt	4	7	6	17		2.31	2.03	2.17						
MnAu	4	7	6	11		2.18	2.43	2.31						
MnB	4	7	2	13		1.64	1.71	1.68						
MnBa	4	7	6	2		2.28	2.74	2.51						
MnBe	4	7	2	2		1.82	1.88	1.85						
MnBi	4	7	6	15		2.15	2.22	2.19						
MnBr	4	7	4	17		2.04	1.95	2.00						
MnC	4	7	2	14		1.59	1.68	1.63						
MnCa	4	7	4	2		2.40	2.40	2.40						
MnCd	4	7	5	12		2.36	2.40	2.38						
MnCl	4	7	3	17		1.93	1.89	1.91						
MnCo	4	7	4	9		2.12	2.06	2.09						
MnCr	4	7	4	6		1.99	2.02	2.00						
MnCs	4	7	6	1		2.63	3.06	2.85						
MnCu	4	7	4	11		2.25	2.16	2.20						
MnF	4	7	2	17		1.63	1.55	1.59						
MnFe	4	7	4	8		2.06	2.03	2.04						
MnGa	4	7	4	13		2.23	2.18	2.20						
MnGe	4	7	4	14		2.13	2.11	2.12						
MnHf	4	7	6	4		1.97	2.38	2.17						
MnHg	4	7	6	12		2.22	2.48	2.35						
MnI	4	7	5	17		2.23	2.04	2.14						
MnIn	4	7	5	13		2.34	2.38	2.36						
MnIr	4	7	6	9		2.04	2.30	2.17						
MnK	4	7	4	1		2.78	2.64	2.71						
MnLa	4	7	6	3		2.08	2.52	2.30						
MnLi	4	7	2	1		2.05	2.05	2.05						
MnMg	4	7	3	2		2.25	2.29	2.27						
MnMn	4	7	4	7		2.01	2.01	2.01						
MnMo	4	7	5	6		2.04	2.19	2.11						
MnN	4	7	2	15		1.52	1.62	1.57						
MnNa	4	7	3	1		2.59	2.51	2.55						
MnNb	4	7	5	5		2.05	2.23	2.14						
MnNi	4	7	4	10		2.19	2.11	2.15						
MnO	4	7	2	16		1.50	1.58	1.54						
MnOs	4	7	6	8		1.97	2.26	2.11						
MnP	4	7	3	15		1.88	1.94	1.91						
MnPb	4	7	6	14		2.19	2.38	2.29						
MnPd	4	7	5	10		2.26	2.30	2.28						
MnPo	4	7	6	16		2.17	2.08	2.12						
MnPt	4	7	6	10		2.11	2.37	2.24						
MnRb	4	7	5	1		2.88	2.94	2.91						
MnRe	4	7	6	7		1.92	2.23	2.08						
MnRh	4	7	5	9		2.18	2.25	2.22						
MnRu	4	7	5	8		2.11	2.20	2.16						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
MnS	4	7	3	16		1.82	1.88	1.85						
MnSb	4	7	5	15		2.17	2.15	2.16						
MnSc	4	7	4	3		2.18	2.24	2.21						
MnSe	4	7	4	16		1.94	1.93	1.93						
MnSi	4	7	3	14		1.99	2.03	2.01						
MnSn	4	7	5	14		2.26	2.30	2.28						
MnSr	4	7	5	2		2.47	2.65	2.56						
MnTa	4	7	6	5		1.91	2.29	2.10						
MnTc	4	7	5	7		2.06	2.18	2.12						
MnTe	4	7	5	16		2.12	2.04	2.08						
MnTi	4	7	4	4		2.06	2.13	2.09						
MnTl	4	7	6	13		2.23	2.47	2.35						
MnV	4	7	4	5		2.00	2.06	2.03						
MnW	4	7	6	6		1.90	2.24	2.07						
MnY	4	7	5	3		2.24	2.45	2.35						
MnZn	4	7	4	12		2.26	2.19	2.23						
MnZr	4	7	5	4		2.11	2.32	2.21						
MoAg	5	6	5	11		2.58	2.46	2.52						
MoAl	5	6	3	13		2.25	2.13	2.19						
MoAs	5	6	4	15		2.17	2.13	2.15						
MoAt	5	6	6	17		2.42	2.04	2.23						
MoAu	5	6	6	11		2.43	2.59	2.51						
MoB	5	6	2	13		1.76	1.76	1.76						
MoBa	5	6	6	2		2.62	2.89	2.75						
MoBe	5	6	2	2		1.94	1.90	1.92						
MoBi	5	6	6	15		2.38	2.37	2.38						
MoBr	5	6	4	17		2.15	2.09	2.12						
MoC	5	6	2	14		1.70	1.73	1.72						
MoCa	5	6	4	2		2.68	2.43	2.56						
MoCd	5	6	5	12		2.61	2.51	2.56						
MoCl	5	6	3	17		2.05	2.03	2.04						
MoCo	5	6	4	9		2.32	2.10	2.21						
MoCr	5	6	4	6		2.17	2.04	2.11						
MoCs	5	6	6	1		3.08	3.26	3.17						
MoCu	5	6	4	11		2.45	2.21	2.33						
MoF	5	6	2	17		1.73	1.65	1.69						
MoFe	5	6	4	8		2.25	2.06	2.15						
MoGa	5	6	4	13		2.42	2.25	2.34						
MoGe	5	6	4	14		2.31	2.21	2.26						
MoHf	5	6	6	4		2.21	2.50	2.35						
MoHg	5	6	6	12		2.49	2.65	2.57						
MoI	5	6	5	17		2.33	2.13	2.23						
MoIn	5	6	5	13		2.58	2.51	2.55						
MoIr	5	6	6	9		2.27	2.43	2.35						
MoK	5	6	4	1		3.17	2.67	2.92						
MoLa	5	6	6	3		2.35	2.65	2.50						
MoLi	5	6	2	1		2.21	2.07	2.14						
MoMg	5	6	3	2		2.47	2.30	2.39						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	<r_e>	r_e	Area	r_e	Area	r_e	<r_e>
MoMn	5	6	4	7		2.19	2.04	2.11						
MoMo	5	6	5	6		2.25	2.25	2.25						
MoN	5	6	2	15		1.63	1.69	1.66						
MoNa	5	6	3	1		2.88	2.52	2.70						
MoNb	5	6	5	5		2.27	2.30	2.28						
MoNi	5	6	4	10		2.39	2.15	2.27						
MoO	5	6	2	16		1.61	1.67	1.64						
MoOs	5	6	6	8		2.19	2.38	2.29						
MoP	5	6	3	15		2.03	2.03	2.03						
MoPb	5	6	6	14		2.45	2.56	2.50						
MoPd	5	6	5	10		2.51	2.39	2.45						
MoPo	5	6	6	16		2.34	2.17	2.26						
MoPt	5	6	6	10		2.36	2.51	2.43						
MoRb	5	6	5	1		3.35	3.03	3.19						
MoRe	5	6	6	7		2.14	2.35	2.25						
MoRh	5	6	5	9		2.42	2.32	2.37						
MoRu	5	6	5	8		2.34	2.27	2.30						
MoS	5	6	3	16		1.96	2.02	1.99						
MoSb	5	6	5	15		2.35	2.32	2.34						
MoSc	5	6	4	3		2.41	2.26	2.34						
MoSe	5	6	4	16		2.08	2.09	2.08						
MoSi	5	6	3	14		2.15	2.09	2.12						
MoSn	5	6	5	14		2.48	2.44	2.46						
MoSr	5	6	5	2		2.81	2.73	2.77						
MoTa	5	6	6	5		2.14	2.40	2.27						
MoTc	5	6	5	7		2.28	2.25	2.26						
MoTe	5	6	5	16		2.25	2.21	2.23						
MoTi	5	6	4	4		2.26	2.15	2.20						
MoTl	5	6	6	13		2.49	2.65	2.57						
MoV	5	6	4	5		2.19	2.08	2.13						
MoW	5	6	6	6		2.12	2.36	2.24						
MoY	5	6	5	3		2.51	2.52	2.52						
MoZn	5	6	4	12		2.47	2.25	2.36						
MoZr	5	6	5	4		2.35	2.38	2.37						
Na117	3	1	7	17								AG	3.08	
NaAg	3	1	5	11		3.03	3.14	3.09						
NaAl	3	1	3	13		2.74	2.65	2.69		33	2.71			
NaAs	3	1	4	15		2.68	2.47	2.57						
NaAt	3	1	6	17		3.12	2.75	2.94				AG	2.93	
NaAu	3	1	6	11		2.79	3.33	3.06						
NaB	3	1	2	13		2.09	2.19	2.14		23	2.30			
NaBa	3	1	6	2		2.88	3.89	3.39						
NaBe	3	1	2	2		2.41	2.58	2.50		23	2.53			
NaBi	3	1	6	15		2.85	2.93	2.89						
NaBr	3	1	4	17	2.50	2.68	2.50	2.59	2.58			AG	2.56	
NaC	3	1	2	14		2.01	2.13	2.07		23	2.13			
NaCa	3	1	4	2		3.06	3.17	3.12						
NaCd	3	1	5	12		3.11	3.18	3.15						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
NaCl	3	1	3	17	2.36	2.48	2.44	2.46	2.45	33	2.35	AG	2.29	2.32
NaCo	3	1	4	9		2.70	2.66	2.68						
NaCr	3	1	4	6		2.47	2.59	2.53						
NaCs	3	1	6	1		3.43	4.57	4.00				AA	3.89	
NaCu	3	1	4	11		2.93	2.79	2.86						
NaF	3	1	2	17	1.93	1.99	2.00	2.00	1.97	23	1.94	AG	1.92	1.93
NaFe	3	1	4	8		2.59	2.61	2.60						
NaFr	3	1	7	1								AA	4.03	
NAg	2	15	5	11		1.86	1.75	1.81						
NaGa	3	1	4	13		2.96	2.78	2.87						
NaGe	3	1	4	14		2.84	2.65	2.75						
NaHf	3	1	6	4		2.42	3.23	2.83						
NaHg	3	1	6	12	4.7	2.88	3.39	3.14						
NaI	3	1	5	17	2.71	3.02	2.69	2.85	2.77			AG	2.76	
NaIn	3	1	5	13		3.12	3.13	3.12						
NaIr	3	1	6	9		2.55	3.11	2.83						
NaK	3	1	4	1	3.580	3.68	3.57	3.62				AA	3.52	
NAl	2	15	3	13	1.79	1.62	1.60	1.61		23	1.67			
NaLa	3	1	6	3		2.58	3.48	3.03						
NaLi	3	1	2	1	2.81	2.81	2.88	2.84		23	2.81	AA	2.89	2.85
NaMg	3	1	3	2		2.88	3.05	2.97		33	2.89			
NaMn	3	1	4	7		2.51	2.59	2.55						
NaMo	3	1	5	6		2.52	2.88	2.70						
NaN	3	1	2	15		1.91	2.04	1.97		23	2.01			
NaNa	3	1	3	1	3.08	3.42	3.42	3.42	3.46	33	3.11	AA	3.26	3.19
NaNb	3	1	5	5		2.54	2.94	2.74						
NaNi	3	1	4	10		2.82	2.73	2.77						
NaO	3	1	2	16		1.87	1.99	1.93		23	1.95			
NaOs	3	1	6	8		2.44	3.03	2.74						
NaP	3	1	3	15		2.46	2.40	2.43		33	2.46			
NaPb	3	1	6	14		2.89	3.19	3.04						
NaPd	3	1	5	10		2.90	3.06	2.98						
NaPo	3	1	6	16		2.91	2.75	2.83						
NaPt	3	1	6	10		2.67	3.22	2.94						
NaRb	3	1	5	1		3.83	4.16	3.99				AA	3.72	
NaRe	3	1	6	7		2.37	2.99	2.68						
NaRh	3	1	5	9		2.77	2.97	2.87						
NaRu	3	1	5	8		2.65	2.90	2.78						
NaS	3	1	3	16		2.36	2.34	2.35		33	2.38			
NAs	2	15	4	15	1.62	1.64	1.63	1.64				EE	1.68	
NaSb	3	1	5	15		2.91	2.71	2.81						
NaSc	3	1	4	3		2.74	2.92	2.83						
NaSe	3	1	4	16		2.57	2.37	2.47						
NaSi	3	1	3	14		2.62	2.54	2.58		33	2.56			
NaSn	3	1	5	14		3.03	2.95	2.99						
NaSr	3	1	5	2		3.16	3.62	3.39						
NAt	2	15	6	17		2.05	2.12	2.08						
NaTa	3	1	6	5		2.35	3.08	2.71						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
NaTc	3	1	5	7		2.56	2.87	2.72						
NaTe	3	1	5	16		2.86	2.57	2.72						
NaTi	3	1	4	4		2.56	2.75	2.65						
NaTl	3	1	6	13		2.91	3.36	3.14						
NAu	2	15	6	11		1.82	1.83	1.83						
NaV	3	1	4	5		2.48	2.65	2.56						
NaW	3	1	6	6		2.33	3.01	2.67						
NaY	3	1	5	3		2.81	3.28	3.05						
NaZn	3	1	4	12		2.99	2.82	2.90						
NaZr	3	1	5	4		2.62	3.07	2.85						
NB	2	15	2	13	1.28	1.31	1.29	1.30		22	1.27			
NBa	2	15	6	2		1.99	2.07	2.03						
NbAg	5	5	5	11		2.64	2.48	2.56						
NbAl	5	5	3	13		2.31	2.14	2.22						
NbAs	5	5	4	15		2.23	2.15	2.19						
NbAt	5	5	6	17		2.47	2.05	2.26						
NbAu	5	5	6	11		2.49	2.63	2.56						
NbB	5	5	2	13		1.80	1.77	1.78						
NbBa	5	5	6	2		2.67	2.93	2.80						
NbBe	5	5	2	2		1.98	1.93	1.95						
NbBi	5	5	6	15		2.45	2.40	2.43						
NbBr	5	5	4	17		2.19	2.12	2.16						
NbC	5	5	2	14		1.74	1.75	1.74						
NbCa	5	5	4	2		2.73	2.44	2.59						
NbCd	5	5	5	12		2.68	2.54	2.61						
NbCl	5	5	3	17		2.09	2.06	2.08						
NbCo	5	5	4	9		2.37	2.11	2.24						
NbCr	5	5	4	6		2.21	2.06	2.13						
NbCs	5	5	6	1		3.15	3.30	3.23						
NbCu	5	5	4	11		2.51	2.22	2.37						
NBe	2	15	2	2		1.46	1.42	1.44		22	1.44			
NbF	5	5	2	17		1.75	1.67	1.71						
NbFe	5	5	4	8		2.29	2.07	2.18						
NbGa	5	5	4	13		2.48	2.27	2.38						
NbGe	5	5	4	14		2.37	2.22	2.30						
NbHf	5	5	6	4		2.25	2.53	2.39						
NbHg	5	5	6	12		2.55	2.69	2.62						
NbI	5	5	5	17		2.37	2.16	2.27						
NBi	2	15	6	15		1.86	1.90	1.88				EE	1.96	
NbIn	5	5	5	13		2.65	2.54	2.60						
NbIr	5	5	6	9		2.32	2.46	2.39						
NbK	5	5	4	1		3.24	2.69	2.96						
NbLa	5	5	6	3		2.40	2.68	2.54						
NbLi	5	5	2	1		2.25	2.10	2.18						
NbMg	5	5	3	2		2.52	2.31	2.42						
NbMn	5	5	4	7		2.23	2.05	2.14						
NbMo	5	5	5	6		2.30	2.27	2.28						
NbN	5	5	2	15		1.67	1.71	1.69						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
NbNa	5	5	3	1		2.94	2.54	2.74						
NbNb	5	5	5	5		2.31	2.31	2.31						
NbNi	5	5	4	10		2.45	2.17	2.31						
NbO	5	5	2	16	1.69	1.65	1.69	1.67	1.76					
NbOs	5	5	6	8		2.24	2.40	2.32						
NbP	5	5	3	15		2.08	2.05	2.07						
NbPb	5	5	6	14		2.51	2.59	2.55						
NbPd	5	5	5	10		2.56	2.41	2.49						
NbPo	5	5	6	16		2.40	2.19	2.30						
NbPt	5	5	6	10		2.41	2.54	2.47						
NBr	2	15	4	17	1.78	1.72	1.77	1.75	1.81					
NbRb	5	5	5	1		3.43	3.06	3.25						
NbRe	5	5	6	7		2.18	2.38	2.28						
NbRh	5	5	5	9		2.47	2.34	2.41						
NbRu	5	5	5	8		2.38	2.29	2.34						
NbS	5	5	3	16		2.01	2.04	2.03						
NbSb	5	5	5	15		2.42	2.35	2.38						
NbSc	5	5	4	3		2.46	2.28	2.37						
NbSe	5	5	4	16		2.13	2.12	2.12						
NbSi	5	5	3	14		2.21	2.11	2.16						
NbSn	5	5	5	14		2.56	2.47	2.51						
NbSr	5	5	5	2		2.87	2.75	2.81						
NbTa	5	5	6	5		2.17	2.43	2.30						
NbTc	5	5	5	7		2.32	2.27	2.29						
NbTe	5	5	5	16		2.31	2.24	2.27						
NbTi	5	5	4	4		2.30	2.16	2.23						
NbTl	5	5	6	13		2.56	2.69	2.62						
NbV	5	5	4	5		2.23	2.09	2.16						
NbW	5	5	6	6		2.16	2.38	2.27						
NbY	5	5	5	3		2.56	2.54	2.55						
NbZn	5	5	4	12		2.53	2.26	2.40						
NbZr	5	5	5	4		2.39	2.40	2.40						
NC	2	15	2	14	1.17	1.27	1.27	1.27	1.19	22	1.17			
NCa	2	15	4	2		1.95	1.83	1.89						
NCd	2	15	5	12		1.89	1.79	1.84						
NCl	2	15	3	17		1.58	1.62	1.60						
NCo	2	15	4	9		1.68	1.56	1.62						
NCr	2	15	4	6		1.61	1.53	1.57						
NCs	2	15	6	1		2.28	2.29	2.28						
NCu	2	15	4	11		1.76	1.64	1.70						
NF	2	15	2	17	1.32	1.24	1.28	1.26	1.28					
NFe	2	15	4	8		1.65	1.53	1.59						
NGa	2	15	4	13		1.75	1.69	1.72						
NGe	2	15	4	14		1.70	1.68	1.69						
NHf	2	15	6	4		1.71	1.81	1.76						
NHg	2	15	6	12		1.86	1.88	1.87						
NI	2	15	5	17		1.92	1.97	1.95						
NiAg	4	10	5	11		2.46	2.58	2.52						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
NiAl	4	10	3	13		2.18	2.27	2.23						
NiAs	4	10	4	15		2.12	2.19	2.15						
NiAt	4	10	6	17		2.51	2.34	2.42						
NiAu	4	10	6	11		2.31	2.67	2.49						
NiB	4	10	2	13		1.71	1.83	1.77						
NiBa	4	10	6	2		2.43	3.08	2.75						
NiBe	4	10	2	2		1.87	2.02	1.94						
NiBi	4	10	6	15		2.30	2.47	2.38						
NiBr	4	10	4	17		2.18	2.16	2.17						
NiC	4	10	2	14		1.66	1.79	1.73						
NiCa	4	10	4	2		2.55	2.69	2.62						
NiCd	4	10	5	12		2.50	2.63	2.56						
NiCl	4	10	3	17		2.05	2.07	2.06						
NiCo	4	10	4	9		2.23	2.25	2.24						
NiCr	4	10	4	6		2.09	2.20	2.15						
NiCs	4	10	6	1		2.82	3.50	3.16						
NiCu	4	10	4	11		2.36	2.37	2.36						
NiF	4	10	2	17		1.72	1.68	1.70						
NiFe	4	10	4	8		2.16	2.21	2.19						
NiGa	4	10	4	13		2.35	2.39	2.37						
NiGe	4	10	4	14		2.24	2.32	2.28						
NiHf	4	10	6	4		2.08	2.62	2.35						
NiHg	4	10	6	12		2.36	2.72	2.54						
NiI	4	10	5	17		2.40	2.30	2.35						
NiIn	4	10	5	13		2.48	2.62	2.55						
NiIr	4	10	6	9		2.15	2.52	2.33						
NiK	4	10	4	1		2.97	3.00	2.99						
NiLa	4	10	6	3		2.20	2.80	2.50						
NiLi	4	10	2	1		2.11	2.21	2.16						
NiMg	4	10	3	2		2.36	2.54	2.45						
NiMn	4	10	4	7		2.11	2.19	2.15						
NiMo	4	10	5	6		2.15	2.39	2.27						
NiN	4	10	2	15		1.60	1.72	1.66						
NIn	2	15	5	13		1.89	1.82	1.85						
NiNa	4	10	3	1		2.73	2.82	2.77						
NiNb	4	10	5	5		2.17	2.45	2.31						
NiNi	4	10	4	10		2.31	2.31	2.31						
NiO	4	10	2	16		1.59	1.67	1.63						
NiOs	4	10	6	8		2.08	2.46	2.27						
NiP	4	10	3	15		1.97	2.10	2.04						
NiPb	4	10	6	14		2.33	2.63	2.48						
NiPd	4	10	5	10		2.39	2.51	2.45						
NiPo	4	10	6	16		2.33	2.33	2.33						
NiPt	4	10	6	10		2.23	2.59	2.41						
NIr	2	15	6	9		1.72	1.73	1.73						
NiRb	4	10	5	1		3.10	3.36	3.23						
NiRe	4	10	6	7		2.03	2.44	2.23						
NiRh	4	10	5	9		2.31	2.45	2.38						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
NiRu	4	10	5	8		2.23	2.40	2.32						
NiS	4	10	3	16		1.92	2.02	1.97						
NiSb	4	10	5	15		2.30	2.36	2.33						
NiSc	4	10	4	3		2.30	2.48	2.39						
NiSe	4	10	4	16		2.05	2.09	2.07						
NiSi	4	10	3	14		2.09	2.21	2.15						
NiSn	4	10	5	14		2.40	2.52	2.46						
NiSr	4	10	5	2		2.64	2.97	2.80						
NiTa	4	10	6	5		2.02	2.51	2.26						
NiTc	4	10	5	7		2.18	2.38	2.28						
NiTe	4	10	5	16		2.25	2.24	2.25						
NiTi	4	10	4	4		2.17	2.34	2.25						
NiTl	4	10	6	13		2.37	2.72	2.54						
NiV	4	10	4	5		2.10	2.25	2.18						
NiW	4	10	6	6		2.01	2.45	2.23						
NiY	4	10	5	3		2.38	2.72	2.55						
NiZn	4	10	4	12		2.38	2.40	2.39						
NiZr	4	10	5	4		2.24	2.55	2.39						
NK	2	15	4	1		2.23	2.01	2.12						
NLa	2	15	6	3		1.82	1.91	1.87						
NLi	2	15	2	1		1.63	1.54	1.59		22	1.67			
NMg	2	15	3	2		1.80	1.75	1.77		23	1.82			
NMn	2	15	4	7		1.62	1.52	1.57						
NMo	2	15	5	6		1.69	1.63	1.66						
NN	2	15	2	15	1.1	1.22	1.22	1.22	1.19					
NNa	2	15	3	1		2.04	1.91	1.97		23	2.01			
NNb	2	15	5	5		1.71	1.67	1.69						
NNi	2	15	4	10		1.72	1.60	1.66						
NO	2	15	2	16	1.15	1.19	1.19	1.19						
NOs	2	15	6	8		1.68	1.70	1.69						
NP	2	15	3	15	1.49	1.52	1.53	1.53	1.49	23	1.51	EE	1.47	1.49
NPb	2	15	6	14		1.87	1.92	1.89						
NPd	2	15	5	10		1.82	1.70	1.76						
NPo	2	15	6	16		1.91	1.93	1.92						
NPt	2	15	6	10		1.78	1.78	1.78						
NRb	2	15	5	1		2.37	2.17	2.27						
NRe	2	15	6	7		1.65	1.69	1.67						
NRh	2	15	5	9		1.77	1.66	1.72						
NRu	2	15	5	8		1.73	1.63	1.68						
NS	2	15	3	16	1.49	1.51	1.50	1.50						
NSb	2	15	5	15		1.81	1.78	1.79				EE	1.83	
NSc	2	15	4	3		1.79	1.71	1.75						
NSe	2	15	4	16	1.65	1.62	1.62	1.62						
NSi	2	15	3	14	1.57	1.58	1.58	1.58						
NSn	2	15	5	14		1.85	1.81	1.83						
NSr	2	15	5	2		2.06	1.97	2.02						
NTa	2	15	6	5		1.66	1.74	1.70						
NTc	2	15	5	7		1.70	1.62	1.66						

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
						r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
NTe	2	15	5	16		1.80	1.79	1.79						
NTi	2	15	4	4		1.69	1.62	1.65						
NTl	2	15	6	13		1.87	1.91	1.89						
NV	2	15	4	5		1.63	1.56	1.60						
NW	2	15	6	6		1.64	1.70	1.67						
NY	2	15	5	3		1.88	1.83	1.85						
NZn	2	15	4	12		1.77	1.67	1.72						
NZr	2	15	5	4		1.77	1.73	1.75						
OAg	2	16	5	11	2	1.83	1.75	1.79						
OAl	2	16	3	13	1.62	1.58	1.59	1.59	1.58	23	1.63			
OAs	2	16	4	15	1.62	1.62	1.66	1.64						
OAt	2	16	6	17		1.99	2.05	2.02						
OAu	2	16	6	11		1.82	1.82	1.82						
OB	2	16	2	13	1.20	1.28	1.26	1.27	1.25	22	1.24			
OBa	2	16	6	2	1.94	2.00	2.03	2.01	1.96					
OBe	2	16	2	2	1.33	1.43	1.37	1.40	1.30	22	1.37			
OBi	2	16	6	15	1.93	1.86	1.90	1.88						
OBr	2	16	4	17		1.67	1.75	1.71						
OC	2	16	2	14	1.13	1.24	1.24	1.24	1.21	22	1.16	DF	1.22	1.19
OCa	2	16	4	2	1.82	1.92	1.81	1.87						
OCd	2	16	5	12		1.86	1.80	1.83						
OCl	2	16	3	17	1.57	1.53	1.59	1.56		23	1.57			
OCo	2	16	4	9		1.63	1.55	1.59						
OCr	2	16	4	6	1.62	1.57	1.51	1.54						
OCs	2	16	6	1		2.29	2.24	2.26						
OCu	2	16	4	11		1.70	1.63	1.67						
OF	2	16	2	17		1.22	1.26	1.24		22	1.33			
OFe	2	16	4	8		1.60	1.52	1.56						
OGa	2	16	4	13		1.71	1.70	1.70						
OGe	2	16	4	14	1.62	1.67	1.69	1.68	1.66			DF	1.68	
OHf	2	16	6	4	1.72	1.71	1.78	1.75	1.76					
OHg	2	16	6	12		1.86	1.88	1.87						
OI	2	16	5	17	1.87	1.85	1.93	1.89						
OIn	2	16	5	13		1.85	1.83	1.84						
OIr	2	16	6	9		1.71	1.72	1.72						
OK	2	16	4	1		2.20	1.98	2.09						
OLa	2	16	6	3	1.83	1.82	1.88	1.85	1.84					
OLi	2	16	2	1		1.60	1.48	1.54		22	1.57			
OMg	2	16	3	2	1.75	1.76	1.71	1.73	1.68	23	1.77			
OMn	2	16	4	7		1.58	1.50	1.54						
OMo	2	16	5	6		1.67	1.61	1.64						
ON	2	16	2	15	1.15	1.19	1.19	1.19						
ONa	2	16	3	1		1.99	1.87	1.93		23	1.95			
ONb	2	16	5	5	1.69	1.69	1.65	1.67	1.76					
ONi	2	16	4	10		1.67	1.59	1.63						
OO	2	16	2	16	1.21	1.16	1.16	1.16	1.24	22	1.21	FF	1.18	1.19
OOs	2	16	6	8		1.67	1.69	1.68						
OP	2	16	3	15	1.48	1.51	1.53	1.52		23	1.50			

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
OPb	2	16	6	14	1.92	1.87	1.92	1.89	1.91					
OPd	2	16	5	10		1.79	1.70	1.74						
OPo	2	16	6	16		1.88	1.92	1.90				FF	2.01	
OPt	2	16	6	10	1.73	1.77	1.77	1.77	1.72					
ORb	2	16	5	1		2.36	2.14	2.25						
ORe	2	16	6	7		1.64	1.67	1.66						
ORh	2	16	5	9		1.74	1.65	1.69						
ORu	2	16	5	8		1.70	1.62	1.66						
OS	2	16	3	16	1.48	1.50	1.49	1.49		23	1.51	FF	1.48	1.50
OsAg	6	8	5	11		2.71	2.40	2.55						
OsAl	6	8	3	13		2.34	2.08	2.21						
OsAs	6	8	4	15		2.25	2.13	2.19						
OsAt	6	8	6	17		2.48	2.16	2.32						
OsAu	6	8	6	11		2.64	2.62	2.63						
OsB	6	8	2	13		1.83	1.73	1.78						
OSb	2	16	5	15	1.83	1.78	1.81	1.79						
OsBa	6	8	6	2		2.94	2.91	2.92						
OsBe	6	8	2	2		2.02	1.86	1.94						
OsBi	6	8	6	15		2.49	2.50	2.49						
OsBr	6	8	4	17		2.30	2.20	2.25						
OSc	2	16	4	3		1.75	1.68	1.72	1.68					
OsC	6	8	2	14		1.77	1.71	1.74						
OsCa	6	8	4	2		2.81	2.35	2.58						
OsCd	6	8	5	12		2.73	2.46	2.60						
OsCl	6	8	3	17		2.19	2.11	2.15						
OsCo	6	8	4	9		2.38	2.03	2.21						
OsCr	6	8	4	6		2.24	1.98	2.11						
OsCs	6	8	6	1		3.56	3.28	3.42						
OsCu	6	8	4	11		2.52	2.14	2.33						
OSe	2	16	4	16	1.65	1.61	1.63	1.62						
OsF	6	8	2	17		1.81	1.71	1.76						
OsFe	6	8	4	8		2.31	1.99	2.15						
OsGa	6	8	4	13		2.49	2.20	2.34						
OsGe	6	8	4	14		2.38	2.17	2.28						
OsHf	6	8	6	4		2.42	2.51	2.47						
OsHg	6	8	6	12		2.69	2.70	2.69						
OsI	6	8	5	17		2.43	2.27	2.35						
OSi	2	16	3	14	1.51	1.55	1.58	1.57	1.54					
OsIn	6	8	5	13		2.68	2.48	2.58						
OsIr	6	8	6	9		2.47	2.45	2.46						
OsK	6	8	4	1		3.37	2.58	2.98						
OsLa	6	8	6	3		2.61	2.67	2.64						
OsLi	6	8	2	1		2.31	2.02	2.17						
OsMg	6	8	3	2		2.57	2.23	2.40						
OsMn	6	8	4	7		2.26	1.97	2.11						
OsMo	6	8	5	6		2.38	2.19	2.29						
OsN	6	8	2	15		1.70	1.68	1.69						
OSn	2	16	5	14	1.83	1.82	1.83	1.83	1.77					

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
OsNa	6	8	3	1		3.03	2.44	2.74						
OsNb	6	8	5	5		2.40	2.24	2.32						
OsNi	6	8	4	10		2.46	2.08	2.27						
OsO	6	8	2	16		1.69	1.67	1.68						
OsOs	6	8	6	8		2.38	2.38	2.38						
OsP	6	8	3	15		2.13	2.02	2.07						
OsPb	6	8	6	14	1.92	2.61	2.66	2.63				DF	1.95	
OsPd	6	8	5	10		2.63	2.33	2.48						
OsPo	6	8	6	16		2.39	2.30	2.34						
OsPt	6	8	6	10		2.56	2.53	2.54						
OSr	2	16	5	2	1.92	2.05	1.94	1.99	1.89					
OsRb	6	8	5	1		3.71	2.95	3.33						
OsRe	6	8	6	7		2.33	2.36	2.34						
OsRh	6	8	5	9		2.54	2.26	2.40						
OsRu	6	8	5	8		2.46	2.21	2.34						
OsS	6	8	3	16		2.07	2.03	2.05						
OsSb	6	8	5	15		2.42	2.36	2.39						
OsSc	6	8	4	3		2.51	2.19	2.35						
OsSe	6	8	4	16		2.18	2.13	2.16						
OsSi	6	8	3	14		2.24	2.06	2.15						
OsSn	6	8	5	14		2.57	2.45	2.51						
OsSr	6	8	5	2		3.04	2.65	2.85						
OsTa	6	8	6	5		2.33	2.41	2.37						
OsTc	6	8	5	7		2.40	2.19	2.29						
OsTe	6	8	5	16		2.32	2.29	2.30						
OsTi	6	8	4	4		2.34	2.08	2.21						
OsTl	6	8	6	13		2.68	2.72	2.70						
OsV	6	8	4	5		2.26	2.01	2.13						
OsW	6	8	6	6		2.31	2.36	2.33						
OsY	6	8	5	3		2.69	2.45	2.57						
OsZn	6	8	4	12		2.54	2.18	2.36						
OsZr	6	8	5	4		2.50	2.32	2.41						
OTa	2	16	6	5	1.69	1.65	1.72	1.69						
OTc	2	16	5	7		1.67	1.61	1.64						
OTe	2	16	5	16	1.83	1.77	1.80	1.79						
OTi	2	16	4	4	1.62	1.65	1.60	1.62						
OTl	2	16	6	13		1.87	1.91	1.89						
OV	2	16	4	5	1.59	1.59	1.54	1.57	1.61					
OW	2	16	6	6		1.63	1.68	1.66						
OY	2	16	5	3		1.86	1.80	1.83	1.79					
OZn	2	16	4	12		1.72	1.68	1.70						
OZr	2	16	5	4	1.71	1.75	1.71	1.73	1.73					
P117	3	15	7	17								EG	2.54	
PAg	3	15	5	11		2.31	2.18	2.24						
PAl	3	15	3	13		2.00	1.98	1.99		33	2.14			
PAs	3	15	4	15	2.00	2.03	2.02	2.02				EE	1.96	
PAt	3	15	6	17		2.60	2.78	2.69				EG	2.42	
PAu	3	15	6	11		2.23	2.30	2.27						

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks: Southern, In order r_e	Southern, Reversed r_e	Southern, $\langle r_e \rangle$	Memphis r_e	Predictions by method of least squares: Area	r_e	Area	r_e	$\langle r_e \rangle$
PB	3	15	2	13		1.59	1.58	1.59		23	1.68			
Pb116	6	14	7	16								DF	2.88	
PBa	3	15	6	2		2.39	2.70	2.55						
PbAg	6	14	5	11		2.95	2.70	2.82						
PbAl	6	14	3	13		2.59	2.38	2.48						
PbAs	6	14	4	15		2.55	2.47	2.51						
PbAt	6	14	6	17		2.77	2.79	2.78						
PbAu	6	14	6	11		2.99	2.88	2.93						
PbB	6	14	2	13		2.01	1.90	1.95						
PbBa	6	14	6	2		3.36	3.41	3.38						
PbBe	6	14	2	2		2.10	2.04	2.07						
PbBi	6	14	6	15		2.86	2.86	2.86						
PbBr	6	14	4	17		2.58	2.60	2.59						
PbC	6	14	2	14		1.96	1.90	1.93						
PbCa	6	14	4	2		2.98	2.77	2.88						
PbCd	6	14	5	12		2.99	2.80	2.90						
PbCl	6	14	3	17		2.47	2.47	2.47						
PbCo	6	14	4	9		2.53	2.26	2.40						
PbCr	6	14	4	6		2.35	2.21	2.28						
PbCs	6	14	6	1		4.20	4.00	4.10						
PbCu	6	14	4	11		2.72	2.42	2.57						
PBe	3	15	2	2		1.66	1.75	1.71		23	1.85			
PbF	6	14	2	17	2.06	2.01	2.00	2.01						
PbFe	6	14	4	8		2.44	2.21	2.33						
PbGa	6	14	4	13		2.74	2.55	2.64						
PbGe	6	14	4	14		2.66	2.54	2.60						
PbHf	6	14	6	4		2.71	2.82	2.76						
PbHg	6	14	6	12		3.06	2.98	3.02						
PbI	6	14	5	17		2.72	2.77	2.74						
PBi	3	15	6	15		2.31	2.40	2.36				EE	2.25	
PbIn	6	14	5	13		2.97	2.86	2.91						
PbIr	6	14	6	9		2.76	2.67	2.72						
PbK	6	14	4	1		3.62	3.14	3.38						
PbLa	6	14	6	3		2.93	3.05	2.99						
PbLi	6	14	2	1		2.40	2.25	2.33						
PbMg	6	14	3	2		2.69	2.57	2.63						
PbMn	6	14	4	7		2.38	2.19	2.29						
PbMo	6	14	5	6		2.56	2.45	2.50						
PbN	6	14	2	15		1.92	1.87	1.89						
PbNa	6	14	3	1		3.19	2.89	3.04						
PbNb	6	14	5	5		2.59	2.51	2.55						
PbNi	6	14	4	10		2.63	2.33	2.48						
PbO	6	14	2	16	1.92	1.92	1.87	1.89	1.91					
PbOs	6	14	6	8	1.92	2.66	2.61	2.63				DF	1.95	
PbP	6	14	3	15		2.42	2.31	2.36						
PbPb	6	14	6	14		2.99	2.99	2.99						
PbPd	6	14	5	10		2.85	2.60	2.73						
PbPo	6	14	6	16		2.72	2.72	2.72				DF	2.77	

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
PbPt	6	14	6	10		2.88	2.77	2.82						
PBr	3	15	4	17		2.16	2.26	2.21				EG	2.11	
PbRb	6	14	5	1		4.19	3.64	3.92						
PbRe	6	14	6	7		2.59	2.58	2.59						
PbRh	6	14	5	9		2.75	2.51	2.63						
PbRu	6	14	5	8		2.65	2.45	2.55						
PbS	6	14	3	16	2.29	2.37	2.29	2.33	2.27			DF	2.25	
PbSb	6	14	5	15		2.72	2.73	2.73						
PbSc	6	14	4	3		2.65	2.53	2.59						
PbSe	6	14	4	16	2.40	2.48	2.43	2.46	2.38			DF	2.46	
PbSi	6	14	3	14		2.51	2.37	2.44						
PbSn	6	14	5	14		2.86	2.83	2.85						
PbSr	6	14	5	2		3.35	3.15	3.25						
PbTa	6	14	6	5		2.59	2.68	2.64						
PbTc	6	14	5	7		2.58	2.43	2.51						
PbTe	6	14	5	16	2.60	2.63	2.64	2.64	2.62			DF	2.63	
PbTi	6	14	4	4		2.46	2.37	2.41						
PbTl	6	14	6	13		3.07	3.04	3.05						
PbV	6	14	4	5		2.38	2.26	2.32						
PbW	6	14	6	6		2.56	2.61	2.58						
PbY	6	14	5	3		2.93	2.84	2.88						
PbZn	6	14	4	12		2.76	2.50	2.63						
PbZr	6	14	5	4		2.70	2.64	2.67						
PC	3	15	2	14	1.56	1.57	1.56	1.56	1.52	23	1.57			
PCa	3	15	4	2		2.34	2.34	2.34						
PCd	3	15	5	12		2.35	2.24	2.29						
PCl	3	15	3	17		2.03	2.07	2.05		33	1.95	EG	1.88	1.93
PCo	3	15	4	9		2.04	1.93	1.98						
PCr	3	15	4	6		1.92	1.90	1.91						
PCs	3	15	6	1		2.79	3.06	2.93						
PCu	3	15	4	11		2.16	2.03	2.09						
PdAg	5	10	5	11		2.73	2.74	2.74						
PdAl	5	10	3	13		2.34	2.37	2.36						
PdAs	5	10	4	15		2.26	2.35	2.31						
PdAt	5	10	6	17		2.62	2.36	2.49						
PdAu	5	10	6	11		2.59	2.89	2.74						
PdB	5	10	2	13		1.82	1.90	1.86						
PdBa	5	10	6	2		2.81	3.32	3.07						
PdBe	5	10	2	2		2.00	2.07	2.03						
PdBi	5	10	6	15		2.53	2.65	2.59						
PdBr	5	10	4	17		2.29	2.31	2.30						
PdC	5	10	2	14		1.76	1.88	1.82						
PdCa	5	10	4	2		2.86	2.79	2.82						
PdCd	5	10	5	12		2.76	2.81	2.79						
PdCl	5	10	3	17		2.18	2.23	2.20						
PdCo	5	10	4	9		2.44	2.33	2.38						
PdCr	5	10	4	6		2.28	2.27	2.28						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
PdCs	5	10	6	1		3.36	3.83	3.59						
PdCu	5	10	4	11		2.57	2.46	2.52						
PdF	5	10	2	17		1.83	1.80	1.82						
PdFe	5	10	4	8		2.36	2.28	2.32						
PdGa	5	10	4	13		2.53	2.52	2.53						
PdGe	5	10	4	14		2.41	2.46	2.44						
PdHf	5	10	6	4		2.35	2.80	2.58						
PdHg	5	10	6	12		2.64	2.96	2.80						
PdI	5	10	5	17		2.49	2.40	2.45						
PdIn	5	10	5	13		2.73	2.81	2.77						
PdIr	5	10	6	9		2.41	2.70	2.55						
PdK	5	10	4	1		3.42	3.12	3.27						
PdLa	5	10	6	3		2.51	3.01	2.76						
PdLi	5	10	2	1		2.28	2.27	2.27						
PdMg	5	10	3	2		2.60	2.61	2.60						
PdMn	5	10	4	7		2.30	2.26	2.28						
PdMo	5	10	5	6		2.39	2.51	2.45						
PdN	5	10	2	15		1.70	1.82	1.76						
PdNa	5	10	3	1		3.06	2.90	2.98						
PdNb	5	10	5	5		2.41	2.56	2.49						
PdNi	5	10	4	10		2.51	2.39	2.45						
PdO	5	10	2	16		1.70	1.79	1.74						
PdOs	5	10	6	8		2.33	2.63	2.48						
PdP	5	10	3	15		2.12	2.24	2.18						
PdPb	5	10	6	14		2.60	2.85	2.73						
PdPd	5	10	5	10		2.65	2.65	2.65						
PdPo	5	10	6	16		2.50	2.43	2.47						
PdPt	5	10	6	10		2.50	2.79	2.65						
PdRb	5	10	5	1		3.66	3.57	3.62						
PdRe	5	10	6	7		2.27	2.60	2.44						
PdRh	5	10	5	9		2.56	2.57	2.57						
PdRu	5	10	5	8		2.47	2.52	2.50						
PdS	5	10	3	16		2.06	2.19	2.13						
PdSb	5	10	5	15		2.47	2.57	2.52						
PdSc	5	10	4	3		2.55	2.56	2.56						
PdSe	5	10	4	16		2.18	2.28	2.23						
PdSi	5	10	3	14		2.24	2.33	2.28						
PdSn	5	10	5	14		2.62	2.73	2.67						
PdSr	5	10	5	2		3.02	3.14	3.08						
PdTa	5	10	6	5		2.27	2.68	2.47						
PdTc	5	10	5	7		2.41	2.49	2.45						
PdTe	5	10	5	16		2.38	2.42	2.40						
PdTi	5	10	4	4		2.39	2.41	2.40						
PdTl	5	10	6	13		2.64	2.96	2.80						
PdV	5	10	4	5		2.30	2.32	2.31						
PdW	5	10	6	6		2.25	2.62	2.43						
PdY	5	10	5	3		2.68	2.86	2.77						
PdZn	5	10	4	12		2.59	2.52	2.55						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
PdZr	5	10	5	4		2.50	2.68	2.59						
PF	3	15	2	17	1.59	1.61	1.66	1.63		23	1.55	EG	1.57	1.56
PFe	3	15	4	8		1.98	1.89	1.94						
PGa	3	15	4	13		2.16	2.10	2.13						
PGe	3	15	4	14		2.10	2.07	2.09						
PHf	3	15	6	4		2.04	2.29	2.17						
PHg	3	15	6	12		2.29	2.37	2.33						
PI	3	15	5	17		2.40	2.56	2.48				EG	2.28	
PIn	3	15	5	13		2.34	2.27	2.31						
PIr	3	15	6	9		2.09	2.17	2.13						
PK	3	15	4	1		2.71	2.62	2.66						
PLa	3	15	6	3		2.17	2.45	2.31						
PLi	3	15	2	1		1.87	1.92	1.89		23	2.07			
PMg	3	15	3	2		2.10	2.21	2.16		33	2.28			
PMn	3	15	4	7		1.94	1.88	1.91						
PMo	3	15	5	6		2.03	2.03	2.03						
PN	3	15	2	15	1.49	1.53	1.52	1.53	1.49	23	1.51	EE	1.47	1.49
PNa	3	15	3	1		2.40	2.46	2.43		33	2.46			
PNb	3	15	5	5		2.05	2.08	2.07						
PNi	3	15	4	10		2.10	1.97	2.04						
PO	3	15	2	16	1.48	1.53	1.51	1.52		23	1.50			
PoAg	6	16	5	11		2.54	2.60	2.57						
PoAl	6	16	3	13		2.48	2.43	2.46						
PoAs	6	16	4	15		2.56	2.51	2.53						
PoAt	6	16	6	17		2.60	2.73	2.67						
PoAu	6	16	6	11		2.58	2.63	2.60						
PoB	6	16	2	13		1.96	1.92	1.94						
PoBa	6	16	6	2		2.85	3.03	2.94						
PoBe	6	16	2	2		1.95	2.03	1.99						
PoBi	6	16	6	15		2.67	2.64	2.65						
PoBr	6	16	4	17		2.53	2.52	2.53						
PoC	6	16	2	14		1.95	1.93	1.94				DF	2.03	
PoCa	6	16	4	2		2.51	2.75	2.63						
PoCd	6	16	5	12		2.63	2.70	2.66						
PoCl	6	16	3	17		2.43	2.42	2.43						
PoCo	6	16	4	9		2.23	2.24	2.23						
PoCr	6	16	4	6		2.05	2.18	2.11						
PoCs	6	16	6	1		3.45	3.49	3.47						
PoCu	6	16	4	11		2.43	2.42	2.43						
PoF	6	16	2	17		1.93	1.98	1.95						
PoFe	6	16	4	8		2.14	2.19	2.16						
PoGa	6	16	4	13		2.58	2.58	2.58						
PoGe	6	16	4	14		2.59	2.58	2.59				DF	2.49	
PoHf	6	16	6	4		2.35	2.55	2.45						
PoHg	6	16	6	12		2.66	2.71	2.69						
PoI	6	16	5	17		2.64	2.67	2.65						
PoIn	6	16	5	13		2.68	2.76	2.72						
PoIr	6	16	6	9		2.38	2.45	2.41						

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks, Southern, In order r_e	Predictions from neural networks, Southern, Reversed r_e	Predictions from neural networks, Southern, $<r_e>$	Predictions from neural networks, Memphis r_e	Predictions by method of least squares, Area	Predictions by method of least squares, r_e	Predictions by method of least squares, Area	Predictions by method of least squares, r_e	Predictions by method of least squares, $<r_e>$
PoK	6	16	4	1		2.94	3.14	3.04						
PoLa	6	16	6	3		2.53	2.74	2.63						
PoLi	6	16	2	1		2.21	2.24	2.23						
PoMg	6	16	3	2		2.37	2.57	2.47						
PoMn	6	16	4	7		2.08	2.17	2.12						
PoMo	6	16	5	6		2.17	2.34	2.26						
PoN	6	16	2	15		1.93	1.91	1.92						
PoNa	6	16	3	1		2.75	2.91	2.83						
PoNb	6	16	5	5		2.19	2.40	2.30						
PoNi	6	16	4	10		2.33	2.33	2.33						
PoO	6	16	2	16		1.92	1.88	1.90				FF	2.01	
PoOs	6	16	6	8		2.30	2.39	2.34						
PoP	6	16	3	15		2.46	2.39	2.42						
PoPb	6	16	6	14		2.72	2.72	2.72				DF	2.77	
PoPd	6	16	5	10		2.43	2.50	2.47						
PoPo	6	16	6	16		2.59	2.59	2.59				FF	2.84	
PoPt	6	16	6	10		2.48	2.53	2.50						
PoRb	6	16	5	1		3.28	3.45	3.36						
PoRe	6	16	6	7		2.24	2.37	2.30						
PoRh	6	16	5	9		2.33	2.41	2.37						
PoRu	6	16	5	8		2.25	2.35	2.30						
POs	3	15	6	8		2.02	2.13	2.07						
PoS	6	16	3	16		2.41	2.33	2.37				FF	2.32	
PoSb	6	16	5	15		2.66	2.65	2.66						
PoSc	6	16	4	3		2.26	2.50	2.38						
PoSe	6	16	4	16		2.50	2.43	2.47				FF	2.54	
PoSi	6	16	3	14		2.49	2.44	2.46						
PoSn	6	16	5	14		2.70	2.74	2.72						
PoSr	6	16	5	2		2.74	2.99	2.86						
PoTa	6	16	6	5		2.26	2.44	2.35						
PoTc	6	16	5	7		2.19	2.33	2.26						
PoTe	6	16	5	16		2.61	2.56	2.58				FF	2.71	
PoTi	6	16	4	4		2.13	2.34	2.23						
PoTl	6	16	6	13		2.72	2.75	2.74						
PoV	6	16	4	5		2.06	2.23	2.15						
PoW	6	16	6	6		2.23	2.38	2.30						
PoY	6	16	5	3		2.44	2.70	2.57						
PoZn	6	16	4	12		2.52	2.52	2.52						
PoZr	6	16	5	4		2.28	2.52	2.40						
PP	3	15	3	15	1.89	1.89	1.89	1.89	1.85	33	1.97	EE	1.76	1.87
PPb	3	15	6	14		2.31	2.42	2.36						
PPd	3	15	5	10		2.24	2.12	2.18						
PPo	3	15	6	16		2.39	2.46	2.42						
PPt	3	15	6	10		2.16	2.23	2.20						
PRb	3	15	5	1		2.93	2.88	2.90						
PRe	3	15	6	7		1.97	2.11	2.04						
PRh	3	15	5	9		2.17	2.06	2.11						
PRu	3	15	5	8		2.10	2.02	2.06						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
PS	3	15	3	16		1.89	1.87	1.88		33	1.94			
PSb	3	15	5	15	2.205	2.24	2.22	2.23	2.05			EE	2.12	
PSc	3	15	4	3		2.12	2.15	2.14						
PSe	3	15	4	16	2.02	2.02	2.01	2.01						
PSi	3	15	3	14		1.95	1.95	1.95						
PSn	3	15	5	14		2.30	2.26	2.28						
PSr	3	15	5	2		2.50	2.55	2.52						
PTa	3	15	6	5		1.97	2.19	2.08						
PtAg	6	10	5	11		2.87	2.59	2.73						
PtAl	6	10	3	13		2.45	2.23	2.34						
PtAs	6	10	4	15		2.36	2.28	2.32						
PtAt	6	10	6	17		2.63	2.36	2.50						
PtAu	6	10	6	11		2.81	2.83	2.82						
PtB	6	10	2	13		1.91	1.83	1.87						
PtBa	6	10	6	2		3.16	3.20	3.18						
PtBe	6	10	2	2		2.10	1.97	2.03						
PtBi	6	10	6	15		2.64	2.70	2.67						
PtBr	6	10	4	17		2.43	2.36	2.40						
PTc	3	15	5	7		2.05	2.01	2.03						
PtC	6	10	2	14	1.68	1.84	1.81	1.83	1.51					
PtCa	6	10	4	2		2.98	2.56	2.77						
PtCd	6	10	5	12		2.89	2.66	2.78						
PtCl	6	10	3	17		2.31	2.27	2.29						
PtCo	6	10	4	9		2.51	2.17	2.34						
PtCr	6	10	4	6		2.35	2.12	2.23						
PtCs	6	10	6	1		3.89	3.66	3.77						
PtCu	6	10	4	11		2.65	2.30	2.48						
PTe	3	15	5	16		2.24	2.25	2.24						
PtF	6	10	2	17		1.90	1.83	1.87						
PtFe	6	10	4	8		2.43	2.13	2.28						
PtGa	6	10	4	13		2.62	2.38	2.50						
PtGe	6	10	4	14		2.50	2.34	2.42						
PtHf	6	10	6	4		2.58	2.71	2.64						
PtHg	6	10	6	12		2.86	2.92	2.89						
PTi	3	15	4	4		2.00	2.02	2.01						
PtI	6	10	5	17		2.57	2.46	2.52						
PtIn	6	10	5	13		2.84	2.69	2.76						
PtIr	6	10	6	9		2.62	2.63	2.62						
PtK	6	10	4	1		3.62	2.85	3.23						
PTl	3	15	6	13		2.31	2.42	2.36						
PtLa	6	10	6	3		2.78	2.90	2.84						
PtLi	6	10	2	1		2.40	2.15	2.28						
PtMg	6	10	3	2		2.71	2.41	2.56						
PtMn	6	10	4	7		2.37	2.11	2.24						
PtMo	6	10	5	6		2.51	2.36	2.43						
PtN	6	10	2	15		1.78	1.78	1.78						
PtNa	6	10	3	1		3.22	2.67	2.94						
PtNb	6	10	5	5		2.54	2.41	2.47						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
PtNi	6	10	4	10		2.59	2.23	2.41						
PtO	6	10	2	16	1.73	1.77	1.77	1.77	1.72					
PtOs	6	10	6	8		2.53	2.56	2.54						
PtP	6	10	3	15		2.23	2.16	2.20						
PtPb	6	10	6	14		2.77	2.88	2.82						
PtPd	6	10	5	10		2.79	2.50	2.65						
PtPo	6	10	6	16		2.53	2.48	2.50						
PtPt	6	10	6	10		2.72	2.72	2.72						
PtRb	6	10	5	1		4.04	3.28	3.66						
PtRe	6	10	6	7		2.47	2.53	2.50						
PtRh	6	10	5	9		2.69	2.43	2.56						
PtRu	6	10	5	8		2.60	2.37	2.49						
PtS	6	10	3	16		2.18	2.16	2.17						
PtSb	6	10	5	15		2.54	2.54	2.54						
PtSc	6	10	4	3		2.65	2.37	2.51						
PtSe	6	10	4	16		2.29	2.27	2.28						
PtSi	6	10	3	14		2.35	2.21	2.28						
PtSn	6	10	5	14		2.71	2.64	2.68						
PtSr	6	10	5	2		3.26	2.91	3.08						
PtTa	6	10	6	5		2.47	2.60	2.54						
PtTc	6	10	5	7		2.54	2.35	2.44						
PtTe	6	10	5	16		2.44	2.46	2.45						
PtTi	6	10	4	4		2.46	2.24	2.35						
PtTl	6	10	6	13		2.85	2.95	2.90						
PtV	6	10	4	5		2.37	2.16	2.27						
PtW	6	10	6	6		2.44	2.54	2.49						
PtY	6	10	5	3		2.86	2.67	2.76						
PtZn	6	10	4	12		2.67	2.36	2.51						
PtZr	6	10	5	4		2.65	2.51	2.58						
PV	3	15	4	5		1.94	1.94	1.94						
PW	3	15	6	6		1.96	2.13	2.04						
PY	3	15	5	3		2.26	2.33	2.29						
PZn	3	15	4	12		2.18	2.08	2.13						
PZr	3	15	5	4		2.12	2.18	2.15						
Rb117	5	1	7	17								AG	3.49	
RbAg	5	1	5	11		3.76	3.83	3.79						
RbAl	5	1	3	13		3.21	3.05	3.13						
RbAs	5	1	4	15		3.13	3.13	3.13						
RbAt	5	1	6	17		3.46	2.96	3.21				AG	3.35	
RbAu	5	1	6	11		3.46	4.26	3.86						
RbB	5	1	2	13		2.34	2.44	2.39						
RbBa	5	1	6	2		3.66	5.08	4.37						
RbBe	5	1	2	2		2.55	2.73	2.64						
RbBi	5	1	6	15		3.55	3.74	3.64						
RbBr	5	1	4	17	2.94	2.94	3.17	3.06	2.95			AG	2.97	
RbC	5	1	2	14		2.27	2.41	2.34						
RbCa	5	1	4	2		3.78	3.62	3.70						
RbCd	5	1	5	12		3.89	3.95	3.92						

Table 2. Internuclear separation: tabulated data and forecasts, continued

	R_1	C_1	R_2	C_2	Tab.	Predictions from neural networks: Southern, In order r_e	Southern, Reversed r_e	Southern $<r_e>$	Memphis r_e	Predictions by method of least squares: Area	r_e	Area	r_e	$<r_e>$
RbCl	5	1	3	17	2.79	2.78	3.07	2.92	2.79			AG	2.71	
RbCo	5	1	4	9		3.19	2.99	3.09						
RbCr	5	1	4	6		2.89	2.88	2.89						
RbCs	5	1	6	1		4.65	6.44	5.54				AA	4.35	
RbCu	5	1	4	11		3.51	3.21	3.36						
RbF	5	1	2	17	2.27	2.24	2.35	2.30	2.30			AG	2.33	
RbFe	5	1	4	8		3.05	2.92	2.98						
RbFr	5	1	7	1								AA	4.49	
RbGa	5	1	4	13		3.54	3.30	3.42						
RbGe	5	1	4	14		3.37	3.23	3.30						
RbHf	5	1	6	4		2.94	3.98	3.46						
RbHg	5	1	6	12		3.60	4.43	4.02						
RbI	5	1	5	17	3.18	3.26	3.24	3.25	3.19			AG	3.18	
RbIn	5	1	5	13		3.88	3.97	3.93						
RbIr	5	1	6	9		3.10	3.85	3.47						
RbK	5	1	4	1		4.82	4.16	4.49				AA	3.98	
RbLa	5	1	6	3		3.19	4.38	3.79						
RbLi	5	1	2	1		2.98	3.06	3.02				AA	3.36	
RbMg	5	1	3	2		3.37	3.36	3.37						
RbMn	5	1	4	7		2.94	2.88	2.91						
RbMo	5	1	5	6		3.03	3.35	3.19						
RbN	5	1	2	15		2.17	2.37	2.27						
RbNa	5	1	3	1		4.16	3.83	3.99				AA	3.72	
RbNb	5	1	5	5		3.06	3.43	3.25						
RbNi	5	1	4	10		3.36	3.10	3.23						
RbO	5	1	2	16		2.14	2.36	2.25						
RbOs	5	1	6	8		2.95	3.71	3.33						
RbP	5	1	3	15		2.88	2.93	2.90						
RbPb	5	1	6	14		3.64	4.19	3.92						
RbPd	5	1	5	10		3.57	3.66	3.62						
RbPo	5	1	6	16		3.45	3.28	3.36						
RbPt	5	1	6	10		3.28	4.04	3.66						
RbRb	5	1	5	1		5.30	5.30	5.30				AA	4.18	
RbRe	5	1	6	7		2.85	3.64	3.25						
RbRh	5	1	5	9		3.38	3.51	3.44						
RbRu	5	1	5	8		3.21	3.40	3.30						
RbS	5	1	3	16		2.75	2.98	2.86						
RbSb	5	1	5	15		3.50	3.59	3.54						
RbSc	5	1	4	3		3.28	3.28	3.28						
RbSe	5	1	4	16		2.95	3.13	3.04						
RbSi	5	1	3	14		3.07	3.00	3.03						
RbSn	5	1	5	14		3.73	3.83	3.78						
RbSr	5	1	5	2		4.04	4.42	4.23						
RbTa	5	1	6	5		2.83	3.76	3.29						
RbTc	5	1	5	7		3.09	3.34	3.21						
RbTe	5	1	5	16		3.28	3.40	3.34						
RbTi	5	1	4	4		3.03	3.07	3.05						
RbTl	5	1	6	13		3.67	4.44	4.05						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
RbV	5	1	4	5		2.91	2.95	2.93						
RbW	5	1	6	6		2.80	3.65	3.23						
RbY	5	1	5	3		3.47	3.91	3.69						
RbZn	5	1	4	12		3.59	3.29	3.44						
RbZr	5	1	5	4		3.19	3.61	3.40						
ReAg	6	7	5	11		2.68	2.34	2.51						
ReAl	6	7	3	13		2.32	2.02	2.17						
ReAs	6	7	4	15		2.24	2.08	2.16						
ReAt	6	7	6	17		2.44	2.11	2.28						
ReAu	6	7	6	11		2.61	2.55	2.58						
ReB	6	7	2	13		1.82	1.69	1.76						
ReBa	6	7	6	2		2.89	2.82	2.86						
ReBe	6	7	2	2		2.01	1.83	1.92						
ReBi	6	7	6	15		2.47	2.43	2.45						
ReBr	6	7	4	17		2.28	2.15	2.21						
ReC	6	7	2	14		1.76	1.68	1.72						
ReCa	6	7	4	2		2.77	2.28	2.53						
ReCd	6	7	5	12		2.70	2.40	2.55						
ReCl	6	7	3	17		2.17	2.07	2.12						
ReCo	6	7	4	9		2.36	1.98	2.17						
ReCr	6	7	4	6		2.21	1.93	2.07						
ReCs	6	7	6	1		3.50	3.16	3.33						
ReCu	6	7	4	11		2.50	2.08	2.29						
ReF	6	7	2	17		1.79	1.68	1.74						
ReFe	6	7	4	8		2.29	1.94	2.11						
ReGa	6	7	4	13		2.47	2.14	2.31						
ReGe	6	7	4	14		2.36	2.12	2.24						
ReHf	6	7	6	4		2.39	2.44	2.42						
ReHg	6	7	6	12		2.66	2.63	2.64						
ReI	6	7	5	17		2.40	2.22	2.31						
ReIn	6	7	5	13		2.66	2.42	2.54						
ReIr	6	7	6	9		2.44	2.39	2.41						
ReK	6	7	4	1		3.32	2.50	2.91						
ReLa	6	7	6	3		2.57	2.59	2.58						
ReLi	6	7	2	1		2.29	1.98	2.14						
ReMg	6	7	3	2		2.55	2.17	2.36						
ReMn	6	7	4	7		2.23	1.92	2.08						
ReMo	6	7	5	6		2.35	2.14	2.25						
ReN	6	7	2	15		1.69	1.65	1.67						
ReNa	6	7	3	1		2.99	2.37	2.68						
ReNb	6	7	5	5		2.38	2.18	2.28						
ReNi	6	7	4	10		2.44	2.03	2.23						
ReO	6	7	2	16		1.67	1.64	1.66						
ReOs	6	7	6	8		2.36	2.33	2.34						
ReP	6	7	3	15		2.11	1.97	2.04						
RePb	6	7	6	14		2.58	2.59	2.59						
RePd	6	7	5	10		2.60	2.27	2.44						
RePo	6	7	6	16		2.37	2.24	2.30						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
RePt	6	7	6	10		2.53	2.47	2.50						
ReRb	6	7	5	1		3.64	2.85	3.25						
ReRe	6	7	6	7		2.30	2.30	2.30						
ReRh	6	7	5	9		2.52	2.21	2.36						
ReRu	6	7	5	8		2.43	2.16	2.30						
ReS	6	7	3	16		2.06	1.99	2.02						
ReSb	6	7	5	15		2.40	2.30	2.35						
ReSc	6	7	4	3		2.48	2.13	2.30						
ReSe	6	7	4	16		2.16	2.09	2.13						
ReSi	6	7	3	14		2.23	2.00	2.12						
ReSn	6	7	5	14		2.55	2.38	2.46						
ReSr	6	7	5	2		3.00	2.57	2.78						
ReTa	6	7	6	5		2.30	2.35	2.33						
ReTc	6	7	5	7		2.37	2.13	2.25						
ReTe	6	7	5	16		2.30	2.24	2.27						
ReTi	6	7	4	4		2.31	2.02	2.17						
ReTl	6	7	6	13		2.65	2.65	2.65						
ReV	6	7	4	5		2.23	1.96	2.10						
ReW	6	7	6	6		2.28	2.30	2.29						
ReY	6	7	5	3		2.65	2.38	2.52						
ReZn	6	7	4	12		2.52	2.13	2.32						
ReZr	6	7	5	4		2.47	2.26	2.36						
RhAg	5	9	5	11		2.65	2.64	2.64						
RhAl	5	9	3	13		2.28	2.29	2.29						
RhAs	5	9	4	15		2.20	2.27	2.24						
RhAt	5	9	6	17		2.53	2.23	2.38						
RhAu	5	9	6	11		2.51	2.78	2.64						
RhB	5	9	2	13		1.78	1.85	1.81						
RhBa	5	9	6	2		2.72	3.17	2.94						
RhBe	5	9	2	2		1.96	2.01	1.99						
RhBi	5	9	6	15		2.44	2.55	2.49						
RhBr	5	9	4	17		2.22	2.22	2.22						
RhC	5	9	2	14	1.61	1.72	1.82	1.77	1.61					
RhCa	5	9	4	2		2.77	2.66	2.72						
RhCd	5	9	5	12		2.68	2.70	2.69						
RhCl	5	9	3	17		2.11	2.15	2.13						
RhCo	5	9	4	9		2.37	2.25	2.31						
RhCr	5	9	4	6		2.22	2.19	2.21						
RhCs	5	9	6	1		3.22	3.61	3.42						
RhCu	5	9	4	11		2.50	2.37	2.44						
RhF	5	9	2	17		1.78	1.74	1.76						
RhFe	5	9	4	8		2.30	2.20	2.25						
RhGa	5	9	4	13		2.46	2.43	2.45						
RhGe	5	9	4	14		2.34	2.37	2.36						
RhHf	5	9	6	4		2.28	2.69	2.49						
RhHg	5	9	6	12		2.55	2.85	2.70						
RhI	5	9	5	17		2.41	2.30	2.35						
RhIn	5	9	5	13		2.64	2.71	2.67						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
RhIr	5	9	6	9		2.34	2.61	2.47						
RhK	5	9	4	1		3.29	2.96	3.13						
RhLa	5	9	6	3		2.44	2.88	2.66						
RhLi	5	9	2	1		2.23	2.20	2.21						
RhMg	5	9	3	2		2.54	2.50	2.52						
RhMn	5	9	4	7		2.25	2.18	2.22						
RhMo	5	9	5	6		2.32	2.42	2.37						
RhN	5	9	2	15		1.66	1.77	1.72						
RhNa	5	9	3	1		2.97	2.77	2.87						
RhNb	5	9	5	5		2.34	2.47	2.41						
RhNi	5	9	4	10		2.45	2.31	2.38						
RhO	5	9	2	16		1.65	1.74	1.69						
RhOs	5	9	6	8		2.26	2.54	2.40						
RhP	5	9	3	15		2.06	2.17	2.11						
RhPb	5	9	6	14		2.51	2.75	2.63						
RhPd	5	9	5	10		2.57	2.56	2.57						
RhPo	5	9	6	16		2.41	2.33	2.37						
RhPt	5	9	6	10		2.43	2.69	2.56						
RhRb	5	9	5	1		3.51	3.38	3.44						
RhRe	5	9	6	7		2.21	2.52	2.36						
RhRh	5	9	5	9		2.49	2.49	2.49						
RhRu	5	9	5	8		2.40	2.43	2.42						
RhS	5	9	3	16		2.00	2.13	2.07						
RhSb	5	9	5	15		2.40	2.48	2.44						
RhSc	5	9	4	3		2.48	2.46	2.47						
RhSe	5	9	4	16		2.12	2.21	2.16						
RhSi	5	9	3	14		2.18	2.24	2.21						
RhSn	5	9	5	14		2.54	2.63	2.58						
RhSr	5	9	5	2		2.92	2.99	2.95						
RhTa	5	9	6	5		2.20	2.58	2.39						
RhTc	5	9	5	7		2.34	2.41	2.38						
RhTe	5	9	5	16		2.31	2.34	2.32						
RhTi	5	9	4	4		2.32	2.32	2.32						
RhTl	5	9	6	13		2.56	2.85	2.70						
RhV	5	9	4	5		2.25	2.24	2.24						
RhW	5	9	6	6		2.18	2.53	2.35						
RhY	5	9	5	3		2.60	2.74	2.67						
RhZn	5	9	4	12		2.52	2.42	2.47						
RhZr	5	9	5	4		2.43	2.57	2.50						
RuAg	5	8	5	11		2.59	2.55	2.57						
RuAl	5	8	3	13		2.24	2.21	2.23						
RuAs	5	8	4	15		2.16	2.20	2.18						
RuAt	5	8	6	17		2.46	2.13	2.29						
RuAu	5	8	6	11		2.45	2.69	2.57						
RuB	5	8	2	13		1.75	1.80	1.78						
RuBa	5	8	6	2		2.65	3.03	2.84						
RuBe	5	8	2	2		1.94	1.95	1.95						
RuBi	5	8	6	15		2.38	2.46	2.42						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
RuBr	5	8	4	17		2.17	2.15	2.16						
RuC	5	8	2	14		1.70	1.78	1.74						
RuCa	5	8	4	2		2.70	2.55	2.63						
RuCd	5	8	5	12		2.62	2.61	2.61						
RuCl	5	8	3	17		2.07	2.09	2.08						
RuCo	5	8	4	9		2.33	2.18	2.25						
RuCr	5	8	4	6		2.18	2.12	2.15						
RuCs	5	8	6	1		3.13	3.43	3.28						
RuCu	5	8	4	11		2.45	2.29	2.37						
RuF	5	8	2	17		1.74	1.69	1.72						
RuFe	5	8	4	8		2.26	2.13	2.19						
RuGa	5	8	4	13		2.42	2.34	2.38						
RuGe	5	8	4	14		2.30	2.29	2.29						
RuHf	5	8	6	4		2.23	2.60	2.41						
RuHg	5	8	6	12		2.50	2.75	2.62						
RuI	5	8	5	17		2.35	2.21	2.28						
RuIn	5	8	5	13		2.58	2.61	2.60						
RuIr	5	8	6	9		2.29	2.52	2.40						
RuK	5	8	4	1		3.20	2.82	3.01						
RuLa	5	8	6	3		2.38	2.77	2.57						
RuLi	5	8	2	1		2.20	2.13	2.17						
RuMg	5	8	3	2		2.49	2.40	2.44						
RuMn	5	8	4	7		2.20	2.11	2.16						
RuMo	5	8	5	6		2.27	2.34	2.30						
RuN	5	8	2	15		1.63	1.73	1.68						
RuNa	5	8	3	1		2.90	2.65	2.78						
RuNb	5	8	5	5		2.29	2.38	2.34						
RuNi	5	8	4	10		2.40	2.23	2.32						
RuO	5	8	2	16		1.62	1.70	1.66						
RuOs	5	8	6	8		2.21	2.46	2.34						
RuP	5	8	3	15		2.02	2.10	2.06						
RuPb	5	8	6	14		2.45	2.65	2.55						
RuPd	5	8	5	10		2.52	2.47	2.50						
RuPo	5	8	6	16		2.35	2.25	2.30						
RuPt	5	8	6	10		2.37	2.60	2.49						
RuRb	5	8	5	1		3.40	3.21	3.30						
RuRe	5	8	6	7		2.16	2.43	2.30						
RuRh	5	8	5	9		2.43	2.40	2.42						
RuRu	5	8	5	8		2.35	2.35	2.35						
RuS	5	8	3	16		1.97	2.07	2.02						
RuSb	5	8	5	15		2.35	2.40	2.37						
RuSc	5	8	4	3		2.43	2.36	2.40						
RuSe	5	8	4	16		2.08	2.15	2.11						
RuSi	5	8	3	14		2.14	2.17	2.16						
RuSn	5	8	5	14		2.48	2.53	2.51						
RuSr	5	8	5	2		2.84	2.86	2.85						
RuTa	5	8	6	5		2.16	2.49	2.32						
RuTc	5	8	5	7		2.29	2.33	2.31						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
RuTe	5	8	5	16		2.26	2.27	2.26						
RuTi	5	8	4	4		2.28	2.24	2.26						
RuTl	5	8	6	13		2.50	2.75	2.62						
RuV	5	8	4	5		2.20	2.16	2.18						
RuW	5	8	6	6		2.14	2.44	2.29						
RuY	5	8	5	3		2.54	2.63	2.58						
RuZn	5	8	4	12		2.47	2.34	2.40						
RuZr	5	8	5	4		2.37	2.48	2.42						
SAg	3	16	5	11		2.25	2.13	2.19						
SAl	3	16	3	13	2.03	1.94	1.95	1.94	2.05	33	2.09			
SAs	3	16	4	15		1.99	2.03	2.01						
SAt	3	16	6	17		2.48	2.69	2.59						
SAu	3	16	6	11		2.23	2.25	2.24						
SB	3	16	2	13	1.61	1.56	1.55	1.55	1.63	23	1.65			
Sb117	5	15	7	17								EG	2.91	
SBa	3	16	6	2	2.51	2.47	2.58	2.52	2.55					
SbAg	5	15	5	11		2.65	2.56	2.60						
SbAl	5	15	3	13		2.31	2.34	2.33						
SbAs	5	15	4	15		2.35	2.36	2.35				EE	2.32	
SbAt	5	15	6	17		2.71	2.92	2.82				EG	2.79	
SbAu	5	15	6	11		2.64	2.63	2.63						
SbB	5	15	2	13		1.82	1.86	1.84						
SbBa	5	15	6	2		2.91	3.12	3.02						
SbBe	5	15	2	2		1.83	2.02	1.93						
SbBi	5	15	6	15		2.69	2.66	2.68				EE	2.61	
SbBr	5	15	4	17		2.39	2.50	2.44				EG	2.47	
SbC	5	15	2	14		1.80	1.85	1.83						
SbCa	5	15	4	2		2.65	2.76	2.71						
SbCd	5	15	5	12		2.70	2.63	2.67						
SbCl	5	15	3	17		2.31	2.34	2.32				EG	2.25	
SbCo	5	15	4	9		2.28	2.23	2.25						
SbCr	5	15	4	6		2.13	2.18	2.16						
SbCs	5	15	6	1		3.52	3.62	3.57						
SbCu	5	15	4	11		2.43	2.38	2.41						
SBe	3	16	2	2	1.74	1.63	1.68	1.66	1.78	23	1.80			
SbF	5	15	2	17	1.92	1.89	1.90	1.89	1.91			EG	1.93	
SbFe	5	15	4	8		2.21	2.18	2.19						
SbGa	5	15	4	13		2.47	2.48	2.48						
SbGe	5	15	4	14		2.42	2.45	2.43						
SbHf	5	15	6	4		2.40	2.61	2.51						
SbHg	5	15	6	12		2.71	2.71	2.71						
SBi	3	16	6	15	2.32	2.28	2.36	2.32						
SbI	5	15	5	17		2.55	2.76	2.65				EG	2.65	
SbIn	5	15	5	13		2.69	2.67	2.68						
SbIr	5	15	6	9		2.44	2.47	2.46						
SbK	5	15	4	1		3.15	3.15	3.15						
SbLa	5	15	6	3		2.58	2.81	2.70						
SbLi	5	15	2	1		2.07	2.24	2.15						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
SbMg	5	15	3	2		2.34	2.58	2.46						
SbMn	5	15	4	7		2.15	2.17	2.16						
SbMo	5	15	5	6		2.32	2.35	2.34						
SbN	5	15	2	15		1.78	1.81	1.79				EE	1.83	
SbNa	5	15	3	1		2.71	2.91	2.81						
SbNb	5	15	5	5		2.35	2.42	2.38						
SbNi	5	15	4	10		2.36	2.30	2.33						
SbO	5	15	2	16	1.83	1.81	1.78	1.79						
SbOs	5	15	6	8		2.36	2.42	2.39						
SbP	5	15	3	15	2.205	2.22	2.24	2.23	2.05			EE	2.12	
SbPb	5	15	6	14		2.73	2.72	2.73						
SbPd	5	15	5	10		2.57	2.47	2.52						
SbPo	5	15	6	16		2.65	2.66	2.66						
SbPt	5	15	6	10		2.54	2.54	2.54						
SBr	3	16	4	17		2.10	2.27	2.18						
SbRb	5	15	5	1		3.59	3.50	3.54						
SbRe	5	15	6	7		2.30	2.40	2.35						
SbRh	5	15	5	9		2.48	2.40	2.44						
SbRu	5	15	5	8		2.40	2.35	2.37						
SbS	5	15	3	16		2.22	2.18	2.20						
SbSb	5	15	5	15	2.34	2.54	2.54	2.54				EE	2.48	
SbSc	5	15	4	3		2.38	2.51	2.45						
SbSe	5	15	4	16		2.32	2.30	2.31						
SbSi	5	15	3	14		2.27	2.32	2.30						
SbSn	5	15	5	14		2.63	2.63	2.63						
SbSr	5	15	5	2		2.96	3.03	3.00						
SbTa	5	15	6	5		2.31	2.49	2.40						
SbTc	5	15	5	7		2.34	2.33	2.34						
SbTe	5	15	5	16		2.49	2.50	2.50						
SbTi	5	15	4	4		2.23	2.35	2.29						
SbTl	5	15	6	13		2.75	2.75	2.75						
SbV	5	15	4	5		2.15	2.24	2.20						
SbW	5	15	6	6		2.28	2.42	2.35						
SbY	5	15	5	3		2.63	2.73	2.68						
SbZn	5	15	4	12		2.48	2.45	2.46						
SbZr	5	15	5	4		2.44	2.54	2.49						
SC	3	16	2	14	1.53	1.53	1.54	1.54	1.52	23	1.55	DF	1.52	1.53
SCa	3	16	4	2	2.32	2.30	2.26	2.28	2.36					
ScAg	4	3	5	11		2.66	2.62	2.64						
ScAl	4	3	3	13		2.38	2.26	2.32						
ScAs	4	3	4	15		2.32	2.20	2.26						
ScAt	4	3	6	17		2.63	2.17	2.40						
ScAu	4	3	6	11		2.46	2.73	2.60						
ScB	4	3	2	13		1.84	1.87	1.86						
ScBa	4	3	6	2		2.55	3.08	2.81						
ScBe	4	3	2	2		2.03	2.08	2.05						
ScBi	4	3	6	15		2.49	2.45	2.47						
ScBr	4	3	4	17		2.29	2.15	2.22						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
ScC	4	3	2	14		1.78	1.84	1.81						
ScCa	4	3	4	2		2.69	2.61	2.65						
ScCd	4	3	5	12		2.71	2.67	2.69						
ScCl	4	3	3	17	2.23	2.16	2.11	2.13	2.26					
ScCo	4	3	4	9		2.39	2.25	2.32						
ScCr	4	3	4	6		2.21	2.19	2.20						
ScCs	4	3	6	1		2.97	3.48	3.23						
ScCu	4	3	4	11		2.56	2.36	2.46						
SCd	3	16	5	12		2.29	2.20	2.24						
ScF	4	3	2	17	1.79	1.80	1.72	1.76	1.77					
ScFe	4	3	4	8		2.30	2.20	2.25						
ScGa	4	3	4	13		2.57	2.38	2.47						
ScGe	4	3	4	14		2.46	2.31	2.39						
ScHf	4	3	6	4		2.17	2.64	2.41						
ScHg	4	3	6	12		2.53	2.78	2.66						
ScI	4	3	5	17		2.53	2.22	2.38						
ScIn	4	3	5	13		2.70	2.65	2.68						
ScIr	4	3	6	9		2.27	2.57	2.42						
ScK	4	3	4	1		3.16	2.88	3.02						
SCl	3	16	3	17		1.97	2.08	2.03		33	1.94			
ScLa	4	3	6	3		2.31	2.81	2.56						
ScLi	4	3	2	1		2.31	2.27	2.29						
ScMg	4	3	3	2		2.51	2.48	2.50						
ScMn	4	3	4	7		2.24	2.18	2.21						
ScMo	4	3	5	6		2.26	2.41	2.34						
ScN	4	3	2	15		1.71	1.79	1.75						
ScNa	4	3	3	1		2.92	2.74	2.83						
ScNb	4	3	5	5		2.28	2.46	2.37						
ScNi	4	3	4	10		2.48	2.30	2.39						
ScO	4	3	2	16		1.68	1.75	1.72	1.68					
SCo	3	16	4	9		1.97	1.87	1.92						
ScOs	4	3	6	8		2.19	2.51	2.35						
ScP	4	3	3	15		2.15	2.12	2.14						
ScPb	4	3	6	14		2.53	2.65	2.59						
ScPd	4	3	5	10		2.56	2.55	2.56						
ScPo	4	3	6	16		2.50	2.26	2.38						
ScPt	4	3	6	10		2.37	2.65	2.51						
SCr	3	16	4	6		1.87	1.83	1.85						
ScRb	4	3	5	1		3.28	3.28	3.28						
ScRe	4	3	6	7		2.13	2.48	2.30						
ScRh	4	3	5	9		2.46	2.48	2.47						
ScRu	4	3	5	8		2.36	2.43	2.40						
SCs	3	16	6	1		2.90	2.91	2.90						
ScS	4	3	3	16		2.08	2.09	2.08						
ScSb	4	3	5	15		2.51	2.38	2.45						
ScSc	4	3	4	3		2.43	2.43	2.43						
ScSe	4	3	4	16		2.22	2.13	2.18						
ScSi	4	3	3	14		2.28	2.20	2.24						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
ScSn	4	3	5	14		2.63	2.55	2.59						
ScSr	4	3	5	2		2.78	2.93	2.85						
ScTa	4	3	6	5		2.11	2.54	2.32						
ScTc	4	3	5	7		2.30	2.40	2.35						
ScTe	4	3	5	16		2.44	2.25	2.35						
ScTi	4	3	4	4		2.28	2.30	2.29						
ScTl	4	3	6	13		2.55	2.76	2.66						
SCu	3	16	4	11		2.07	1.98	2.03						
ScV	4	3	4	5		2.22	2.23	2.22						
ScW	4	3	6	6		2.10	2.49	2.29						
ScY	4	3	5	3		2.50	2.70	2.60						
ScZn	4	3	4	12		2.60	2.40	2.50						
ScZr	4	3	5	4		2.35	2.55	2.45						
SeAg	4	16	5	11		2.35	2.25	2.30						
SeAl	4	16	3	13		2.05	2.09	2.07						
SeAs	4	16	4	15		2.13	2.14	2.13						
SeAt	4	16	6	17		2.54	2.79	2.66						
SeAu	4	16	6	11		2.35	2.37	2.36						
SeB	4	16	2	13		1.65	1.67	1.66						
SeBa	4	16	6	2		2.61	2.73	2.67						
SeBe	4	16	2	2		1.66	1.82	1.74						
SeBi	4	16	6	15		2.41	2.46	2.44						
SeBr	4	16	4	17		2.22	2.37	2.29						
SeC	4	16	2	14	1.68	1.63	1.66	1.65	1.75			DF	1.73	
SeCa	4	16	4	2		2.36	2.43	2.39						
SeCd	4	16	5	12		2.39	2.32	2.35						
SeCl	4	16	3	17		2.12	2.19	2.16						
SeCo	4	16	4	9		2.03	1.99	2.01						
SeCr	4	16	4	6		1.91	1.95	1.93						
SeCs	4	16	6	1		3.09	3.09	3.09						
SeCu	4	16	4	11		2.15	2.11	2.13						
SeF	4	16	2	17		1.68	1.76	1.72						
SeFe	4	16	4	8		1.97	1.96	1.96						
SeGa	4	16	4	13		2.20	2.20	2.20						
SeGe	4	16	4	14	2.13	2.17	2.19	2.18	2.22			DF	2.19	
SeHf	4	16	6	4		2.18	2.33	2.26						
SeHg	4	16	6	12		2.41	2.44	2.42						
SeI	4	16	5	17		2.38	2.62	2.50						
SeIn	4	16	5	13		2.39	2.35	2.37						
SeIr	4	16	6	9		2.20	2.23	2.21						
SeK	4	16	4	1		2.75	2.73	2.74						
SeLa	4	16	6	3		2.33	2.49	2.41						
SeLi	4	16	2	1		1.87	2.00	1.94						
SeMg	4	16	3	2		2.08	2.30	2.19						
SeMn	4	16	4	7		1.93	1.94	1.93						
SeMo	4	16	5	6		2.09	2.08	2.08						
SeN	4	16	2	15	1.65	1.62	1.62	1.62						
SeNa	4	16	3	1		2.37	2.57	2.47						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
SeNb	4	16	5	5		2.12	2.13	2.12						
SeNi	4	16	4	10		2.09	2.05	2.07						
SeO	4	16	2	16	1.65	1.63	1.61	1.62						
SeOs	4	16	6	8		2.13	2.18	2.16						
SeP	4	16	3	15	2.02	2.01	2.02	2.01						
SePb	4	16	6	14	2.40	2.43	2.48	2.46	2.38			DF	2.46	
SePd	4	16	5	10		2.28	2.18	2.23						
SePo	4	16	6	16		2.43	2.50	2.47				FF	2.54	
SePt	4	16	6	10		2.27	2.29	2.28						
SeRb	4	16	5	1		3.13	2.95	3.04						
SeRe	4	16	6	7		2.09	2.16	2.13						
SeRh	4	16	5	9		2.21	2.12	2.16						
SeRu	4	16	5	8		2.15	2.08	2.11						
SeS	4	16	3	16	2.04	2.04	2.00	2.02	2.00					
SeSb	4	16	5	15		2.30	2.32	2.31						
SeSc	4	16	4	3		2.13	2.22	2.18						
SeSe	4	16	4	16	2.17	2.13	2.13	2.13						
SeSi	4	16	3	14	2.06	2.04	2.07	2.05	2.12					
SeSn	4	16	5	14	2.33	2.35	2.35	2.35	2.30					
SeSr	4	16	5	2		2.63	2.60	2.62						
SeTa	4	16	6	5		2.10	2.23	2.17						
SeTc	4	16	5	7		2.10	2.06	2.08						
SeTe	4	16	5	16		2.29	2.34	2.32						
SeTi	4	16	4	4		2.00	2.09	2.05						
SeTl	4	16	6	13		2.44	2.48	2.46						
SeV	4	16	4	5		1.94	2.00	1.97						
SeW	4	16	6	6		2.07	2.18	2.13						
SeY	4	16	5	3		2.36	2.38	2.37						
SeZn	4	16	4	12		2.19	2.17	2.18						
SeZr	4	16	5	4		2.20	2.23	2.21						
SF	3	16	2	17	1.60	1.54	1.64	1.59		23	1.58			
SFe	3	16	4	8		1.92	1.83	1.88						
SGa	3	16	4	13		2.09	2.07	2.08						
SGe	3	16	4	14	2.01	2.04	2.06	2.05	2.07			DF	1.98	
SHf	3	16	6	4		2.08	2.21	2.15						
SHg	3	16	6	12		2.28	2.32	2.30						
SI	3	16	5	17		2.30	2.52	2.41						
SiAg	3	14	5	11		2.40	2.30	2.35						
SiAl	3	14	3	13		2.10	2.08	2.09		33	2.22			
SiAs	3	14	4	15		2.11	2.07	2.09						
SiAt	3	14	6	17		2.69	2.80	2.74						
SiAu	3	14	6	11		2.29	2.42	2.36						
SiB	3	14	2	13		1.66	1.66	1.66		23	1.77			
SiBa	3	14	6	2		2.40	2.86	2.63						
SiBe	3	14	2	2		1.75	1.86	1.81		23	1.95			
SiBi	3	14	6	15		2.36	2.47	2.42						
SiBr	3	14	4	17		2.23	2.26	2.25						
SiC	3	14	2	14	2.25	1.62	1.63	1.63						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
SiCa	3	14	4	2		2.43	2.49	2.46						
SiCd	3	14	5	12		2.44	2.36	2.40						
SiCl	3	14	3	17	2.06	2.09	2.08	2.09						
SiCo	3	14	4	9		2.14	2.04	2.09						
SiCr	3	14	4	6		2.00	2.01	2.01						
SiCs	3	14	6	1		2.79	3.27	3.03						
SiCu	3	14	4	11		2.27	2.14	2.21						
SiF	3	14	2	17	1.6	1.69	1.68	1.68						
SiFe	3	14	4	8		2.07	2.00	2.04						
SiGa	3	14	4	13		2.28	2.19	2.23						
SiGe	3	14	4	14		2.20	2.15	2.17						
SiHf	3	14	6	4		2.06	2.42	2.24						
SiHg	3	14	6	12		2.35	2.49	2.42						
SiI	3	14	5	17		2.50	2.56	2.53						
SiIn	3	14	5	13		2.44	2.38	2.41						
SiIr	3	14	6	9		2.13	2.28	2.21						
SiK	3	14	4	1		2.82	2.78	2.80						
SiLa	3	14	6	3		2.18	2.59	2.39						
SiLi	3	14	2	1		1.97	2.04	2.01		23	2.19			
SiMg	3	14	3	2		2.22	2.35	2.28		33	2.38			
SiMn	3	14	4	7		2.03	1.99	2.01						
SiMo	3	14	5	6		2.09	2.15	2.12						
SIn	3	16	5	13		2.28	2.24	2.26						
SiN	3	14	2	15	1.57	1.58	1.58	1.58						
SiNa	3	14	3	1		2.54	2.62	2.58		33	2.56			
SiNb	3	14	5	5		2.11	2.21	2.16						
SiNi	3	14	4	10		2.21	2.09	2.15						
SiO	3	14	2	16	1.51	1.58	1.55	1.57	1.54					
SiOs	3	14	6	8		2.06	2.24	2.15						
SiP	3	14	3	15		1.95	1.95	1.95						
SiPb	3	14	6	14		2.37	2.51	2.44						
SiPd	3	14	5	10		2.33	2.24	2.28						
SiPo	3	14	6	16		2.44	2.49	2.46						
SiPt	3	14	6	10		2.21	2.35	2.28						
SIr	3	16	6	9		2.09	2.12	2.10						
SiRb	3	14	5	1		3.00	3.07	3.03						
SiRe	3	14	6	7		2.00	2.23	2.12						
SiRh	3	14	5	9		2.24	2.18	2.21						
SiRu	3	14	5	8		2.17	2.14	2.16						
SiS	3	14	3	16	1.93	1.93	1.91	1.92	1.94					
SiSb	3	14	5	15		2.32	2.27	2.30						
SiSc	3	14	4	3		2.20	2.28	2.24						
SiSe	3	14	4	16	2.06	2.07	2.04	2.05	2.12					
SiSi	3	14	3	14		2.04	2.04	2.04	2.01					
SiSn	3	14	5	14		2.39	2.34	2.37						
SiSr	3	14	5	2		2.56	2.71	2.63						
SiTa	3	14	6	5		2.00	2.31	2.15						
SiTc	3	14	5	7		2.12	2.13	2.12						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
SiTe	3	14	5	16		2.31	2.26	2.29						
SiTi	3	14	4	4		2.08	2.14	2.11						
SiTl	3	14	6	13		2.37	2.53	2.45						
SiV	3	14	4	5		2.02	2.06	2.04						
SiW	3	14	6	6		1.98	2.25	2.11						
SiY	3	14	5	3		2.31	2.47	2.39						
SiZn	3	14	4	12		2.30	2.19	2.24						
SiZr	3	14	5	4		2.17	2.31	2.24						
SK	3	16	4	1		2.68	2.52	2.60						
SLa	3	16	6	3		2.22	2.36	2.29	2.39					
SLi	3	16	2	1		1.83	1.84	1.84		23	2.01			
SMg	3	16	3	2	2.14	2.04	2.12	2.08		33	2.22			
SMn	3	16	4	7		1.88	1.82	1.85						
SMo	3	16	5	6		2.02	1.96	1.99						
SN	3	16	2	15	1.49	1.50	1.51	1.50						
SNa	3	16	3	1		2.34	2.36	2.35		33	2.38			
SnAg	5	14	5	11		2.82	2.71	2.76						
SnAl	5	14	3	13		2.41	2.42	2.41						
SnAs	5	14	4	15		2.40	2.43	2.41						
SnAt	5	14	6	17		2.84	2.91	2.87						
SnAu	5	14	6	11		2.75	2.80	2.78						
SNb	3	16	5	5		2.04	2.01	2.03						
SnB	5	14	2	13		1.88	1.92	1.90						
SnBa	5	14	6	2		3.00	3.35	3.18						
SnBe	5	14	2	2		1.93	2.10	2.01						
SnBi	5	14	6	15		2.78	2.75	2.77						
SnBr	5	14	4	17		2.44	2.52	2.48						
SnC	5	14	2	14		1.85	1.90	1.87						
SnCa	5	14	4	2		2.85	2.89	2.87						
SnCd	5	14	5	12		2.87	2.78	2.83						
SnCl	5	14	3	17	2.36	2.35	2.37	2.36						
SnCo	5	14	4	9		2.43	2.33	2.38						
SnCr	5	14	4	6		2.27	2.28	2.28						
SnCs	5	14	6	1		3.63	3.92	3.78						
SnCu	5	14	4	11		2.59	2.48	2.54						
SnF	5	14	2	17	1.94	1.95	1.92	1.93						
SnFe	5	14	4	8		2.35	2.28	2.32						
SnGa	5	14	4	13		2.60	2.58	2.59						
SnGe	5	14	4	14		2.51	2.53	2.52						
SnHf	5	14	6	4		2.47	2.78	2.63						
SnHg	5	14	6	12		2.83	2.88	2.85						
SNi	3	16	4	10		2.02	1.92	1.97						
SnI	5	14	5	17		2.64	2.77	2.70						
SnIn	5	14	5	13		2.85	2.81	2.83						
SnIr	5	14	6	9		2.54	2.62	2.58						
SnK	5	14	4	1		3.42	3.30	3.36						
SnLa	5	14	6	3		2.66	3.00	2.83						
SnLi	5	14	2	1		2.19	2.32	2.25						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
SnMg	5	14	3	2		2.52	2.68	2.60						
SnMn	5	14	4	7		2.30	2.26	2.28						
SnMo	5	14	5	6		2.44	2.48	2.46						
SnN	5	14	2	15		1.81	1.85	1.83						
SnNa	5	14	3	1		2.95	3.03	2.99						
SnNb	5	14	5	5		2.47	2.56	2.51						
SnNi	5	14	4	10		2.52	2.40	2.46						
SnO	5	14	2	16	1.83	1.83	1.82	1.83	1.77					
SnOs	5	14	6	8		2.45	2.57	2.51						
SnP	5	14	3	15		2.26	2.30	2.28						
SnPb	5	14	6	14		2.83	2.86	2.85						
SnPd	5	14	5	10		2.73	2.62	2.67						
SnPo	5	14	6	16		2.74	2.70	2.72						
SnPt	5	14	6	10		2.64	2.71	2.68						
SnRb	5	14	5	1		3.83	3.73	3.78						
SnRe	5	14	6	7		2.38	2.55	2.46						
SnRh	5	14	5	9		2.63	2.54	2.58						
SnRu	5	14	5	8		2.53	2.48	2.51						
SnS	5	14	3	16	2.21	2.24	2.24	2.24	2.17					
SnSb	5	14	5	15		2.63	2.63	2.63						
SnSc	5	14	4	3		2.55	2.63	2.59						
SnSe	5	14	4	16	2.33	2.35	2.35	2.35	2.30					
SnSi	5	14	3	14		2.34	2.39	2.37						
SnSn	5	14	5	14		2.76	2.76	2.76						
SnSr	5	14	5	2		3.13	3.22	3.18						
SnTa	5	14	6	5		2.38	2.64	2.51						
SnTc	5	14	5	7		2.47	2.46	2.47						
SnTe	5	14	5	16	2.52	2.55	2.55	2.55	2.52					
SnTi	5	14	4	4		2.38	2.45	2.41						
SnTl	5	14	6	13		2.86	2.91	2.88						
SnV	5	14	4	5		2.30	2.34	2.32						
SnW	5	14	6	6		2.36	2.57	2.46						
SnY	5	14	5	3		2.77	2.89	2.83						
SnZn	5	14	4	12		2.63	2.55	2.59						
SnZr	5	14	5	4		2.57	2.69	2.63						
SO	3	16	2	16	1.48	1.49	1.50	1.49		23	1.51	FF	1.48	1.50
SOs	3	16	6	8		2.03	2.07	2.05						
SP	3	16	3	15		1.87	1.89	1.88		33	1.94			
SPb	3	16	6	14	2.29	2.29	2.37	2.33	2.27			DF	2.25	
SPd	3	16	5	10		2.19	2.06	2.13						
SPo	3	16	6	16		2.33	2.41	2.37				FF	2.32	
SPt	3	16	6	10		2.16	2.18	2.17						
SrAg	5	2	5	11		3.28	3.13	3.20						
SrAl	5	2	3	13		2.83	2.60	2.71						
SrAs	5	2	4	15		2.75	2.65	2.70						
SrAt	5	2	6	17		3.03	2.51	2.77						
SrAu	5	2	6	11		3.04	3.40	3.22						
SRb	3	16	5	1		2.98	2.75	2.86						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
SrB	5	2	2	13		2.12	2.12	2.12						
SrBa	5	2	6	2		3.23	3.89	3.56						
SrBe	5	2	2	2		2.32	2.35	2.33						
SrBi	5	2	6	15		3.07	3.06	3.06						
SrBr	5	2	4	17		2.62	2.66	2.64						
SrC	5	2	2	14		2.06	2.10	2.08						
SrCa	5	2	4	2		3.32	3.01	3.17						
SrCd	5	2	5	12		3.36	3.22	3.29						
SrCl	5	2	3	17		2.49	2.58	2.53						
SrCo	5	2	4	9		2.85	2.56	2.70						
SrCr	5	2	4	6		2.61	2.48	2.54						
SrCs	5	2	6	1		3.96	4.58	4.27						
SrCu	5	2	4	11		3.08	2.72	2.90						
SRe	3	16	6	7		1.99	2.06	2.02						
SrF	5	2	2	17	2.08	2.04	2.04	2.04	2.00					
SrFe	5	2	4	8		2.73	2.50	2.62						
SrGa	5	2	4	13		3.09	2.78	2.94						
SrGe	5	2	4	14		2.94	2.73	2.84						
SRh	3	16	5	9		2.13	2.00	2.07						
SrHf	5	2	6	4		2.65	3.22	2.94						
SrHg	5	2	6	12		3.15	3.50	3.32						
SrI	5	2	5	17		2.87	2.70	2.79						
SrIn	5	2	5	13		3.34	3.23	3.28						
SrIr	5	2	6	9		2.77	3.13	2.95						
SrK	5	2	4	1		4.09	3.38	3.74						
SrLa	5	2	6	3		2.85	3.48	3.17						
SrLi	5	2	2	1		2.68	2.59	2.64						
SrMg	5	2	3	2		3.01	2.83	2.92						
SrMn	5	2	4	7		2.65	2.47	2.56						
SrMo	5	2	5	6		2.73	2.81	2.77						
SrN	5	2	2	15		1.97	2.06	2.02						
SrNa	5	2	3	1		3.62	3.16	3.39						
SrNb	5	2	5	5		2.75	2.87	2.81						
SrNi	5	2	4	10		2.97	2.64	2.80						
SrO	5	2	2	16	1.92	1.94	2.05	1.99	1.89					
SrOs	5	2	6	8		2.65	3.04	2.85						
SrP	5	2	3	15		2.55	2.50	2.52						
SrPb	5	2	6	14		3.15	3.35	3.25						
SrPd	5	2	5	10		3.14	3.02	3.08						
SrPo	5	2	6	16		2.99	2.74	2.86						
SrPt	5	2	6	10		2.91	3.26	3.08						
SrRb	5	2	5	1		4.42	4.04	4.23						
SrRe	5	2	6	7		2.57	3.00	2.78						
SrRh	5	2	5	9		2.99	2.92	2.95						
SrRu	5	2	5	8		2.86	2.84	2.85						
SrS	5	2	3	16	2.44	2.44	2.53	2.48	2.49					
SrSb	5	2	5	15		3.03	2.96	3.00						
SrSc	5	2	4	3		2.93	2.78	2.85						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
SrSe	5	2	4	16		2.60	2.63	2.62						
SrSi	5	2	3	14		2.71	2.56	2.63						
SrSn	5	2	5	14		3.22	3.13	3.18						
SrSr	5	2	5	2		3.52	3.52	3.52						
SrTa	5	2	6	5		2.56	3.07	2.82						
SrTc	5	2	5	7		2.77	2.80	2.78						
SrTe	5	2	5	16		2.86	2.82	2.84						
SrTi	5	2	4	4		2.72	2.62	2.67						
SrTl	5	2	6	13		3.19	3.51	3.35						
SRu	3	16	5	8		2.07	1.97	2.02						
SrV	5	2	4	5		2.63	2.52	2.58						
SrW	5	2	6	6		2.54	3.00	2.77						
SrY	5	2	5	3		3.08	3.20	3.14						
SrZn	5	2	4	12		3.13	2.78	2.95						
SrZr	5	2	5	4		2.85	2.99	2.92						
SS	3	16	3	16	1.89	1.88	1.88	1.88	1.87	33	1.92	FF	1.79	1.86
SSb	3	16	5	15		2.18	2.22	2.20						
SSc	3	16	4	3		2.09	2.08	2.08						
SSe	3	16	4	16	2.04	2.00	2.04	2.02	2.00					
SSi	3	16	3	14	1.93	1.91	1.93	1.92	1.94					
SSn	3	16	5	14	2.21	2.24	2.24	2.24	2.17					
SSr	3	16	5	2	2.44	2.53	2.44	2.48	2.49					
STa	3	16	6	5		2.01	2.12	2.06						
STc	3	16	5	7		2.03	1.95	1.99						
STe	3	16	5	16	2.23	2.18	2.25	2.22						
STi	3	16	4	4		1.96	1.95	1.96						
STl	3	16	6	13		2.30	2.37	2.33						
SV	3	16	4	5		1.89	1.88	1.88						
SW	3	16	6	6		1.98	2.07	2.03						
SY	3	16	5	3		2.27	2.24	2.25						
SZn	3	16	4	12		2.10	2.04	2.07						
SZr	3	16	5	4		2.12	2.10	2.11						
TaAg	6	5	5	11		2.76	2.34	2.55						
TaAl	6	5	3	13		2.40	2.01	2.21						
TaAs	6	5	4	15		2.32	2.08	2.20						
TaAt	6	5	6	17		2.49	2.12	2.31						
TaAu	6	5	6	11		2.69	2.56	2.63						
TaB	6	5	2	13		1.88	1.70	1.79						
TaBa	6	5	6	2		2.97	2.82	2.89						
TaBe	6	5	2	2		2.06	1.84	1.95						
TaBi	6	5	6	15		2.56	2.44	2.50						
TaBr	6	5	4	17		2.32	2.17	2.25						
TaC	6	5	2	14		1.81	1.68	1.75						
TaCa	6	5	4	2		2.85	2.26	2.55						
TaCd	6	5	5	12		2.80	2.40	2.60						
TaCl	6	5	3	17		2.21	2.08	2.15						
TaCo	6	5	4	9		2.42	1.97	2.20						
TaCr	6	5	4	6		2.26	1.92	2.09						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
TaCs	6	5	6	1		3.60	3.16	3.38						
TaCu	6	5	4	11		2.58	2.07	2.32						
TaF	6	5	2	17		1.82	1.69	1.75						
TaFe	6	5	4	8		2.35	1.93	2.14						
TaGa	6	5	4	13		2.56	2.13	2.34						
TaGe	6	5	4	14		2.45	2.11	2.28						
TaHf	6	5	6	4		2.44	2.44	2.44						
TaHg	6	5	6	12		2.75	2.64	2.69						
TaI	6	5	5	17		2.45	2.24	2.35						
TaIn	6	5	5	13		2.76	2.42	2.59						
TaIr	6	5	6	9		2.50	2.39	2.44						
TaK	6	5	4	1		3.42	2.47	2.94						
TaLa	6	5	6	3		2.63	2.59	2.61						
TaLi	6	5	2	1		2.36	2.00	2.18						
TaMg	6	5	3	2		2.61	2.15	2.38						
TaMn	6	5	4	7		2.29	1.91	2.10						
TaMo	6	5	5	6		2.40	2.14	2.27						
TaN	6	5	2	15		1.74	1.66	1.70						
TaNa	6	5	3	1		3.08	2.35	2.71						
TaNb	6	5	5	5		2.43	2.17	2.30						
TaNi	6	5	4	10		2.51	2.02	2.26						
TaO	6	5	2	16	1.69	1.72	1.65	1.69						
TaOs	6	5	6	8		2.41	2.33	2.37						
TaP	6	5	3	15		2.19	1.97	2.08						
TaPb	6	5	6	14		2.68	2.59	2.64						
TaPd	6	5	5	10		2.68	2.27	2.47						
TaPo	6	5	6	16		2.44	2.26	2.35						
TaPt	6	5	6	10		2.60	2.47	2.54						
TaRb	6	5	5	1		3.76	2.83	3.29						
TaRe	6	5	6	7		2.35	2.30	2.33						
TaRh	6	5	5	9		2.58	2.20	2.39						
TaRu	6	5	5	8		2.49	2.16	2.32						
TaS	6	5	3	16		2.12	2.01	2.06						
TaSb	6	5	5	15		2.49	2.31	2.40						
TaSc	6	5	4	3		2.54	2.11	2.32						
TaSe	6	5	4	16		2.23	2.10	2.17						
TaSi	6	5	3	14		2.31	2.00	2.15						
TaSn	6	5	5	14		2.64	2.38	2.51						
TaSr	6	5	5	2		3.07	2.56	2.82						
TaTa	6	5	6	5		2.35	2.35	2.35						
TaTc	6	5	5	7		2.43	2.13	2.28						
TaTe	6	5	5	16		2.37	2.26	2.32						
TaTi	6	5	4	4		2.37	2.01	2.19						
TaTl	6	5	6	13		2.75	2.66	2.70						
TaV	6	5	4	5		2.29	1.95	2.12						
TaW	6	5	6	6		2.33	2.31	2.32						
TaY	6	5	5	3		2.72	2.37	2.54						
TaZn	6	5	4	12		2.60	2.11	2.36						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	<r_e>	r_e	Area	r_e	Area	r_e	<r_e>
TaZr	6	5	5	4		2.52	2.25	2.39						
TcAg	5	7	5	11		2.56	2.48	2.52						
TcAl	5	7	3	13		2.23	2.15	2.19						
TcAs	5	7	4	15		2.15	2.15	2.15						
TcAt	5	7	6	17		2.42	2.07	2.24						
TcAu	5	7	6	11		2.42	2.62	2.52						
TcB	5	7	2	13		1.74	1.77	1.76						
TcBa	5	7	6	2		2.61	2.93	2.77						
TcBe	5	7	2	2		1.93	1.92	1.92						
TcBi	5	7	6	15		2.36	2.40	2.38						
TcBr	5	7	4	17		2.14	2.10	2.12						
TcC	5	7	2	14		1.69	1.74	1.72						
TcCa	5	7	4	2		2.67	2.47	2.57						
TcCd	5	7	5	12		2.59	2.54	2.57						
TcCl	5	7	3	17		2.04	2.04	2.04						
TcCo	5	7	4	9		2.31	2.12	2.21						
TcCr	5	7	4	6		2.16	2.07	2.11						
TcCs	5	7	6	1		3.08	3.31	3.19						
TcCu	5	7	4	11		2.44	2.23	2.33						
TcF	5	7	2	17		1.72	1.66	1.69						
TcFe	5	7	4	8		2.23	2.08	2.16						
TcGa	5	7	4	13		2.40	2.28	2.34						
TcGe	5	7	4	14		2.29	2.23	2.26						
TcHf	5	7	6	4		2.20	2.53	2.37						
TcHg	5	7	6	12		2.47	2.68	2.57						
TcI	5	7	5	17		2.32	2.15	2.24						
TcIn	5	7	5	13		2.56	2.54	2.55						
TcIr	5	7	6	9		2.26	2.46	2.36						
TcK	5	7	4	1		3.16	2.72	2.94						
TcLa	5	7	6	3		2.35	2.69	2.52						
TcLi	5	7	2	1		2.19	2.09	2.14						
TcMg	5	7	3	2		2.46	2.33	2.40						
TcMn	5	7	4	7		2.18	2.06	2.12						
TcMo	5	7	5	6		2.25	2.28	2.26						
TcN	5	7	2	15		1.62	1.70	1.66						
TcNa	5	7	3	1		2.87	2.56	2.72						
TcNb	5	7	5	5		2.27	2.32	2.29						
TcNi	5	7	4	10		2.38	2.18	2.28						
TcO	5	7	2	16		1.61	1.67	1.64						
TcOs	5	7	6	8		2.19	2.40	2.29						
TcP	5	7	3	15		2.01	2.05	2.03						
TcPb	5	7	6	14		2.43	2.58	2.51						
TcPd	5	7	5	10		2.49	2.41	2.45						
TcPo	5	7	6	16		2.33	2.19	2.26						
TcPt	5	7	6	10		2.35	2.54	2.44						
TcRb	5	7	5	1		3.34	3.09	3.21						
TcRe	5	7	6	7		2.13	2.37	2.25						
TcRh	5	7	5	9		2.41	2.34	2.38						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
TcRu	5	7	5	8		2.33	2.29	2.31						
TcS	5	7	3	16		1.95	2.03	1.99						
TcSb	5	7	5	15		2.33	2.34	2.34						
TcSc	5	7	4	3		2.40	2.30	2.35						
TcSe	5	7	4	16		2.06	2.10	2.08						
TcSi	5	7	3	14		2.13	2.12	2.12						
TcSn	5	7	5	14		2.46	2.47	2.47						
TcSr	5	7	5	2		2.80	2.77	2.78						
TcTa	5	7	6	5		2.13	2.43	2.28						
TcTc	5	7	5	7		2.27	2.27	2.27						
TcTe	5	7	5	16		2.24	2.22	2.23						
TcTi	5	7	4	4		2.25	2.18	2.22						
TcTl	5	7	6	13		2.47	2.68	2.57						
TcV	5	7	4	5		2.18	2.11	2.14						
TcW	5	7	6	6		2.11	2.38	2.25						
TcY	5	7	5	3		2.51	2.55	2.53						
TcZn	5	7	4	12		2.45	2.28	2.36						
TcZr	5	7	5	4		2.34	2.41	2.38						
TeAg	5	16	5	11		2.50	2.46	2.48						
TeAl	5	16	3	13		2.27	2.33	2.30						
TeAs	5	16	4	15		2.35	2.34	2.35						
TeAt	5	16	6	17		2.61	2.86	2.73						
TeAu	5	16	6	11		2.55	2.52	2.54						
TeB	5	16	2	13		1.81	1.86	1.83						
TeBa	5	16	6	2		2.86	2.92	2.89						
TeBe	5	16	2	2		1.80	2.00	1.90						
TeBi	5	16	6	15		2.60	2.58	2.59						
TeBr	5	16	4	17		2.38	2.48	2.43						
TeC	5	16	2	14		1.80	1.85	1.82						
TeCa	5	16	4	2		2.50	2.68	2.59						
TeCd	5	16	5	12		2.56	2.54	2.55						
TeCl	5	16	3	17		2.30	2.33	2.32						
TeCo	5	16	4	9		2.16	2.18	2.17						
TeCr	5	16	4	6		2.02	2.13	2.07						
TeCs	5	16	6	1		3.45	3.34	3.40				DF	1.89	
TeCu	5	16	4	11	2.35	2.32	2.33	2.33						
TeF	5	16	2	17		1.83	1.89	1.86						
TeFe	5	16	4	8		2.09	2.14	2.11						
TeGa	5	16	4	13		2.40	2.44	2.42						
TeGe	5	16	4	14	2.34	2.39	2.42	2.40	2.43			DF	2.36	
TeHf	5	16	6	4		2.35	2.48	2.42						
TeHg	5	16	6	12		2.62	2.60	2.61						
TeI	5	16	5	17		2.51	2.71	2.61						
TeIn	5	16	5	13		2.58	2.58	2.58						
TeIr	5	16	6	9		2.37	2.37	2.37						
TeK	5	16	4	1		2.94	3.05	2.99						
TeLa	5	16	6	3		2.53	2.65	2.59						
TeLi	5	16	2	1		2.03	2.21	2.12						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
TeMg	5	16	3	2		2.23	2.53	2.38						
TeMn	5	16	4	7		2.04	2.12	2.08						
TeMo	5	16	5	6		2.21	2.25	2.23						
TeN	5	16	2	15		1.79	1.80	1.79						
TeNa	5	16	3	1		2.57	2.86	2.72						
TeNb	5	16	5	5		2.24	2.31	2.27						
TeNi	5	16	4	10		2.24	2.25	2.25						
TeO	5	16	2	16	1.83	1.80	1.77	1.79						
TeOs	5	16	6	8		2.29	2.32	2.30						
TeP	5	16	3	15		2.25	2.24	2.24						
TePb	5	16	6	14	2.60	2.64	2.63	2.64	2.62			DF	2.63	
TePd	5	16	5	10		2.42	2.38	2.40						
TePo	5	16	6	16		2.56	2.61	2.58				FF	2.71	
TePt	5	16	6	10		2.46	2.44	2.45						
TeRb	5	16	5	1		3.40	3.28	3.34						
TeRe	5	16	6	7		2.24	2.30	2.27						
TeRh	5	16	5	9		2.34	2.31	2.32						
TeRu	5	16	5	8		2.27	2.26	2.26						
TeS	5	16	3	16	2.23	2.25	2.18	2.22						
TeSb	5	16	5	15		2.50	2.49	2.50						
TeSc	5	16	4	3		2.25	2.44	2.35						
TeSe	5	16	4	16		2.34	2.29	2.32						
TeSi	5	16	3	14		2.26	2.31	2.29						
TeSn	5	16	5	14	2.52	2.55	2.55	2.55	2.52					
TeSr	5	16	5	2		2.82	2.86	2.84						
TeTa	5	16	6	5		2.26	2.37	2.32						
TeTc	5	16	5	7		2.22	2.24	2.23						
TeTe	5	16	5	16	2.56	2.47	2.47	2.47						
TeTi	5	16	4	4		2.11	2.28	2.20						
TeTl	5	16	6	13		2.65	2.64	2.65						
TeV	5	16	4	5		2.04	2.18	2.11						
TeW	5	16	6	6		2.23	2.31	2.27						
TeY	5	16	5	3		2.50	2.60	2.55						
TeZn	5	16	4	12		2.38	2.40	2.39						
TeZr	5	16	5	4		2.33	2.42	2.37						
TiAg	4	4	5	11		2.49	2.45	2.47						
TiAl	4	4	3	13		2.24	2.13	2.18						
TiAs	4	4	4	15		2.17	2.07	2.12						
TiAt	4	4	6	17		2.46	2.05	2.26						
TiAu	4	4	6	11		2.32	2.53	2.43						
TiB	4	4	2	13		1.75	1.77	1.76						
TiBa	4	4	6	2		2.41	2.84	2.63						
TiBe	4	4	2	2		1.93	1.96	1.94						
TiBi	4	4	6	15		2.33	2.29	2.31						
TiBr	4	4	4	17		2.17	2.02	2.09						
TiC	4	4	2	14		1.69	1.74	1.72						
TiCa	4	4	4	2		2.54	2.45	2.50						
TiCd	4	4	5	12		2.54	2.49	2.51						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
TiCl	4	4	3	17		2.04	1.97	2.01						
TiCo	4	4	4	9		2.26	2.12	2.19						
TiCr	4	4	4	6		2.10	2.07	2.08						
TiCs	4	4	6	1		2.80	3.19	2.99						
TiCu	4	4	4	11		2.41	2.22	2.31						
TiF	4	4	2	17		1.71	1.62	1.67						
TiFe	4	4	4	8		2.18	2.08	2.13						
TiGa	4	4	4	13		2.40	2.24	2.32						
TiGe	4	4	4	14		2.30	2.17	2.24						
TiHf	4	4	6	4		2.07	2.46	2.26						
TiHg	4	4	6	12		2.38	2.58	2.48						
TiI	4	4	5	17		2.38	2.09	2.23						
TiIn	4	4	5	13		2.53	2.47	2.50						
TiIr	4	4	6	9		2.16	2.39	2.27						
TiK	4	4	4	1		2.96	2.69	2.83						
TiLa	4	4	6	3		2.19	2.61	2.40						
TiLi	4	4	2	1		2.19	2.13	2.16						
TiMg	4	4	3	2		2.38	2.34	2.36						
TiMn	4	4	4	7		2.13	2.06	2.09						
TiMo	4	4	5	6		2.15	2.26	2.20						
TiN	4	4	2	15		1.62	1.69	1.65						
TiNa	4	4	3	1		2.75	2.56	2.65						
TiNb	4	4	5	5		2.16	2.30	2.23						
TiNi	4	4	4	10		2.34	2.17	2.25						
TiO	4	4	2	16	1.62	1.60	1.65	1.62						
TiOs	4	4	6	8		2.08	2.34	2.21						
TiP	4	4	3	15		2.02	2.00	2.01						
TiPb	4	4	6	14		2.37	2.46	2.41						
TiPd	4	4	5	10		2.41	2.39	2.40						
TiPo	4	4	6	16		2.34	2.13	2.23						
TiPt	4	4	6	10		2.24	2.46	2.35						
TiRb	4	4	5	1		3.07	3.03	3.05						
TiRe	4	4	6	7		2.02	2.31	2.17						
TiRh	4	4	5	9		2.32	2.32	2.32						
TiRu	4	4	5	8		2.24	2.28	2.26						
TiS	4	4	3	16		1.95	1.96	1.96						
TiSb	4	4	5	15		2.35	2.23	2.29						
TiSc	4	4	4	3		2.30	2.28	2.29						
TiSe	4	4	4	16		2.09	2.00	2.05						
TiSi	4	4	3	14		2.14	2.08	2.11						
TiSn	4	4	5	14		2.45	2.38	2.41						
TiSr	4	4	5	2		2.62	2.72	2.67						
TiTa	4	4	6	5		2.01	2.37	2.19						
TiTc	4	4	5	7		2.18	2.25	2.22						
TiTe	4	4	5	16		2.28	2.11	2.20						
TiTi	4	4	4	4		2.17	2.17	2.17						
TiTl	4	4	6	13		2.39	2.56	2.48						
TiV	4	4	4	5		2.11	2.10	2.11						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
TiW	4	4	6	6		2.00	2.32	2.16						
TiY	4	4	5	3		2.37	2.52	2.44						
TiZn	4	4	4	12		2.44	2.25	2.34						
TiZr	4	4	5	4		2.23	2.39	2.31						
TlAg	6	13	5	11		3.05	2.75	2.90						
TlAl	6	13	3	13		2.62	2.39	2.51						
TlAs	6	13	4	15		2.55	2.46	2.51						
TlAt	6	13	6	17		2.83	2.73	2.78						
TlAu	6	13	6	11		3.06	2.97	3.01						
TlB	6	13	2	13		2.02	1.92	1.97						
TlBa	6	13	6	2		3.46	3.49	3.47						
TlBe	6	13	2	2		2.16	2.07	2.12						
TlBi	6	13	6	15		2.89	2.90	2.89						
TlBr	6	13	4	17	2.62	2.61	2.59	2.60	2.60					
TlC	6	13	2	14		1.97	1.91	1.94						
TlCa	6	13	4	2		3.13	2.79	2.96						
TlCd	6	13	5	12		3.09	2.84	2.97						
TlCl	6	13	3	17	2.48	2.49	2.47	2.48	2.48					
TlCo	6	13	4	9		2.62	2.29	2.46						
TlCr	6	13	4	6		2.44	2.24	2.34						
TlCs	6	13	6	1		4.37	4.09	4.23						
TlCu	6	13	4	11		2.80	2.45	2.63						
TlF	6	13	2	17	2.08	2.03	2.00	2.01	2.09					
TlFe	6	13	4	8		2.53	2.25	2.39						
TlGa	6	13	4	13		2.79	2.56	2.68						
TlGe	6	13	4	14		2.68	2.54	2.61						
TlHf	6	13	6	4		2.77	2.89	2.83						
TlHg	6	13	6	12		3.13	3.07	3.10						
TlI	6	13	5	17	2.81	2.76	2.75	2.75						
TlIn	6	13	5	13		3.04	2.89	2.97						
TlIr	6	13	6	9		2.83	2.75	2.79						
TlK	6	13	4	1		3.84	3.15	3.50						
TlLa	6	13	6	3		3.01	3.12	3.07						
TlLi	6	13	2	1		2.48	2.28	2.38						
TlMg	6	13	3	2		2.81	2.60	2.71						
TlMn	6	13	4	7		2.47	2.23	2.35						
TlMo	6	13	5	6		2.65	2.49	2.57						
TlN	6	13	2	15		1.91	1.87	1.89						
TlNa	6	13	3	1		3.36	2.91	3.14						
TlNb	6	13	5	5		2.69	2.56	2.62						
TlNi	6	13	4	10		2.72	2.37	2.54						
TlO	6	13	2	16		1.91	1.87	1.89						
TlOs	6	13	6	8		2.72	2.68	2.70						
TlP	6	13	3	15		2.42	2.31	2.36						
TlPb	6	13	6	14		3.04	3.07	3.05						
TlPd	6	13	5	10		2.96	2.64	2.80						
TlPo	6	13	6	16		2.75	2.72	2.74						
TlPt	6	13	6	10		2.95	2.85	2.90						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
TlRb	6	13	5	1		4.44	3.67	4.05						
TlRe	6	13	6	7		2.65	2.65	2.65						
TlRh	6	13	5	9		2.85	2.56	2.70						
TlRu	6	13	5	8		2.75	2.50	2.62						
TlS	6	13	3	16		2.37	2.30	2.33						
TlSb	6	13	5	15		2.75	2.75	2.75						
TlSc	6	13	4	3		2.76	2.55	2.66						
TlSe	6	13	4	16		2.48	2.44	2.46						
TlSi	6	13	3	14		2.53	2.37	2.45						
TlSn	6	13	5	14		2.91	2.86	2.88						
TlSr	6	13	5	2		3.51	3.19	3.35						
TlTa	6	13	6	5		2.66	2.75	2.70						
TlTc	6	13	5	7		2.68	2.47	2.57						
TlTe	6	13	5	16		2.64	2.65	2.65						
TlTi	6	13	4	4		2.56	2.39	2.48						
TlTl	6	13	6	13		3.12	3.12	3.12						
TlV	6	13	4	5		2.47	2.29	2.38						
TlW	6	13	6	6		2.62	2.67	2.65						
TlY	6	13	5	3		3.05	2.88	2.96						
TlZn	6	13	4	12		2.83	2.52	2.68						
TlZr	6	13	5	4		2.80	2.68	2.74						
VAg	4	5	5	11		2.39	2.36	2.38						
VAl	4	5	3	13		2.15	2.07	2.11						
VAs	4	5	4	15		2.08	2.00	2.04						
VAt	4	5	6	17		2.36	2.00	2.18						
VAu	4	5	6	11		2.23	2.44	2.34						
VB	4	5	2	13		1.69	1.72	1.70						
VBa	4	5	6	2		2.33	2.73	2.53						
VBe	4	5	2	2		1.87	1.89	1.88						
VBi	4	5	6	15		2.22	2.21	2.22						
VBr	4	5	4	17		2.09	1.95	2.02						
VC	4	5	2	14		1.63	1.69	1.66						
VCa	4	5	4	2		2.45	2.38	2.41						
VCd	4	5	5	12		2.43	2.40	2.41						
VCl	4	5	3	17		1.97	1.90	1.94						
VCo	4	5	4	9		2.18	2.06	2.12						
VCr	4	5	4	6		2.03	2.01	2.02						
VCs	4	5	6	1		2.69	3.05	2.87						
VCu	4	5	4	11		2.31	2.15	2.23						
VF	4	5	2	17		1.66	1.57	1.61						
VFe	4	5	4	8		2.11	2.02	2.06						
VGa	4	5	4	13		2.30	2.17	2.24						
VGe	4	5	4	14		2.21	2.11	2.16						
VHf	4	5	6	4		2.00	2.37	2.19						
VHg	4	5	6	12		2.28	2.48	2.38						
VI	4	5	5	17		2.28	2.02	2.15						
VIn	4	5	5	13		2.41	2.38	2.40						
VIr	4	5	6	9		2.08	2.31	2.19						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
VK	4	5	4	1		2.85	2.61	2.73						
VLa	4	5	6	3		2.12	2.51	2.32						
VLi	4	5	2	1		2.11	2.06	2.08						
VMg	4	5	3	2		2.30	2.27	2.28						
VMn	4	5	4	7		2.06	2.00	2.03						
VMo	4	5	5	6		2.08	2.19	2.13						
VN	4	5	2	15		1.56	1.63	1.60						
VNa	4	5	3	1		2.65	2.48	2.56						
VNb	4	5	5	5		2.09	2.23	2.16						
VNi	4	5	4	10		2.25	2.10	2.18						
VO	4	5	2	16	1.59	1.54	1.59	1.57	1.61					
VOs	4	5	6	8		2.01	2.26	2.13						
VP	4	5	3	15		1.94	1.94	1.94						
VPb	4	5	6	14		2.26	2.38	2.32						
VPd	4	5	5	10		2.32	2.30	2.31						
VPo	4	5	6	16		2.23	2.06	2.15						
VPt	4	5	6	10		2.16	2.37	2.27						
VRb	4	5	5	1		2.95	2.91	2.93						
VRe	4	5	6	7		1.96	2.23	2.10						
VRh	4	5	5	9		2.24	2.25	2.24						
VRu	4	5	5	8		2.16	2.20	2.18						
VS	4	5	3	16		1.88	1.89	1.88						
VSb	4	5	5	15		2.24	2.15	2.20						
VSc	4	5	4	3		2.23	2.22	2.22						
VSe	4	5	4	16		2.00	1.94	1.97						
VSi	4	5	3	14		2.06	2.02	2.04						
VSn	4	5	5	14		2.34	2.30	2.32						
VSr	4	5	5	2		2.52	2.63	2.58						
VTa	4	5	6	5		1.95	2.29	2.12						
VTc	4	5	5	7		2.11	2.18	2.14						
VTe	4	5	5	16		2.18	2.04	2.11						
VTi	4	5	4	4		2.10	2.11	2.11						
VTl	4	5	6	13		2.29	2.47	2.38						
VV	4	5	4	5		2.04	2.04	2.04						
VW	4	5	6	6		1.94	2.24	2.09						
VY	4	5	5	3		2.29	2.44	2.36						
VZn	4	5	4	12		2.33	2.18	2.26						
VZr	4	5	5	4		2.15	2.31	2.23						
WAg	6	6	5	11		2.69	2.32	2.51						
WAl	6	6	3	13		2.34	2.00	2.17						
WAs	6	6	4	15		2.26	2.06	2.16						
WAt	6	6	6	17		2.45	2.09	2.27						
WAu	6	6	6	11		2.62	2.53	2.58						
WB	6	6	2	13		1.84	1.68	1.76						
WBa	6	6	6	2		2.90	2.78	2.84						
WBe	6	6	2	2		2.02	1.82	1.92						
WBi	6	6	6	15		2.49	2.41	2.45						
WBr	6	6	4	17		2.28	2.14	2.21						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$\langle r_e \rangle$	r_e	Area	r_e	Area	r_e	$\langle r_e \rangle$
WC	6	6	2	14		1.77	1.67	1.72						
WCa	6	6	4	2		2.78	2.25	2.51						
WCd	6	6	5	12		2.72	2.37	2.55						
WCl	6	6	3	17		2.17	2.05	2.11						
WCo	6	6	4	9		2.37	1.95	2.16						
WCr	6	6	4	6		2.22	1.90	2.06						
WCs	6	6	6	1		3.51	3.12	3.31						
WCu	6	6	4	11		2.51	2.06	2.29						
WF	6	6	2	17		1.79	1.67	1.73						
WFe	6	6	4	8		2.30	1.92	2.11						
WGa	6	6	4	13		2.49	2.11	2.30						
WGe	6	6	4	14		2.39	2.09	2.24						
WHf	6	6	6	4		2.40	2.42	2.41						
WHg	6	6	6	12		2.68	2.60	2.64						
WI	6	6	5	17		2.41	2.21	2.31						
WIn	6	6	5	13		2.68	2.39	2.54						
WIr	6	6	6	9		2.45	2.36	2.40						
WK	6	6	4	1		3.33	2.46	2.89						
WLa	6	6	6	3		2.58	2.56	2.57						
WLi	6	6	2	1		2.31	1.97	2.14						
WMg	6	6	3	2		2.56	2.14	2.35						
WMn	6	6	4	7		2.24	1.90	2.07						
WMo	6	6	5	6		2.36	2.12	2.24						
WN	6	6	2	15		1.70	1.64	1.67						
WNa	6	6	3	1		3.01	2.33	2.67						
WNb	6	6	5	5		2.38	2.16	2.27						
WNi	6	6	4	10		2.45	2.01	2.23						
WO	6	6	2	16		1.68	1.63	1.66						
WOs	6	6	6	8		2.36	2.31	2.33						
WP	6	6	3	15		2.13	1.96	2.04						
WPb	6	6	6	14		2.61	2.56	2.58						
WPd	6	6	5	10		2.62	2.25	2.43						
WPo	6	6	6	16		2.38	2.23	2.30						
WPt	6	6	6	10		2.54	2.44	2.49						
WRb	6	6	5	1		3.65	2.80	3.23						
WRe	6	6	6	7		2.30	2.28	2.29						
WRh	6	6	5	9		2.53	2.18	2.35						
WRu	6	6	5	8		2.44	2.14	2.29						
WS	6	6	3	16		2.07	1.98	2.03						
WSb	6	6	5	15		2.42	2.28	2.35						
WSc	6	6	4	3		2.49	2.10	2.29						
WSe	6	6	4	16		2.18	2.07	2.13						
WSi	6	6	3	14		2.25	1.98	2.11						
WSn	6	6	5	14		2.57	2.36	2.46						
WSr	6	6	5	2		3.00	2.54	2.77						
WTa	6	6	6	5		2.31	2.33	2.32						
WTc	6	6	5	7		2.38	2.11	2.25						
WTe	6	6	5	16		2.31	2.23	2.27						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
WTl	6	6	4	4		2.32	2.00	2.16						
WTl	6	6	6	13		2.67	2.62	2.65						
WV	6	6	4	5		2.24	1.94	2.09						
WW	6	6	6	6		2.28	2.28	2.28						
WY	6	6	5	3		2.66	2.35	2.51						
WZn	6	6	4	12		2.53	2.10	2.32						
WZr	6	6	5	4		2.47	2.23	2.35						
YAg	5	3	5	11		2.97	2.77	2.87						
YAl	5	3	3	13		2.58	2.35	2.46						
YAs	5	3	4	15		2.50	2.38	2.44						
YAt	5	3	6	17		2.75	2.26	2.51						
YAu	5	3	6	11		2.78	2.97	2.87						
YB	5	3	2	13		1.97	1.94	1.95						
YBa	5	3	6	2		2.95	3.34	3.15						
YBe	5	3	2	2		2.16	2.12	2.14						
YBi	5	3	6	15		2.77	2.70	2.73						
YBr	5	3	4	17		2.41	2.37	2.39						
YC	5	3	2	14		1.91	1.91	1.91						
YCa	5	3	4	2		3.03	2.69	2.86						
YCd	5	3	5	12		3.03	2.84	2.93						
YCl	5	3	3	17		2.29	2.31	2.30						
YCo	5	3	4	9		2.62	2.31	2.46						
YCr	5	3	4	6		2.42	2.25	2.33						
YCs	5	3	6	1		3.55	3.83	3.69						
YCu	5	3	4	11		2.81	2.45	2.63						
YF	5	3	2	17	1.93	1.91	1.85	1.88	1.91					
YFe	5	3	4	8		2.52	2.27	2.39						
YGa	5	3	4	13		2.80	2.50	2.65						
YGe	5	3	4	14		2.67	2.45	2.56						
YHf	5	3	6	4		2.46	2.84	2.65						
YHg	5	3	6	12		2.85	3.05	2.95						
YI	5	3	5	17		2.63	2.41	2.52						
YIn	5	3	5	13		3.00	2.84	2.92						
YIr	5	3	6	9		2.55	2.76	2.66						
YK	5	3	4	1		3.66	2.98	3.32						
YLa	5	3	6	3		2.63	3.03	2.83						
YLi	5	3	2	1		2.48	2.33	2.40						
YMg	5	3	3	2		2.77	2.54	2.66						
YMn	5	3	4	7		2.45	2.24	2.35						
YMo	5	3	5	6		2.52	2.51	2.52						
YN	5	3	2	15		1.83	1.88	1.85						
YNa	5	3	3	1		3.28	2.81	3.05						
YNb	5	3	5	5		2.54	2.56	2.55						
YNi	5	3	4	10		2.72	2.38	2.55						
YO	5	3	2	16		1.80	1.86	1.83	1.79					
YOs	5	3	6	8		2.45	2.69	2.57						
YP	5	3	3	15		2.33	2.26	2.29						
YPb	5	3	6	14		2.84	2.93	2.88						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
YPd	5	3	5	10		2.86	2.68	2.77						
YPo	5	3	6	16		2.70	2.44	2.57						
YPt	5	3	6	10		2.67	2.86	2.76						
YRb	5	3	5	1		3.91	3.47	3.69						
YRe	5	3	6	7		2.38	2.65	2.52						
YRh	5	3	5	9		2.74	2.60	2.67						
YRu	5	3	5	8		2.63	2.54	2.58						
YS	5	3	3	16		2.24	2.27	2.25						
YSb	5	3	5	15		2.73	2.63	2.68						
YSc	5	3	4	3		2.70	2.50	2.60						
YSe	5	3	4	16		2.38	2.36	2.37						
YSi	5	3	3	14		2.47	2.31	2.39						
YSn	5	3	5	14		2.89	2.77	2.83						
YSr	5	3	5	2		3.20	3.08	3.14						
YTa	5	3	6	5		2.37	2.72	2.54						
YTc	5	3	5	7		2.55	2.51	2.53						
YTe	5	3	5	16		2.60	2.50	2.55						
YTi	5	3	4	4		2.52	2.37	2.44						
YTl	5	3	6	13		2.88	3.05	2.96						
YV	5	3	4	5		2.44	2.29	2.36						
YW	5	3	6	6		2.35	2.66	2.51						
YY	5	3	5	3		2.83	2.83	2.83						
YZn	5	3	4	12		2.84	2.49	2.67						
YZr	5	3	5	4		2.63	2.66	2.65						
ZnAg	4	12	5	11		2.60	2.66	2.63						
ZnAl	4	12	3	13		2.27	2.36	2.32						
ZnAs	4	12	4	15		2.23	2.28	2.26						
ZnAt	4	12	6	17		2.72	2.65	2.69						
ZnAu	4	12	6	11		2.44	2.76	2.60						
ZnB	4	12	2	13		1.77	1.88	1.82						
ZnBa	4	12	6	2		2.56	3.25	2.90						
ZnBe	4	12	2	2		1.89	2.08	1.99						
ZnBi	4	12	6	15		2.48	2.62	2.55						
ZnBr	4	12	4	17		2.31	2.32	2.31						
ZnC	4	12	2	14		1.73	1.84	1.78						
ZnCa	4	12	4	2		2.65	2.84	2.75						
ZnCd	4	12	5	12		2.64	2.72	2.68						
ZnCl	4	12	3	17		2.18	2.19	2.19						
ZnCo	4	12	4	9		2.32	2.32	2.32						
ZnCr	4	12	4	6		2.17	2.28	2.22						
ZnCs	4	12	6	1		3.00	3.75	3.37						
ZnCu	4	12	4	11		2.47	2.45	2.46						
ZnF	4	12	2	17		1.82	1.77	1.80						
ZnFe	4	12	4	8		2.25	2.28	2.26						
ZnGa	4	12	4	13		2.46	2.49	2.48						
ZnGe	4	12	4	14		2.36	2.42	2.39						
ZnHf	4	12	6	4		2.18	2.73	2.45						
ZnHg	4	12	6	12		2.50	2.82	2.66						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
						In order	Reversed							
	R_1	C_1	R_2	C_2	Tab.	r_e	r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
ZnI	4	12	5	17		2.56	2.53	2.55						
ZnIn	4	12	5	13		2.63	2.71	2.67						
ZnIr	4	12	6	9		2.26	2.59	2.43						
ZnK	4	12	4	1		3.12	3.20	3.16						
ZnLa	4	12	6	3		2.32	2.93	2.62						
ZnLi	4	12	2	1		2.14	2.29	2.22						
ZnMg	4	12	3	2		2.43	2.66	2.55						
ZnMn	4	12	4	7		2.19	2.26	2.23						
ZnMo	4	12	5	6		2.25	2.47	2.36						
ZnN	4	12	2	15		1.67	1.77	1.72						
ZnNa	4	12	3	1	3	2.82	2.99	2.90						
ZnNb	4	12	5	5		2.26	2.53	2.40						
ZnNi	4	12	4	10		2.40	2.38	2.39						
ZnO	4	12	2	16		1.68	1.72	1.70						
ZnOs	4	12	6	8		2.18	2.54	2.36						
ZnP	4	12	3	15		2.08	2.18	2.13						
ZnPb	4	12	6	14		2.50	2.76	2.63						
ZnPd	4	12	5	10		2.52	2.59	2.55						
ZnPo	4	12	6	16		2.52	2.52	2.52						
ZnPt	4	12	6	10		2.36	2.67	2.51						
ZnRb	4	12	5	1		3.29	3.59	3.44						
ZnRe	4	12	6	7		2.13	2.52	2.32						
ZnRh	4	12	5	9		2.42	2.52	2.47						
ZnRu	4	12	5	8		2.34	2.47	2.40						
ZnS	4	12	3	16		2.04	2.10	2.07						
ZnSb	4	12	5	15		2.45	2.48	2.46						
ZnSc	4	12	4	3		2.40	2.60	2.50						
ZnSe	4	12	4	16		2.17	2.19	2.18						
ZnSi	4	12	3	14		2.19	2.30	2.24						
ZnSn	4	12	5	14		2.55	2.63	2.59						
ZnSr	4	12	5	2		2.78	3.13	2.95						
ZnTa	4	12	6	5		2.11	2.60	2.36						
ZnTc	4	12	5	7		2.28	2.45	2.36						
ZnTe	4	12	5	16		2.40	2.38	2.39						
ZnTi	4	12	4	4		2.25	2.44	2.34						
ZnTl	4	12	6	13		2.52	2.83	2.68						
ZnV	4	12	4	5		2.18	2.33	2.26						
ZnW	4	12	6	6		2.10	2.53	2.32						
ZnY	4	12	5	3		2.49	2.84	2.67						
ZnZn	4	12	4	12		2.50	2.50	2.50						
ZnZr	4	12	5	4		2.34	2.65	2.49						
ZrAg	5	4	5	11		2.77	2.58	2.67						
ZrAl	5	4	3	13		2.41	2.21	2.31						
ZrAs	5	4	4	15		2.33	2.22	2.28						
ZrAt	5	4	6	17		2.58	2.12	2.35						
ZrAu	5	4	6	11		2.60	2.74	2.67						
ZrB	5	4	2	13		1.86	1.83	1.85						
ZrBa	5	4	6	2		2.77	3.06	2.92						

Table 2. Internuclear separation: tabulated data and forecasts, continued

						Predictions from neural networks				Predictions by method of least squares				
							Southern		Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
ZrBe	5	4	2	2		2.05	1.99	2.02						
ZrBi	5	4	6	15		2.57	2.50	2.54						
ZrBr	5	4	4	17		2.28	2.20	2.24						
ZrC	5	4	2	14		1.80	1.81	1.81						
ZrCa	5	4	4	2		2.85	2.52	2.68						
ZrCd	5	4	5	12		2.81	2.63	2.72						
ZrCl	5	4	3	17		2.17	2.15	2.16						
ZrCo	5	4	4	9		2.46	2.18	2.32						
ZrCr	5	4	4	6		2.29	2.12	2.20						
ZrCs	5	4	6	1		3.30	3.46	3.38						
ZrCu	5	4	4	11		2.62	2.30	2.46						
ZrF	5	4	2	17		1.81	1.73	1.77						
ZrFe	5	4	4	8		2.38	2.13	2.26						
ZrGa	5	4	4	13		2.60	2.34	2.47						
ZrGe	5	4	4	14		2.48	2.30	2.39						
ZrHf	5	4	6	4		2.33	2.63	2.48						
ZrHg	5	4	6	12		2.66	2.80	2.73						
ZrI	5	4	5	17		2.47	2.24	2.35						
ZrIn	5	4	5	13		2.79	2.64	2.71						
ZrIr	5	4	6	9		2.41	2.56	2.48						
ZrK	5	4	4	1		3.40	2.78	3.09						
ZrLa	5	4	6	3		2.49	2.80	2.64						
ZrLi	5	4	2	1		2.34	2.18	2.26						
ZrMg	5	4	3	2		2.62	2.39	2.50						
ZrMn	5	4	4	7		2.32	2.11	2.21						
ZrMo	5	4	5	6		2.38	2.35	2.37						
ZrN	5	4	2	15		1.73	1.77	1.75						
ZrNa	5	4	3	1		3.07	2.62	2.85						
ZrNb	5	4	5	5		2.40	2.39	2.40						
ZrNi	5	4	4	10		2.55	2.24	2.39						
ZrO	5	4	2	16	1.71	1.71	1.75	1.73	1.73					
ZrOs	5	4	6	8		2.32	2.50	2.41						
ZrP	5	4	3	15		2.18	2.12	2.15						
ZrPb	5	4	6	14		2.64	2.70	2.67						
ZrPd	5	4	5	10		2.68	2.50	2.59						
ZrPo	5	4	6	16		2.52	2.28	2.40						
ZrPt	5	4	6	10		2.51	2.65	2.58						
ZrRb	5	4	5	1		3.61	3.19	3.40						
ZrRe	5	4	6	7		2.26	2.47	2.36						
ZrRh	5	4	5	9		2.57	2.43	2.50						
ZrRu	5	4	5	8		2.48	2.37	2.42						
ZrS	5	4	3	16		2.10	2.12	2.11						
ZrSb	5	4	5	15		2.54	2.44	2.49						
ZrSc	5	4	4	3		2.55	2.35	2.45						
ZrSe	5	4	4	16		2.23	2.20	2.21						
ZrSi	5	4	3	14		2.31	2.17	2.24						
ZrSn	5	4	5	14		2.69	2.57	2.63						
ZrSr	5	4	5	2		2.99	2.85	2.92						

Table VII. Internuclear separation: tabulated data and forecasts, concluded

						Predictions from neural networks				Predictions by method of least squares				
						Southern			Memphis					
	R_1	C_1	R_2	C_2	Tab.	In order r_e	Reversed r_e	$<r_e>$	r_e	Area	r_e	Area	r_e	$<r_e>$
ZrTa	5	4	6	5		2.25	2.52	2.39						
ZrTc	5	4	5	7		2.41	2.34	2.38						
ZrTe	5	4	5	16		2.42	2.33	2.37						
ZrTi	5	4	4	4		2.39	2.23	2.31						
ZrTl	5	4	6	13		2.68	2.80	2.74						
ZrV	5	4	4	5		2.31	2.15	2.23						
ZrW	5	4	6	6		2.23	2.47	2.35						
ZrY	5	4	5	3		2.66	2.63	2.65						
ZrZn	5	4	4	12		2.65	2.34	2.49						
ZrZr	5	4	5	4		2.48	2.48	2.48						
Averages					2.12			2.41	2.11					1.83
Standard deviations					0.66			0.47	0.52					0.46

SOUTHERN SCHOLARS SENIOR PROJECT

Name: Jason Ileto Date: 4/17/03 Major: Physics

SENIOR PROJECT

A significant scholarly project, involving research, writing, or special performance, appropriate to the major in question, is ordinarily completed the senior year. The project is expected to be of sufficiently high quality to warrant a grade of A and to justify public presentation.

Under the guidance of a faculty advisor, the Senior Project should be an original work, should use primary sources when applicable, should have a table of contents and works cited page, should give convincing evidence to support a strong thesis, and should use the methods and writing style appropriate to the discipline.

The completed project, to be turned in in duplicate, must be approved by the Honors Committee in consultation with the student's supervising professor three weeks prior to graduation. Please include the advisor's name on the title page. The 2-3 hours of credit for this project is done as directed study or in a research class.

Keeping in mind the above senior project description, please describe in as much detail as you can the project you will undertake. You may attach a separate sheet if you wish:

I will present a table of all possible diatomic molecules, and using neural networks, predict the internuclear seperation of every diatomic molecule. I will demonstrate how a neural network does this using learning and validation sets.

Signature of faculty advisor Ray Hefferlin Expected date of completion 4/17/3

Approval to be signed by faculty advisor when completed:

This project has been completed as planned: ✓

This in an "A" project: ✓

This project is worth 2-3 hours of credit: 2

Advisor's Final Signature Ray Hefferlin

Chair, Honors Committee ________ Date Approved: ________

Dear Advisor, please write your final evaluation on the project on the reverse side of this page. Comment on the characteristics that make this "A" quality work.

This work began, in principle, about 25 years ago (perhaps you recall proof reading a long manuscript with Dr. Kuhlman while I was in Russia!). The next attempt to predict ~~these~~ some numbers ~~was~~ (internuclear separations of molecules) was done 20 years ago. Much intermittent work followed and Jason finally assisted in its completion. The results appear in the Journal of Chemical Information and Computer Science, vol. 43, pp 622-628, 2003. They have withstood three assults, by us and by a Belgian astronomer, to show that they disagree with "the literature." I think that Jason should stay and participate in completing the next paper!

Ray Hefferlin 4/17/3