# Sandwich-like compounds based on bare all-boron cluster $\mathbf{B}_{6}{ }^{2-}$ 

## Supporting Information

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The coordinates of designed cluster-assembled compounds are listed as follows:

| 5 | -2.071716 | 0.000015 | 0.000853 |
| :--- | :---: | :---: | :---: |
| 5 | -0.830479 | -0.887684 | -0.000554 |
| 5 | 2.071718 | -0.000015 | 0.000886 |
| 5 | -0.830449 | 0.887678 | -0.000275 |
| 5 | 0.830478 | 0.887684 | -0.000595 |
| 5 | 0.830448 | -0.887678 | -0.000316 |

## |State=1-A|HF=-148.8432897



Charge $=-3$ Multiplicity $=1$
Li,0,0.,0.,0.
B,0,0.,2.0631012169,2.4229219666
В,0,-0.8898591801,0.8286615669,2.4613552587
В,0,-0.8898591801,-0.8286615669,2.4613552587
В,0,0.,-2.0631012169,2.4229219666
B,0,0.8898591801,-0.8286615669,2.4613552587
В,0,0.8898591801,0.8286615669,2.4613552587
B,0,0.8286615669,0.8898591801,-2.4613552587
B,0,2.0631012169,0.,-2.4229219666
В,0,0.8286615669,-0.8898591801,-2.4613552587
В,0,-0.8286615669,-0.8898591801,-2.4613552587
В,0,-2.0631012169,0.,-2.4229219666
B,0,-0.8286615669,0.8898591801,-2.4613552587

## State=1-A1 $\backslash H F=-305.2405097$

(b)

Charge $=-3$ Multiplicity $=1$
B,0,-2.5672181325,2.0659643031,0
В,0,-2.5932156741,0.830100654,-0.8867597386
В,0,-2.5932156741,-0.830100654,-0.8867597386
В,0,-2.5672181325,-2.0659643031,0.
В,0,-2.5932156741,-0.830100654,0.8867597386
В,0,-2.5932156741,0.830100654,0.8867597386
В,0,2.5672181325,2.0659643031,0.
В,0,2.5932156741,0.830100654,-0.8867597386
В,0,2.5932156741,-0.830100654,-0.8867597386
B,0,2.5672181325,-2.0659643031,0.
В,0,2.5932156741,-0.830100654,0.8867597386
B,0,2.5932156741,0.830100654,0.8867597386
Li,0,0.,0.,0.
State=1-AG\HF=-305.2323036

(


Charge = -3 Multiplicity = 1
B,0,-0.0000001166,1.2448482699,-1.2448484351
В,0,0.6255895729,2.5729642694,-1.6882340528
В,0,0.6329710048,3.7514119062,-2.8562426159
B,0,-0.0000003907,4.1720940397,-4.1720945934
В,0,-0.5922153849,-2.4732393523,1.6357080564
В,0,0.5922157697,-1.6357076728,2.4732395139
В,0,1.4663806323,-1.6400994979,3.7139052514
В,0,0.5858322678,-2.8830179674,3.7115220418
В,0,-1.4663801309,-3.7139051711,1.640100128
В,0,-0.5858316503,-3.7115217141,2.8830185148
В,0,-0.625589972,1.6882336528,-2.5729644348

## State=1-A1 $\backslash H F=-305.2570786$


(4)


Charge = -3 Multiplicity = 1
B,0,0.,0.8383813409,2.3341368328
B,0,0.,-0.8383813409,2.3341368328
B,0,0.,-2.0741098631,3.214121037
B,0,0.,-0.8279608194,4.0894462212
В,0,-0.8383813409,0.,-2.3341368328
В,0,0.8383813409,0.,-2.3341368328
В,0,2.0741098631,0.,-3.214121037
B,0,0.8279608194,0.,-4.0894462212
В,0,-2.0741098631,0.,-3.214121037
В,0,-0.8279608194,0.,-4.0894462212
B,0,0.,2.0741098631,3.214121037
B,0,0.,0.8279608194,4.0894462212
Li,0,0.,0.,0.

## State=1-A1 $\backslash H F=-305.2389001$


bi

## $C^{B}-8-8$

Charge $=-3$ Multiplicity $=1$
B,0,0.,0.8378292274,2.0316244774
В,0,0.,-0.8378292274,2.0316244774
В,0,0.,-2.0698375453,2.9226352338
B,0,0.,-0.8262689159,3.8009289799
В,0,0.,-2.0633637067,-2.8133345453
B,0,0.,2.0633637067,-2.8133345453
B,0,0.,2.0698375453,2.9226352338

B,0,0.,0.8262689159,3.8009289799
Li,0,0.,0.,-0.557432705
B,0,-0.8861882317,0.8301470296,-2.8873121672
B,0,0.8861882317,-0.8301470296,-2.8873121672
В,0,-0.8861882317,-0.8301470296,-2.8873121672
B,0,0.8861882317,0.8301470296,-2.8873121672

## State=1-A1\HF=-305.2379286

(4)

Charge $=-3$ Multiplicity $=1$
B,0,0.,0.8368435556,-1.9825734929
В,0,0.,-0.8368435556,-1.9825734929
В,0,0.,-2.0703749492,-2.8701206105
В,0,0.,-0.8267684597,-3.7486642148
В,0,-2.0633850806,0.,2.7650620287
B,0,2.0633850806,0.,2.7650620287
В,0,0.,2.0703749492,-2.8701206105
B,0,0.,0.8267684597,-3.7486642148
Li,0,0.,0.,0.5229284689
B,0,0.8301002548,-0.8871887335,2.8397088744
B,0,-0.8301002548,0.8871887335,2.8397088744
В,0,-0.8301002548,-0.8871887335,2.8397088744
В,0,0.8301002548,0.8871887335,2.8397088744

## State=1-A1\HF=-305.2422567


ci


Charge $=-3$ Multiplicity $=1$
B,0,0.,0.8389585746,2.3573981266
В,0,0.,-0.8389585746,2.3573981266
B,0,0.,-2.0737531842,3.2389853983
В,0,0.,-0.8275843026,4.1140833045

B,0,0.,0.8389585746,-2.3573981266
В,0,0.,-0.8389585746,-2.3573981266
В,0,0.,-2.0737531842,-3.2389853983
В,0,0.,-0.8275843026,-4.1140833045
B,0,0.,2.0737531842,-3.2389853983
B,0,0.,0.8275843026,-4.1140833045
В,0,0.,2.0737531842,3.2389853983
B,0,0.,0.8275843026,4.1140833045
Li,0,0.,0.,0.

## State=1-AG\HF=-305.235703


bi


Charge = -3 Multiplicity = 1
B,0,2.3259640752,0.0000122624,0.0000119627
B,0,3.5777008205,0.0000255558,0.8846160775
В,0,5.2370014321,0.0000343735,0.8938664914
B,0,6.4658217666,0.0000340876,0.0000332544
В,0,-2.3259640752,-0.0000122624,-0.0000119627
В,0,-3.5777099197,-0.0000121673,0.8845792765
В,0,-5.2370106264,-0.0000208452,0.8938126225
В,0,-6.4658217666,-0.0000340876,-0.0000332544
В,0,-3.5777008205,-0.0000255558,-0.8846160775
В,0,-5.2370014321,-0.0000343735,-0.8938664914
В,0,3.5777099197,0.0000121673,-0.8845792765
B,0,5.2370106264,0.0000208452,-0.8938126225
Li,0,0.,0.,0.

## State=1-AG\HF=-305.2739826

(b)


Charge $=-3$ Multiplicity $=1$
B,0,0.,0.,2.3264768618
В,0,0.,0.8845904156,3.5782025005
В,0,0.,0.8938150054,5.2375333863
В,0,0.,0.,6.4663558947
B,0,0.,0.,-2.3264768618
В,0,-0.8845904156,0.,-3.5782025005
В,0,-0.8938150054,0.,-5.2375333863
В,0,0.,0.,-6.4663558947
В,0,0.8845904156,0.,-3.5782025005
B,0,0.8938150054,0.,-5.2375333863
B,0,0.,-0.8845904156,3.5782025005
В,0,0.,-0.8938150054,5.2375333863
Li,0,0.,0.,0.

## State=1-A1\HF=-305.27398


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Charge = -3 Multiplicity = 1
Li,0,-1.0365331342,0.0272608409,-0.0252695367
B,0,4.3017105992,-0.1117448844,-0.7832117803
В,0,2.6473270001,-0.0682497803,-0.8138237606
В,0,4.2571326993,-0.1133750589,1.0060513794
В,0,5.5128213275,-0.1449992554,0.142031144
В,0,-3.3692317128,-0.7403986294,-0.9768549092
В, $0,-3.3528836653,-1.976227113,-0.0907726776$
В,0,-3.2445275453,2.1497614567,-0.0843139465
В,0,-3.3256456607,0.9192727658,-0.9742568963

В,0,-3.4132562879,-0.7420346169,0.7956254567
В,0,-3.3696693144,0.9176718603,0.7982235245
В,0,2.6031736277,-0.0698611136,0.9562810341
B,0,1.374968813,-0.0361721356,0.040183154
State=1-A'\HF=-305.2597497


## State=1-A1 $\backslash H F=-305.2594747$


(4)


Charge $=-3$ Multiplicity $=1$
B,0,-0.0000001211,1.2429687084,-1.2429689108
В,0,0.883380665,2.1292096102,-2.1292007473
B,0,0.8952646473,3.3025236298,-3.3025148341
В,0,-0.0000004064,4.1706224234,-4.1706231025

B,0,0.0000063786,-2.6455270425,1.4602221724
В,0,-0.0000059786,-1.4602217417,2.6455272803
B,0,-0.0000150291,-1.2092079524,4.1424216453
В,0,-0.0000057831,-2.7097666835,3.8808070248
В,0,0.0000155505,-4.1424214484,1.2092086269
B,0,0.0000064253,-3.8808065836,2.7097673154
В,0,-0.88338108,2.1292003146,-2.1292098708
В,0,-0.8952652909,3.3025142092,-3.3025240803
Li,0,0.0000000372,-0.3818124056,0.3818124678

## State=1-A1\HF=-305.2572029

| 5 | 0 | -1.118509 | -0.685952 | 0.774488 |
| :---: | :---: | :---: | :---: | :---: |
| 5 | 0 | 1.051244 | -1.699400 | -0.420720 |
| 5 | 0 | -2.048389 | -1.468325 | -0.342085 |
| 5 | 0 | -2.310755 | 0.076532 | -0.158524 |
| 5 | 0 | -0.362775 | 0.719931 | 0.278204 |
| 5 | 0 | -0.534892 | -1.981131 | -0.125158 |
| 5 | 0 | 1.101227 | 1.679045 | -0.021366 |
| 5 | 0 | -0.378729 | 2.307737 | -0.157560 |
| 5 | 0 | -1.794205 | 1.611761 | -0.160688 |
| 5 | 0 | 2.385608 | -0.853248 | -0.247796 |
| 5 | 0 | 1.031333 | -0.000830 | -0.472959 |
| 5 | 0 | 2.427728 | 0.711055 | 0.040881 |
| 3 | 0 | 0.918521 | -0.695294 | 1.688806 |

## State=1-A\HF=-305.4341441



| 1 | 5 | 0 | -0.614960 | 1.113656 | -0.661272 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 5 | 0 | -2.214701 | 0.818946 | -0.482516 |
| 3 | 5 | 0 | -3.323206 | -0.034078 | 0.048531 |
| 4 | 5 | 0 | -2.104149 | -0.402609 | 0.849130 |
| 5 | 5 | 0 | -0.511135 | -0.805378 | 0.942660 |
| 6 | 5 | 0 | 1.064396 | -0.122295 | 0.920557 |


| 7 | 5 | 0 | 0.617995 | 1.650969 | 0.175537 |
| ---: | ---: | ---: | ---: | ---: | :---: |
| 8 | 5 | 0 | 0.783790 | 0.096248 | -0.859893 |
| 9 | 5 | 0 | 0.513708 | -1.607833 | 0.016223 |
| 10 | 5 | 0 | 1.882883 | -1.274690 | -0.592973 |
| 11 | 5 | 0 | 2.655479 | -0.025398 | -0.135231 |
| 12 | 5 | 0 | 2.063019 | 1.245490 | 0.499757 |
| 13 | 3 | 0 | -1.355196 | -1.088380 | -1.200851 |

State=1-A\HF=-305.4074433


| 1 | 5 | 0 | -2.044158 | -0.522665 | 0.613212 |
| ---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 5 | 0 | 0.655522 | -1.646865 | 0.141796 |
| 3 | 5 | 0 | -1.964964 | -1.079448 | -1.038285 |
| 4 | 5 | 0 | -1.912138 | 0.453564 | -0.760552 |
| 5 | 5 | 0 | -2.005596 | 1.059811 | 0.852502 |
| 6 | 5 | 0 | -0.960590 | -1.684285 | 0.001936 |
| 7 | 5 | 0 | 2.184799 | 1.375252 | -0.223289 |
| 8 | 5 | 0 | 0.635451 | 1.632233 | -0.311066 |
| 9 | 5 | 0 | -0.954555 | 1.733795 | -0.101654 |
| 10 | 5 | 0 | 2.197506 | -1.372350 | 0.228172 |
| 11 | 5 | 0 | 1.280473 | -0.050440 | -0.257600 |
| 12 | 5 | 0 | 2.936698 | -0.011048 | -0.045186 |
| 13 | 3 | 0 | -0.080746 | 0.187414 | 1.500024 |

## State $=1-\mathrm{A} \backslash \mathrm{HF}=-\mathbf{3 0 5} .4238527$

| di |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |
| 1 | 5 | 0 | -1.820733 | 0.906625 | -0.489917 |
| 2 | 5 | 0 | -3.266347 | 0.453230 | -0.002634 |
| 3 | 5 | 0 | -4.694740 | -0.331031 | 0.455168 |
| 4 | 5 | 0 | -3.339509 | -1.062792 | 0.732444 |
| 5 | 5 | 0 | -1.908794 | -0.623583 | 0.187752 |
| 6 | 5 | 0 | -0.476637 | 0.094779 | -0.426717 |
| 7 | 5 | 0 | 2.421296 | 0.298577 | 0.303284 |
| 8 | 5 | 0 | 3.801091 | 1.017457 | 0.666534 |
| 9 | 5 | 0 | 5.105362 | 0.209233 | 0.509043 |
| 10 | 5 | 0 | 3.916716 | -0.433548 | -0.324550 |


| 11 | 5 | 0 | 2.456685 | -0.935645 | -0.797116 |
| ---: | ---: | ---: | ---: | ---: | ---: |
| 12 | 5 | 0 | 1.039050 | -0.402528 | -0.495154 |
| 13 | 3 | 0 | -5.389066 | 1.348712 | -0.530228 |

## State=1-A\HF=-305.3666704



Charge $=-3$ Multiplicity $=1$
Na,0,0.,0.,0.
B,0,0.,2.0645477987,2.7611571855
В,0,-0.8887261199,0.8294794505,2.8194207669
В,0,-0.8887261199,-0.8294794505,2.8194207669
B,0,0.,-2.0645477987,2.7611571855
В,0,0.8887261199,-0.8294794505,2.8194207669
В,0,0.8887261199,0.8294794505,2.8194207669
В,0,0.8294794505,0.8887261199,-2.8194207669
B,0,2.0645477987,0.,-2.7611571855
В,0,0.8294794505,-0.8887261199,-2.8194207669
В,0,-0.8294794505,-0.8887261199,-2.8194207669
В,0,-2.0645477987,0.,-2.7611571855
В,0,-0.8294794505,0.8887261199,-2.8194207669

## State=1-A1 $\backslash H F=-460.0255786$

## $\mathrm{c}^{8} \mathrm{~B}^{9}-\frac{8}{8}$ <br>  <br> $\therefore 8-8$

Charge $=-3$ Multiplicity $=1$
B,0,0.,2.0658448957,2.8355822003
B,0,-0.8874106946,0.8300838911,2.8793862808
В,0,-0.8874106946,-0.8300838911,2.8793862808
B,0,0.,-2.0658448957,2.8355822003
В,0,0.8874106946,-0.8300838911,2.8793862808
В,0,0.8874106946,0.8300838911,2.8793862808
B,0,0.,2.0658448957,-2.8355822003

B,0,-0.8874106946,0.8300838911,-2.8793862808
В,0,-0.8874106946,-0.8300838911,-2.8793862808
В,0,0.,-2.0658448957,-2.8355822003
В,0,0.8874106946,-0.8300838911,-2.8793862808
В,0,0.8874106946,0.8300838911,-2.8793862808
Na,0,0.,0.,0.

## State=1-AG\HF=-460.021121

## (1)

## C8-8

Charge $=-3$ Multiplicity $=1$
B,0,0.,0.835439279,2.4152027489
В,0,0.,-0.835439279,2.4152027489
B,0,0.,-2.0708740248,3.3010559459
В,0,0.,-0.8278313917,4.1815244356
В,0,0.,-2.0656387005,-3.0875560566
B,0,0.,2.0656387005,-3.0875560566
B,0,0.,2.0708740248,3.3010559459
B,0,0.,0.8278313917,4.1815244356
Na,0,0.,0.,-0.4577150359
B,0,-0.8866689699,0.8311803628,-3.1533702672
В,0,0.8866689699,-0.8311803628,-3.1533702672
В,0,-0.8866689699,-0.8311803628,-3.1533702672
B,0,0.8866689699,0.8311803628,-3.1533702672

## State=1-A1\HF=-460.02215


(T)

## $\mathrm{C}^{8}{ }^{-8}$

Charge = -3 Multiplicity = 1
Na,0,-0.8807737922,0.000004533,-0.00000069537
B,0,4.7465918253,0.4468674725,-0.7729128684
В,0,3.0862856066,0.4437220831,-0.7674708885

B,0,4.7465750203,-0.4469163305,0.7729878173
В,0,5.9794626991,-0.0000307742,0.0000472081
В,0,-3.5502572259,1.0341482982,-1.7886734618
B,0,-3.6114017361,-0.352100552,-1.1635505823
В,0,-3.6114164838,0.3521377253,1.1634935579
В,0,-3.611400842,1.1840546222,-0.2754012812
В,0,-3.6114173778,-1.1840174489,0.2753442568
В,0,-3.5502961133,-1.0341117541,1.7886174027
В,0,3.0862689203,-0.4437538511,0.767519621
B,0,1.8387080501,-0.0000094632,0.0000145167

## State=1-A1 $\backslash H F=-460.0400373$

Ho


Charge = -3 Multiplicity = 1
B,0,0.,0.8348053769,-2.3820759728
В,0,0.,-0.8348053769,-2.3820759728
B,0,0.,-2.0710918068,-3.2662439203
В,0,0.,-0.8282536443,-4.1472907315
B,0,-2.0654298322,0.,3.0567080431
В,0,2.0654298322,0.,3.0567080431
B,0,0.,2.0710918068,-3.2662439203
B,0,0.,0.8282536443,-4.1472907315
Na,0,0.,0.,0.4452308717
B,0,0.8310667738,-0.8872022947,3.1245743113
В,0,-0.8310667738,0.8872022947,3.1245743113
В,0,-0.8310667738,-0.8872022947,3.1245743113
В,0,0.8310667738,0.8872022947,3.1245743113

## State=1-A1 $\backslash H F=-460.025081$

Charge $=-3$ Multiplicity $=1$

| 5 | 0 | -1.005097 | -0.938503 | 0.574436 |
| :--- | :--- | ---: | ---: | ---: |
| 5 | 0 | 1.095355 | -1.227730 | -1.076252 |


| 5 | 0 | -1.924210 | -1.717777 | -0.559807 |
| ---: | :---: | :---: | :---: | :---: |
| 5 | 0 | -2.471175 | -0.343286 | -0.026570 |
| 5 | 0 | -0.646336 | 0.668235 | 0.280876 |
| 5 | 0 | -0.323763 | -1.904491 | -0.622649 |
| 5 | 0 | 0.498474 | 1.982957 | -0.103383 |
| 5 | 0 | -1.066011 | 2.251734 | 0.149594 |
| 5 | 0 | -2.283658 | 1.252754 | 0.202220 |
| 5 | 0 | 2.215004 | -0.088836 | -1.029652 |
| 5 | 0 | 0.706060 | 0.386873 | -0.750852 |
| 5 | 0 | 1.990546 | 1.379183 | -0.474961 |
| 11 | 0 | 1.461277 | -0.773233 | 1.562273 |

## State=1-A\HF=-460.2119885



| 1 | 5 | 0 | 0.079205 | -0.655800 | 1.055696 |
| :---: | :---: | :---: | ---: | :---: | :---: |
| 2 | 5 | 0 | -1.454601 | -0.976317 | 0.575121 |
| 3 | 5 | 0 | -2.819217 | -1.228095 | -0.110539 |
| 4 | 5 | 0 | -1.699095 | -1.463738 | -1.090820 |
| 5 | 5 | 0 | -0.146511 | -1.167347 | -1.076188 |
| 6 | 5 | 0 | 1.296572 | -0.637184 | -0.625634 |
| 7 | 5 | 0 | 1.570408 | -1.035885 | 1.285250 |
| 8 | 5 | 0 | 1.222750 | 0.633788 | 0.615646 |
| 9 | 5 | 0 | 0.099649 | 1.813245 | -0.228609 |
| 10 | 5 | 0 | 1.463124 | 1.409357 | -0.922060 |
| 11 | 5 | 0 | 2.704386 | 0.522300 | -0.624357 |
| 12 | 5 | 0 | 2.782106 | -0.590165 | 0.429001 |
| 13 | 11 | 0 | -2.317625 | 1.534473 | 0.326133 |

State=1-A $\backslash H F=-460.1461246$


Charge $=-3$ Multiplicity $=1$
K,0,0.,0.,0.
B,0,0.,2.0612720486,3.103744918
В,0,-0.889918209,0.8250308078,3.1896129208

B,0,-0.889918209,-0.8250308078,3.1896129208
В,0,0.,-2.0612720486,3.103744918
B,0,0.889918209,-0.8250308078,3.1896129208
B,0,0.889918209,0.8250308078,3.1896129208
В,0,0.8250308078,0.889918209,-3.1896129208
В,0,2.0612720486,0.,-3.103744918
В,0,0.8250308078,-0.889918209,-3.1896129208
В,0,-0.8250308078,-0.889918209,-3.1896129208
В,0,-2.0612720486,0.,-3.103744918
В,0,-0.8250308078,0.889918209,-3.1896129208

## State=1-A1 $\backslash H F=-897.6831844$

## -8:

## 0

## cfer

Charge $=-3$ Multiplicity $=1$
B,0,0.,2.0615998923,3.129369713
В,0,-0.8894718118,0.8247479536,3.2076169791
B,0,-0.8894718118,-0.8247479536,3.2076169791
В,0,0.,-2.0615998923,3.129369713
B,0,0.8894718118,-0.8247479536,3.2076169791
B,0,0.8894718118,0.8247479536,3.2076169791
В,0,0.,2.0615998923,-3.129369713
В,0,-0.8894718118,0.8247479536,-3.2076169791
В,0,-0.8894718118,-0.8247479536,-3.2076169791
B,0,0.,-2.0615998923,-3.129369713
B,0,0.8894718118,-0.8247479536,-3.2076169791
B,0,0.8894718118,0.8247479536,-3.2076169791
K,0,0.,0.,0.

## State=1-AG\HF=-897.681385



Charge $=-3$ Multiplicity $=1$
K,0,-0.8691128385,-0.0037805693,0.0037722321
В,0,5.2094736015,0.6372982609,-0.6364988862
В,0,3.5659925305,0.6278864943,-0.6271056441
В,0,5.2171964554,-0.6315382689,0.6307906388
В,0,6.451032439,0.0066504618,-0.0066146837
В,0,-3.8715223249,0.0436728589,-1.2160306549
В,0,-3.7738766916,-1.4550901602,-1.4610251933
В,0,-3.7738892069,1.4592327086,1.4568553221
В,0,-3.8715273596,1.2160664253,-0.0422058944
В,0,-3.8734245453,-1.2118262904,0.0379004418
В,0,-3.8734295802,-0.039395456,1.211762516
В,0,3.5736829017,-0.6324540699,0.6316982739
B,0,2.3229205666,-0.0061368011,0.0061392821

## State=1-A'।HF=-897.6907525



## $\mathrm{C}^{8-8}-8$

Charge $=-3$ Multiplicity $=1$
K,0,-0.8838843845,0.0000056698,-0.0000089173
В,0,5.2263030886,0.4488782981,-0.7763913001
В,0,3.5836928012,0.4461462934,-0.7716643347
В,0,5.2262816626,-0.4489453482,0.7764967539
В,0,6.4646285818,-0.0000414686,0.0000652202
В,0,-3.781173951,1.0326253266,-1.7860390787
В,0,-3.8750982858,-0.3523498687,-1.1628444771
В,0,-3.8751172276,0.3523995839,1.1627662869
В,0,-3.8750973923,1.1835673102,-0.2748327764
В,0,-3.8751181211,-1.1835175949,0.2747545861
В,0,-3.7812232358,-1.0325768161,1.7859627834
В,0,3.5836715061,-0.4461922699,0.7717366447
B,0,2.3370112344,-0.0000149912,0.0000235776

## State=1-A1\HF=-897.6910129

| 1 | 5 | 0 | 1.129119 | -0.893380 | -0.482603 |
| ---: | ---: | ---: | ---: | ---: | ---: |
| 2 | 5 | 0 | -0.461608 | -1.041277 | 1.629656 |
| 3 | 5 | 0 | 2.285693 | -1.737066 | 0.313296 |
| 4 | 5 | 0 | 2.753612 | -0.439789 | -0.443980 |
| 5 | 5 | 0 | 0.753445 | 0.694694 | -0.243319 |
| 6 | 5 | 0 | 0.789686 | -1.808523 | 0.892523 |
| 7 | 5 | 0 | -0.188862 | 2.042766 | 0.228372 |
| 8 | 5 | 0 | 1.212487 | 2.212453 | -0.578659 |
| 9 | 5 | 0 | 2.320141 | 1.077115 | -0.839542 |
| 10 | 5 | 0 | -1.575740 | 0.098021 | 1.801576 |
| 11 | 5 | 0 | -0.186441 | 0.560263 | 1.154707 |
| 12 | 5 | 0 | -1.522025 | 1.507394 | 1.063810 |
| 13 | 19 | 0 | -1.923555 | -0.598071 | -1.183115 |

## State=1-A\HF=-897.8793117



| 1 | 5 | 0 | -0.020514 | 0.814515 | -1.060719 |
| ---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 5 | 0 | -1.292509 | 1.683104 | -0.427062 |
| 3 | 5 | 0 | -2.019543 | 2.020087 | 0.853545 |
| 4 | 5 | 0 | -0.916195 | 1.031867 | 1.177378 |
| 5 | 5 | 0 | 0.292730 | -0.059194 | 0.872761 |
| 6 | 5 | 0 | 1.974551 | -0.021849 | 0.537754 |
| 7 | 5 | 0 | 1.556066 | 1.260790 | -0.822898 |
| 8 | 5 | 0 | 0.364149 | -0.737078 | -0.788839 |
| 9 | 5 | 0 | 1.041272 | -1.545303 | 0.452024 |
| 10 | 5 | 0 | 2.605373 | -1.612206 | 0.322896 |
| 11 | 5 | 0 | 3.528249 | -0.356397 | 0.014887 |
| 12 | 5 | 0 | 3.024969 | 1.060736 | -0.334586 |
| 13 | 19 | 0 | -2.668052 | -0.931335 | -0.209774 |

State $=1-\mathrm{A} \backslash \mathrm{HF}=-897.8346612$

Be
Charge $=-2$ Multiplicity $=1$
Be,0,0.,0.,0.
B,0,0.,2.0331134611,1.594916954
В,0,-0.9219055868,0.8155303962,1.7068309103
В,0,-0.9219055868,-0.8155303962,1.7068309103
В,0,0.,-2.0331134611,1.594916954
В,0,0.9219055868,-0.8155303962,1.7068309103
В,0,0.9219055868,0.8155303962,1.7068309103
В,0,0.8155303962,0.9219055868,-1.7068309103
В,0,2.0331134611,0.,-1.594916954
В,0,0.8155303962,-0.9219055868,-1.7068309103
В,0,-0.8155303962,-0.9219055868,-1.7068309103
В,0,-2.0331134611,0.,-1.594916954
В,0,-0.8155303962,0.9219055868,-1.7068309103

## State=1-A1\HF=-312.5993792



Charge $=-2$ Multiplicity $=1$
B,0,0.,2.0711832638,1.9432332287
В,0,-0.8793674956,0.8358732319,1.8819153731
В,0,-0.8793674956,-0.8358732319,1.8819153731
B,0,0.,-2.0711832638,1.9432332287
В,0,0.8793674956,-0.8358732319,1.8819153731
В,0,0.8793674956,0.8358732319,1.8819153731
B,0,0.,2.0711832638,-1.9432332287
В,0,-0.8793674956,0.8358732319,-1.8819153731
В,0,-0.8793674956,-0.8358732319,-1.8819153731
В,0,0.,-2.0711832638,-1.9432332287
В,0,0.8793674956,-0.8358732319,-1.8819153731
B,0,0.8793674956,0.8358732319,-1.8819153731
Be,0,0.,0.,0.

## State=1-AG\HF=-312.5399665

Be

## $\mathrm{C}^{8}{ }^{8}$

Charge $=-2$ Multiplicity $=1$
B,0,0.,0.8742742917,1.3245906373
B,0,0.,-0.8742742917,1.3245906373
B,0,0.,-2.0908405388,2.2243073715
B,0,0.,-0.8236017312,3.0625321123
В,0,0.,-2.0288636065,-1.9655666698
B,0,0.,2.0288636065,-1.9655666698
B,0,0.,2.0908405388,2.2243073715
В,0,0.,0.8236017312,3.0625321123
Be,0,0.,0.,-0.4790857588
B,0,-0.8912810746,0.8276362646,-2.2271145738
B,0,0.8912810746,-0.8276362646,-2.2271145738
В,0,-0.8912810746,-0.8276362646,-2.2271145738
B,0,0.8912810746,0.8276362646,-2.2271145738

## State=1-A1 $\backslash H F=-312.556129$



Charge $=-2$ Multiplicity $=1$
B,0,0.,0.8575689677,-1.2974699262
В,0,0.,-0.8575689677,-1.2974699262
В,0,0.,-2.0731419803,-2.1855399405
В,0,0.,-0.8214643444,-3.0309849614
В,0,-2.0341792953,0.,1.9650846479
В,0,2.0341792953,0.,1.9650846479
B,0,0.,2.0731419803,-2.1855399405
В,0,0.,0.8214643444,-3.0309849614
Be,0,0.,0.,0.4828053875
B,0,0.8282334934,-0.9001696481,2.1778940126
В,0,-0.8282334934,0.9001696481,2.1778940126
В,0,-0.8282334934,-0.9001696481,2.1778940126
В,0,0.8282334934,0.9001696481,2.1778940126

## State=1-A1\HF=-312.5712758

```
O
Cos-3
Charge = -2 Multiplicity = 1
Be,0,-1.0214197796,0.0001246663,-0.0001289035
B,0,3.7101788396,0.6423873964,-0.6415882178
B,0,2.0707636482,0.6251021999,-0.6243311412
В,0,3.7104670322,-0.6416046979,0.6408383613
B,0,4.9122997096,0.0005733892,-0.0005515811
В,0,-2.8086714542,0.0427516222,-1.2157322696
В,0,-2.6081275776,-1.4441659787,-1.4459201824
B,0,-2.6081400043,1.4441460158,1.4459177059
В,0,-2.808676501,1.2157714525,-0.0412804807
В,0,-2.8091602116,-1.2156270954,0.041188315
B,0,-2.8091652581,-0.0426834213,1.2155638548
B,0,2.0709205824,-0.6260304782,0.6252760852
B,0,0.7944470186,-0.0007201376,0.0007226734
```


## State=1-A' $\backslash$ HF $=-312.6121276$



0

## Cores

Charge = -2 Multiplicity = 1
Be,0,-1.0320144775,0.0000005629,0.00000000659
В,0,3.6974319855,0.4552476828,-0.7874063407
B,0,2.0610071747,0.4500248041,-0.7783711299
В,0,3.6975191918,-0.4551826923,0.7872864835
В,0,4.9003521336,0.0000643555,-0.0001162462
В,0,-2.6052596032,1.0225610446,-1.7686329393
В,0,-2.7931390858,-0.3585385911,-1.1651901129
В,0,-2.7932578131,0.3585779632,1.1651253268
В,0,-2.7931381847,1.1886869997,-0.2706402978
В,0,-2.7932587141,-1.1886456217,0.2705766714
В,0,-2.6056763759,-1.0225392574,1.7686005046
B,0,2.0610832218,-0.4501513754,0.7785858974

## B,0,0.7919476514,-0.0001057624,0.0001821304

## State=1-A' $\backslash H F=-312.6141679$



| 1 | 5 | 0 | -1.103821 | -0.652213 | 0.859525 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 5 | 0 | 1.014198 | -1.684354 | -0.588808 |
| 3 | 5 | 0 | -2.137796 | -1.435373 | -0.194381 |
| 4 | 5 | 0 | -2.288806 | 0.149577 | -0.107827 |
| 5 | 5 | 0 | -0.337645 | 0.715697 | 0.170178 |
| 6 | 5 | 0 | -0.564243 | -1.909501 | -0.189301 |
| 7 | 5 | 0 | 1.162603 | 1.689732 | 0.057622 |
| 8 | 5 | 0 | -0.317096 | 2.321728 | -0.217038 |
| 9 | 5 | 0 | -1.735732 | 1.651693 | -0.215996 |
| 10 | 5 | 0 | 2.323820 | -0.908690 | -0.120294 |
| 11 | 5 | 0 | 1.085451 | 0.052612 | -0.594204 |
| 12 | 5 | 0 | 2.372753 | 0.649352 | 0.290220 |
| 13 | 4 | 0 | 0.657892 | -0.800326 | 1.062880 |

## State=1-A\HF=-312.7588999



| 1 | 5 | 0 | 0.141360 | -0.724455 | -0.940930 |
| ---: | ---: | ---: | ---: | ---: | :---: |
| 2 | 5 | 0 | 1.685766 | -0.544711 | -0.534900 |
| 3 | 5 | 0 | 3.016013 | 0.292737 | 0.005316 |
| 4 | 5 | 0 | 2.364314 | -0.770265 | 0.963988 |
| 5 | 5 | 0 | 0.789609 | -0.929879 | 0.917910 |
| 6 | 5 | 0 | -0.835907 | -0.547430 | 0.723799 |
| 7 | 5 | 0 | -1.356575 | -1.211698 | -1.055340 |
| 8 | 5 | 0 | -1.273706 | 0.494502 | -0.711299 |
| 9 | 5 | 0 | -0.027194 | 1.651886 | -0.384577 |
| 10 | 5 | 0 | -1.168998 | 1.488741 | 0.717722 |
| 11 | 5 | 0 | -2.295622 | 0.427799 | 0.902535 |
| 12 | 5 | 0 | -2.477472 | -0.776219 | -0.062910 |
| 13 | 4 | 0 | 1.798015 | 1.436240 | -0.676643 |

Mg
$8 B$
$8 B$
Charge $=-2$ Multiplicity $=1$
Mg,0,0.,0.,0.
B,0,0.,2.0438503218,2.0237859816
В,0,-0.8945633166,0.8304026825,2.2149092036
В,0,-0.8945633166,-0.8304026825,2.2149092036
B,0,0.,-2.0438503218,2.0237859816
B,0,0.8945633166,-0.8304026825,2.2149092036
В,0,0.8945633166,0.8304026825,2.2149092036
B,0,0.8304026825,0.8945633166,-2.2149092036
B,0,2.0438503218,0.,-2.0237859816
В,0,0.8304026825,-0.8945633166,-2.2149092036
В,0,-0.8304026825,-0.8945633166,-2.2149092036
В,0,-2.0438503218,0.,-2.0237859816
В,0,-0.8304026825,0.8945633166,-2.2149092036

## State=1-A1\HF=-497.9745034



```
Charge \(=-2\) Multiplicity \(=1\)
B,0,0.,2.0532145029,2.115051107
В,0,-0.8868283137,0.8330659968,2.2734015752
В,0,-0.8868283137,-0.8330659968,2.2734015752
В,0,0.,-2.0532145029,2.115051107
В,0,0.8868283137,-0.8330659968,2.2734015752
B,0,0.8868283137,0.8330659968,2.2734015752
В,0,0.,2.0532145029,-2.115051107
В,0,-0.8868283137,0.8330659968,-2.2734015752
В,0,-0.8868283137,-0.8330659968,-2.2734015752
В,0,0.,-2.0532145029,-2.115051107
B,0,0.8868283137,-0.8330659968,-2.2734015752
В,0,0.8868283137,0.8330659968,-2.2734015752
Mg,0,0.,0.,0.
State=1-AG\HF=-497.9570995
```

Charge = -2 Multiplicity = 1
B,0,0.,0.847268081,-1.8026345204
В,0,0.,-0.847268081,-1.8026345204
В,0,0.,-2.0797037597,-2.6686274756
В,0,0.,-0.8277880307,-3.5306861256
В,0,-2.0329602324,0.,2.3351862957
B,0,2.0329602324,0.,2.3351862957
В,0,0.,2.0797037597,-2.6686274756
B,0,0.,0.8277880307,-3.5306861256
Mg,0,0.,0.,0.4097216976
B,0,0.8320865904,-0.8930917697,2.5875478944
В,0,-0.8320865904,0.8930917697,2.5875478944
В,0,-0.8320865904,-0.8930917697,2.5875478944
B,0,0.8320865904,0.8930917697,2.5875478944

## State=1-A1\HF=-497.9501306



## c.



Charge $=-2$ Multiplicity $=1$
Mg,0,-0.878528363,0.0001572806,-0.0001608599
B,0,4.2227132518,0.6418578543,-0.6410571388
B,0,2.5819559229,0.6296003415,-0.6288216139
В,0,4.2225839974,-0.6417445508,0.6409802244
B,0,5.4254940598,0.0000027706,0.0000205214
В,0,-3.1182285527,0.0418366609,-1.2171814737
В,0,-2.8875516668,-1.4410996004,-1.4428088418
В,0,-2.8875640533,1.4410372312,1.4428463455
В,0,-3.1182336041,1.2172182238,-0.040365069
В,0,-3.1177706406,-1.2173838731,0.0405545481
В,0,-3.1177756918,-0.0420531096,1.2173200914

## State=1-A' $\backslash \mathrm{HF}=-497.9869664$

Charge $=-2$ Multiplicity $=1$
B,0,0.,0.8498624827,1.820384771
В,0,0.,-0.8498624827,1.820384771
B,0,0.,-2.0815349323,2.6902324636
B,0,0.,-0.8277337109,3.5514591663
B,0,0.,-2.0356448359,-2.3590060738
B,0,0.,2.0356448359,-2.3590060738
В,0,0.,2.0815349323,2.6902324636
B,0,0.,0.8277337109,3.5514591663
Mg,0,0.,0.,-0.4123647141
B,0,-0.8905126583,0.8323139691,-2.6041163351
В,0,0.8905126583,-0.8323139691,-2.6041163351
В,0,-0.8905126583,-0.8323139691,-2.6041163351
B,0,0.8905126583,0.8323139691,-2.6041163351

## State=1-A1 $\backslash H F=-497.9433482$



## $\mathrm{C}^{8} \mathrm{CB}^{-8}$

Charge $=-2$ Multiplicity $=1$
Mg,0,-0.8784679772,0.000003257,-0.000004749
B,0,4.220024925,0.4542102427,-0.7856124937
B,0,2.5802015916,0.4472479079,-0.7735686937
B,0,4.2200130626,-0.4542415344,0.7856581205
B,0,5.4232079942,-0.0000201067,0.0000293178
В,0,-2.8890634664,1.0210264252,-1.7659783566
В,0,-3.1145395188,-0.35479178,-1.1656239676
B,0,-3.1145494905,0.3548148746,1.1655902932
В,0,-3.1145386214,1.1871938261,-0.2741037219

B,0,-3.1145503879,-1.1871707315,0.2740700475
B,0,-2.8890901309,-1.0210050024,1.7659471199
B,0,2.5801899112,-0.4472670402,0.7735965907
B,0,1.3210172767,-0.0000048977,0.0000071414

## State=1-A1\HF=-497.9876227

| 1 | 5 | 0 | -0.994662 | -0.686642 | 0.634366 |
| ---: | ---: | ---: | ---: | ---: | ---: |
| 2 | 5 | 0 | 0.645511 | -1.730543 | -0.922255 |
| 3 | 5 | 0 | -2.312711 | -1.399673 | -0.107972 |
| 4 | 5 | 0 | -2.412119 | 0.153400 | 0.075224 |
| 5 | 5 | 0 | -0.476131 | 0.757659 | -0.006449 |
| 6 | 5 | 0 | -0.861498 | -2.022274 | -0.403992 |
| 7 | 5 | 0 | 0.976720 | 1.658588 | -0.544317 |
| 8 | 5 | 0 | -0.490338 | 2.343980 | -0.403272 |
| 9 | 5 | 0 | -1.897083 | 1.694136 | -0.093362 |
| 10 | 5 | 0 | 2.047777 | -0.940709 | -0.992955 |
| 11 | 5 | 0 | 0.707861 | -0.043026 | -0.895715 |
| 12 | 5 | 0 | 2.229025 | 0.603266 | -0.666036 |
| 13 | 12 | 0 | 1.182354 | -0.161734 | 1.802806 |

## State=1-A\HF=-498.1184171



| 1 | 5 | 0 | 0.093414 | -0.728426 | 1.004388 |
| ---: | ---: | ---: | ---: | ---: | ---: |
| 2 | 5 | 0 | -1.428324 | -0.941007 | 0.529535 |
| 3 | 5 | 0 | -2.902627 | -0.614257 | -0.157632 |
| 4 | 5 | 0 | -1.902770 | -1.517822 | -0.961360 |
| 5 | 5 | 0 | -0.345901 | -1.326228 | -0.783601 |
| 6 | 5 | 0 | 1.188422 | -0.661710 | -0.619744 |
| 7 | 5 | 0 | 1.629218 | -0.919110 | 1.319864 |
| 8 | 5 | 0 | 1.399882 | 0.651716 | 0.642944 |
| 9 | 5 | 0 | 0.230541 | 1.701637 | -0.022519 |
| 10 | 5 | 0 | 1.429369 | 1.346049 | -0.989365 |
| 11 | 5 | 0 | 2.604263 | 0.327147 | -0.915250 |
| 12 | 5 | 0 | 2.772271 | -0.604051 | 0.312344 |

## State=1-A\HF=-498.0909108



```
Charge \(=-2\) Multiplicity \(=1\)
Ca,0,0.,0.,0.
B,0,0.,2.040134903,2.3456050919
В,0,-0.8883067965,0.8293191065,2.5664621535
В,0,-0.8883067965,-0.8293191065,2.5664621535
В,0,0.,-2.040134903,2.3456050919
В,0,0.8883067965,-0.8293191065,2.5664621535
В,0,0.8883067965,0.8293191065,2.5664621535
В,0,0.8293191065,0.8883067965,-2.5664621535
В,0,2.040134903,0.,-2.3456050919
В,0,0.8293191065,-0.8883067965,-2.5664621535
В,0,-0.8293191065,-0.8883067965,-2.5664621535
В,0,-2.040134903,0.,-2.3456050919
B,0,-0.8293191065,0.8883067965,-2.5664621535
```


## State=1-A1\HF=-975.5193788

C9


Charge $=-2$ Multiplicity $=1$
B,0,0.,2.0452121255,2.3830990524
В,0,-0.8860055191,0.829909776,2.582103316
В,0,-0.8860055191,-0.829909776,2.582103316
B,0,0.,-2.0452121255,2.3830990524
B,0,0.8860055191,-0.829909776,2.582103316
B,0,0.8860055191,0.829909776,2.582103316
B,0,0.,2.0452121255,-2.3830990524
В,0,-0.8860055191,0.829909776,-2.582103316
В,0,-0.8860055191,-0.829909776,-2.582103316
B,0,0.,-2.0452121255,-2.3830990524
В,0,0.8860055191,-0.829909776,-2.582103316
B,0,0.8860055191,0.829909776,-2.582103316

Ca,0,0.,0.,0.

## State=1-AG\HF=-975.5129579


#### Abstract



\section*{${ }^{8}-8-3$}

Charge $=-2$ Multiplicity $=1$ Ca,0,-0.7934862843,-0.0004467908,0.000442843 В,0,4.6189931036,0.638568186,-0.6377697976 B,0,2.9739839393,0.6263793446,-0.6256028725 B,0,4.6196941261,-0.6375702267,0.6368126774 В,0,5.8304721569,0.0008495299,-0.0008234887 В,0,-3.3396581188,0.0418458343,-1.2149678118 В,0,-3.1000748797,-1.4392640385,-1.4412612914 В,0,-3.100087241,1.4394910206,1.4410079951 В,0,-3.3396631564,1.2150036367,-0.0403778823 В,0,-3.3408458101,-1.2145502026,0.0399241378 В,0,-3.3408508475,-0.0414201879,1.2144862457 В,0,2.9746718345,-0.6268918982,0.6261403133 B,0,1.7173100302,-0.0006538349,0.0006604028


## State=1-A' $\backslash H F=-975.5085683$

(9)

## Cobs

Charge $=-2$ Multiplicity $=1$
B,0,0.,0.8362666445,2.1830979177
B,0,0.,-0.8362666445,2.1830979177
В,0,0.,-2.0769486677,3.040585843
В,0,0.,-0.8308212466,3.915086808
В,0,0.,-2.0352732645,-2.640353965
В,0,0.,2.0352732645,-2.640353965
B,0,0.,2.0769486677,3.040585843
B,0,0.,0.8308212466,3.915086808
Са,0,0.,0.,-0.3642540154

B,0,-0.8874917381,0.8297630889,-2.8849542864
В,0,0.8874917381,-0.8297630889,-2.8849542864
В,0,-0.8874917381,-0.8297630889,-2.8849542864
В,0,0.8874917381,0.8297630889,-2.8849542864
State=1-A1 $\backslash H F=-975.4863102$


Charge $=-2$ Multiplicity $=1$
Са,0,-0.7940891768,0.0000056453,-0.0000089652
B,0,4.6179507599,0.451442221,-0.7808252838
В,0,2.9733688988,0.4440626254,-0.7680597798
В,0,4.6179267085,-0.4515078802,0.7809295566
B,0,5.8292784062,-0.0000414412,0.0000658124
В,0,-3.0977967595,1.0193107201,-1.7630106411
B,0,-3.339228891,-0.3533811148,-1.1631201143
В,0,-3.3392501286,0.353428593,1.1630447144
В,0,-3.3392279966,1.1843202527,-0.2740768603
В,0,-3.339251023,-1.1842727744,0.2740014604
В,0,-3.0978510599,-1.0192666743,1.7629406924
В,0,2.9733452412,-0.4441049015,0.768126918
B,0,1.717092551,-0.0000122071,0.0000193859

## State=1-A1\HF=-975.5087713



Charge $=-2$ Multiplicity $=1$
B,0,0.,0.8354561903,-2.1756067183
В,0,0.,-0.8354561903,-2.1756067183
В,0,0.,-2.0771710868,-3.0313267883
В,0,0.,-0.8311098055,-3.9059228298
В,0,-2.0331224497,0.,2.6259831565

B,0,2.0331224497,0.,2.6259831565
B,0,0.,2.0771710868,-3.0313267883
B,0,0.,0.8311098055,-3.9059228298
Са,0,0.,0.,0.3638418476
B,0,0.8298517071,-0.8886516405,2.8795947424
В,0,-0.8298517071,0.8886516405,2.8795947424
B,0,-0.8298517071,-0.8886516405,2.8795947424
B,0,0.8298517071,0.8886516405,2.8795947424

## State=1-A1 $\backslash H F=-975.4898458$

| 1 | 5 | 0 | 0.988753 | -0.948786 | -0.538346 |
| ---: | ---: | ---: | ---: | ---: | ---: |
| 2 | 5 | 0 | -0.623175 | -1.143216 | 1.528871 |
| 3 | 5 | 0 | 2.178341 | -1.744242 | 0.312588 |
| 4 | 5 | 0 | 2.591587 | -0.358270 | -0.312365 |
| 5 | 5 | 0 | 0.792022 | 0.672826 | -0.174844 |
| 6 | 5 | 0 | 0.658763 | -1.870303 | 0.845701 |
| 7 | 5 | 0 | -0.301161 | 1.997772 | 0.258041 |
| 8 | 5 | 0 | 1.228880 | 2.258926 | -0.212744 |
| 9 | 5 | 0 | 2.399321 | 1.235137 | -0.489334 |
| 10 | 5 | 0 | -1.773077 | -0.045334 | 1.578165 |
| 11 | 5 | 0 | -0.319331 | 0.467206 | 1.118250 |
| 12 | 5 | 0 | -1.689065 | 1.382553 | 0.874286 |
| 13 | 20 | 0 | -1.532965 | -0.476067 | -1.197067 |

## State=1-A $\backslash H F=-975.6383119$



| 1 | 5 | 0 | -0.214304 | 0.769462 | 1.042219 |
| ---: | ---: | ---: | ---: | ---: | ---: |
| 2 | 5 | 0 | 1.221124 | 1.247262 | 0.494285 |
| 3 | 5 | 0 | 2.683975 | 1.230353 | -0.289357 |
| 4 | 5 | 0 | 1.478621 | 1.955364 | -0.995111 |
| 5 | 5 | 0 | -0.022691 | 1.558291 | -0.702017 |
| 6 | 5 | 0 | -1.476268 | 0.750174 | -0.484595 |
| 7 | 5 | 0 | -1.699939 | 0.627783 | 1.511829 |
| 8 | 5 | 0 | -1.318123 | -0.772195 | 0.556212 |


| 9 | 5 | 0 | -0.463204 | -1.800485 | -0.514904 |
| ---: | ---: | ---: | ---: | ---: | :---: |
| 10 | 5 | 0 | -1.759858 | -1.194863 | -1.153132 |
| 11 | 5 | 0 | -2.911326 | -0.199294 | -0.823698 |
| 12 | 5 | 0 | -2.924712 | 0.450455 | 0.573936 |
| 13 | 20 | 0 | 1.851676 | -1.155577 | 0.196083 |

State $=1-\mathrm{A} \backslash \mathrm{HF}=-\mathbf{9 7 5 . 5 9 1 3 5 3 7}$


## State=1-A1 $\backslash H F=-328.104283$



Charge $=0$ Multiplicity $=1$
B,0,2.1310024631,2.0661882578,0.
B,0,2.0790011246,0.8333409858,0.8791697907
B,0,2.0790011246,-0.8333409858,0.8791697907
B,0,2.1310024631,-2.0661882578,0.
B,0,2.0790011246,-0.8333409858,-0.8791697907
B,0,2.0790011246,0.8333409858,-0.8791697907

B,0,-2.1310024631,2.0661882578,0.
B,0,-2.0790011246,0.8333409858,0.8791697907
В,0,-2.0790011246,-0.8333409858,0.8791697907
В,0,-2.1310024631,-2.0661882578,0.
В,0,-2.0790011246,-0.8333409858,-0.8791697907
В,0,-2.0790011246,0.8333409858,-0.8791697907
Li,0,0.,0.,-1.5200471845
Li,0,0.,0.,1.5200471845
Li,0,0.,2.6668343602,0.
Li,0,0.,-2.6668343602,0.

## State=1-AG\HF=-328.0603195



Charge $=0$ Multiplicity $=1$
B,0,1.203628033,0.0377526412,-2.0071706661
В,0,-0.0377391903,-1.2036259933,-2.0071721422
B,0,-1.2036308836,-0.0377450173,-2.0071691001
В,0,0.0377363398,1.2036336172,-2.007167624
B,0,0.0377391903,1.2036259933,2.0071721422
B,0,-1.203628033,-0.0377526412,2.0071706661
В,0,-0.0377363398,-1.2036336172,2.007167624
B,0,1.2036308836,0.0377450173,2.0071691001
Li,0,2.4644483081,-0.5544612422,-0.000002803
Li,0,-2.4644483081,0.5544612422,0.000002803
Li,0,-0.5544838963,2.4644432112,0.0000050742
Li,0,0.5544838963,-2.4644432112,-0.00000050742
B,0,1.4511050284,-1.451093942,1.8944215093
В,0,-1.451102338,1.4510867463,1.8944290819
В,0,-1.4511050284,1.451093942,-1.8944215093
B,0,1.451102338,-1.4510867463,-1.8944290819

## State=1-AG\HF=-328.1033325



| 5 | 0 | -0.001980 | -1.197062 | 0.900237 |
| ---: | ---: | ---: | ---: | ---: |
| 5 | 0 | -0.521220 | -1.357217 | -0.784870 |


| 5 | 0 | -2.519240 | 0.226299 | 0.352297 |
| :--- | :--- | :---: | :---: | :---: |
| 5 | 0 | -1.833642 | 1.589359 | 0.248819 |
| 5 | 0 | 1.023798 | 0.282171 | 0.431758 |
| 5 | 0 | -1.670498 | -1.132954 | 0.330510 |
| 5 | 0 | 2.481587 | 0.908657 | -0.243365 |
| 5 | 0 | 1.289064 | 1.892014 | -0.180213 |
| 5 | 0 | -0.284343 | 1.816709 | -0.077495 |
| 5 | 0 | 1.123637 | -1.536991 | -0.208432 |
| 5 | 0 | -1.067085 | 0.327508 | -0.554514 |
| 5 | 0 | 2.388319 | -0.606986 | -0.361158 |
| 3 | 0 | 1.993553 | -1.364409 | 1.768054 |
| 3 | 0 | -0.987564 | 0.456830 | 1.977538 |
| 3 | 0 | -2.553214 | -1.180741 | -1.580668 |
| 3 | 0 | 0.866561 | 0.069143 | -1.920883 |

## State=1-A\HF=-328.274168

|  |  |  |  |  |  |
| :---: | :---: | :---: | ---: | :---: | :---: |
| 1 | 5 | 0 | 1.904446 | 0.996159 | -0.844585 |
| 2 | 5 | 0 | -0.476686 | 2.024844 | 0.557078 |
| 3 | 5 | 0 | -0.289571 | -0.600946 | -1.359763 |
| 4 | 5 | 0 | 1.783635 | -1.230722 | 0.735788 |
| 5 | 5 | 0 | -0.993601 | 0.906610 | -0.599206 |
| 6 | 5 | 0 | -1.824496 | -0.409367 | -1.187276 |
| 7 | 5 | 0 | 0.249018 | -1.465730 | 0.649874 |
| 8 | 3 | 0 | -0.539681 | -0.914182 | 2.523421 |
| 9 | 5 | 0 | -1.249366 | -0.721196 | 0.480802 |
| 10 | 5 | 0 | 2.599979 | -0.176108 | -0.130157 |
| 11 | 5 | 0 | 1.180242 | -0.796146 | -0.750761 |
| 12 | 5 | 0 | 0.557710 | 1.830392 | -0.593543 |
| 13 | 5 | 0 | -1.186899 | 0.774894 | 1.180984 |
| 14 | 3 | 0 | 1.300955 | 0.931673 | 1.360560 |
| 15 | 3 | 0 | -1.387687 | -2.484788 | -0.872748 |
| 16 | 3 | 0 | -3.130938 | 0.579489 | 0.090041 |

State=1-A\HF=-328.2410901

Charge $=0$ Multiplicity $=1$
B,0,1.1987565668,0.0357145946,-2.1310104753
В,0,-0.0357309375,-1.1987560798,-2.1310104753
В,0,-1.1987565668,-0.0357145946,-2.1310104753
В,0,0.0357309375,1.1987560798,-2.1310104753
В,0,-0.0357145946,1.1987565668,2.1310104753
В,0,-1.1987560798,0.0357309375,2.1310104753
В,0,0.0357145946,-1.1987565668,2.1310104753
B,0,1.1987560798,-0.0357309375,2.1310104753
Na,0,2.7505216263,-0.0000187492,0.
Na,0,-2.7505216263,0.0000187492,0.
Na,0,0.0000187492,2.7505216263,0.
Na,0,-0.0000187492,-2.7505216263,0.
В,0,1.4496341829,1.4496144199,1.9636253998
В,0,-1.4496341829,-1.4496144199,1.9636253998
В,0,-1.4496144199,1.4496341829,-1.9636253998
В,0,1.4496144199,-1.4496341829,-1.9636253998

## State=1-A1\HF=-947.1883299



Charge $=0$ Multiplicity $=1$
В,0,-2.1549674538,0.8332011263,0.8755152116
B,0,-2.2386873132,2.0642309392,-0.0057354821
В,0,-2.1566475754,0.8264661695,-0.8775977195
В,0,-2.1549666926,-0.8332030906,-0.8755152159
В,0,-2.2386854315,-2.0642329799,0.0057354777
В,0,-2.1566468238,-0.8264681354,0.8775977152
В,0,2.2386853843,0.0058621107,2.0642315845
В,0,2.1566546265,0.8776340631,0.8264008184
В,0,2.1549600315,0.8754802879,-0.833268163
B,0,2.2386853938,-0.00586007,-2.0642315801
В,0,2.1566554281,-0.8776320972,-0.8264008141

B,0,2.1549608279,-0.8754783235,0.8332681672
$\mathrm{Na}, 0,-0.2316191096,-0.0207224307,2.5944029152$
Na,0,-0.2316191233,0.0207222196,-2.5944029157
$\mathrm{Na}, 0,0.2316178426,2.5944015755,0.0207497098$
Na,0,0.2316202076,-2.5944013643,-0.0207497093

## State=1-A\HF=-947.1594536



Charge = 0 Multiplicity $=1$
B,0,-0.7074369247,-2.40968577,-0.0364124043
В,0,-1.5842934027,-1.5328411379,1.2036572751
В,0,-2.4096804135,-0.7074558198,0.0363997759
В,0,-1.5328239355,-1.5843004519,-1.2036699035
В,0,1.5842934027,1.5328411379,-1.2036572751
В,0,0.7074369247,2.40968577,0.0364124043
B,0,1.5328239355,1.5843004519,1.2036699035
B,0,2.4096804135,0.7074558198,-0.0363997759
Na,0,1.9635483256,-1.9635350554,0.4952251341
$\mathrm{Na}, 0,-1.9635483256,1.9635350554,-0.4952251341$
Na,0,-0.3501976987,0.350206224,-2.7768610061
Na,0,0.3501976987,-0.350206224,2.7768610061
B,0,2.5337957922,0.4748067262,1.4559210301
В,0,0.4747929114,2.5338053845,-1.4559088413
В,0,-2.5337957922,-0.4748067262,-1.4559210301
B,0,-0.4747929114,-2.5338053845,1.4559088413

## State=1-AG\HF=-947.1833105



| 1 | 5 | 0 | 1.253170 | 1.159071 | 0.628634 |
| :--- | :--- | :--- | ---: | ---: | :---: |
| 2 | 5 | 0 | 0.267069 | -1.287702 | 1.087068 |
| 3 | 5 | 0 | -1.417382 | 1.000643 | 1.484869 |
| 4 | 5 | 0 | 1.611726 | 0.560566 | -1.955032 |
| 5 | 5 | 0 | -1.034236 | -0.370294 | 0.734566 |
| 6 | 5 | 0 | -2.205993 | 0.626426 | 0.190089 |


| 7 | 5 | 0 | 0.017565 | 0.504238 | -1.760631 |
| ---: | ---: | ---: | ---: | ---: | :---: |
| 8 | 11 | 0 | 1.544871 | -1.885917 | -1.429642 |
| 9 | 5 | 0 | -1.291394 | -0.258955 | -0.995302 |
| 10 | 5 | 0 | 2.337208 | 0.709981 | -0.562771 |
| 11 | 5 | 0 | 0.978261 | 1.645119 | -0.911716 |
| 12 | 5 | 0 | 0.187066 | 0.378462 | 1.678255 |
| 13 | 5 | 0 | -0.615845 | -1.657050 | -0.175520 |
| 14 | 11 | 0 | 2.651094 | -0.608956 | 1.826385 |
| 15 | 11 | 0 | -1.059095 | 2.905620 | -0.194842 |
| 16 | 11 | 0 | -3.176513 | -1.779158 | 0.051506 |



| 1 | 5 | 0 | -0.168625 | 0.028048 | -0.914757 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 5 | 0 | 0.818725 | -1.068700 | -1.672827 |
| 3 | 5 | 0 | 2.194748 | 0.902764 | 0.428419 |
| 4 | 5 | 0 | 1.329931 | 1.230338 | 1.757353 |
| 5 | 5 | 0 | -1.109658 | 0.567139 | 0.325656 |
| 6 | 5 | 0 | 1.588227 | 0.196032 | -0.869962 |
| 7 | 5 | 0 | -2.455133 | -0.510025 | 0.740794 |
| 8 | 5 | 0 | -1.778950 | 0.362182 | 1.835889 |
| 9 | 5 | 0 | -0.233292 | 0.931456 | 1.932493 |
| 10 | 5 | 0 | -0.631041 | -1.587097 | -1.428321 |
| 11 | 5 | 0 | 0.645755 | 0.380713 | 0.568286 |
| 12 | 5 | 0 | -1.810181 | -1.393594 | -0.396574 |
| 13 | 11 | 0 | -2.728613 | 0.408958 | -1.805427 |
| 14 | 11 | 0 | 0.504624 | 2.780552 | -0.330754 |
| 15 | 11 | 0 | 3.480837 | -1.238882 | -0.678889 |
| 16 | 11 | 0 | -0.525260 | -1.968472 | 1.766684 |



Charge $=0$ Multiplicity $=1$
B,0,1.2009153376,0.034738964,-2.2872212325

B,0,-0.0347553019,-1.2009148649,-2.2872212325
В,0,-1.2009153376,-0.034738964,-2.2872212325
В,0,0.0347553019,1.2009148649,-2.2872212325
В,0,-0.034738964,1.2009153376,2.2872212325
В,0,-1.2009148649,0.0347553019,2.2872212325
В,0,0.034738964,-1.2009153376,2.2872212325
B,0,1.2009148649,-0.0347553019,2.2872212325
K,0,3.2037368839,-0.0000217927,0.
K,0,-3.2037368839,0.0000217927,0.
K,0,0.0000217927,3.2037368839,0.
K,0,-0.0000217927,-3.2037368839,0.
B,0,1.4561843515,1.456164541,2.1773180893
В,0,-1.4561843515,-1.456164541,2.1773180893
В,0,-1.456164541,1.4561843515,-2.1773180893
В,0,1.456164541,-1.4561843515,-2.1773180893

## State=1-A1\HF=-2697.7440601



Charge $=0$ Multiplicity $=1$
B,0,-2.4542801481,0.,2.0591609663
В,0,-2.5580013296,0.8781818363,0.8290317936
В,0,-2.5580013296,0.8781818363,-0.8290317936
В,0,-2.4542801481,0.,-2.0591609663
В,0,-2.5580013296,-0.8781818363,-0.8290317936
В,0,-2.5580013296,-0.8781818363,0.8290317936
В,0,2.4542801481,0.,2.0591609663
В,0,2.5580013296,0.8781818363,0.8290317936
В,0,2.5580013296,0.8781818363,-0.8290317936
B,0,2.4542801481,0.,-2.0591609663
В,0,2.5580013296,-0.8781818363,-0.8290317936
В,0,2.5580013296,-0.8781818363,0.8290317936
K,0,0.,-2.1774133848,0.
K,0,0.,2.1774133848,0.
K,0,0.,0.,3.7163490455
K,0,0.,0.,-3.7163490455

## State=1-AG\HF=-2697.7246534

| 1 | 5 | 0 | -0.154951 | -0.149836 | 1.170946 |
| ---: | ---: | ---: | ---: | ---: | ---: |
| 2 | 5 | 0 | -0.352224 | 0.942911 | 2.405435 |
| 3 | 5 | 0 | -1.407491 | -1.341099 | 1.301844 |
| 4 | 5 | 0 | -2.927998 | -1.189984 | -1.343321 |
| 5 | 5 | 0 | -2.202313 | -1.568713 | -0.066531 |
| 6 | 5 | 0 | -1.116431 | -0.414333 | 2.524885 |
| 7 | 5 | 0 | 1.217210 | 0.340298 | -1.884693 |
| 8 | 5 | 0 | -0.316786 | 0.366135 | -1.873938 |
| 9 | 5 | 0 | -1.751791 | -0.309891 | -1.709409 |
| 10 | 5 | 0 | 0.505789 | 1.405469 | 1.155376 |
| 11 | 5 | 0 | 0.938004 | 0.458947 | -0.063480 |
| 12 | 5 | 0 | 2.165640 | -0.407195 | -0.920272 |
| 13 | 19 | 0 | 1.636628 | 3.052441 | -1.122988 |
| 14 | 19 | 0 | -3.048826 | 1.263670 | 0.658912 |
| 15 | 19 | 0 | 0.302485 | -2.640881 | -1.616341 |
| 16 | 19 | 0 | 2.531646 | -1.183837 | 1.897038 |

State $=1-A \backslash H F=-2697.8664437$


| 1 | 5 | 0 | -1.043939 | 1.557150 | -0.480407 |
| ---: | ---: | ---: | ---: | ---: | :---: |
| 2 | 5 | 0 | -0.604783 | -0.980332 | -1.174566 |
| 3 | 5 | 0 | 1.503520 | 0.926348 | -1.483622 |
| 4 | 5 | 0 | -1.385368 | 0.896488 | 2.089637 |
| 5 | 5 | 0 | 0.889715 | -0.408895 | -0.832178 |
| 6 | 5 | 0 | 2.251987 | 0.289007 | -0.272069 |
| 7 | 5 | 0 | 0.160099 | 0.500490 | 1.779579 |
| 8 | 19 | 0 | -1.755595 | -1.937403 | 1.952953 |
| 9 | 5 | 0 | 1.217484 | -0.485017 | 0.895545 |
| 10 | 5 | 0 | -2.126413 | 1.353750 | 0.776066 |
| 11 | 5 | 0 | -0.548869 | 1.846354 | 1.055256 |
| 12 | 5 | 0 | -0.205620 | 0.660513 | -1.638371 |
| 13 | 5 | 0 | 0.213278 | -1.633454 | 0.011162 |
| 14 | 19 | 0 | -3.185574 | 0.197780 | -1.909267 |
| 15 | 19 | 0 | 1.952127 | 3.070993 | 0.472659 |


| 16 | 19 | 0 | 2.904545 | -2.521475 | -0.707407 |
| :--- | :--- | :--- | :--- | :--- | :--- |

## State=1-A\HF=-2697.8131821

Bis<br>Charge $=0$ Multiplicity $=1$<br>B,0,-1.0025972577,1.3724172719,0.809031615<br>В,0,-0.9169918547,1.4964576762,-0.8483064399<br>B,0,-1.0396454198,0.081208106,-1.5307953851<br>В,0,-1.0025958338,-1.3724183663,-0.8090316218<br>В,0,-0.9169903137,-1.4964586822,0.8483064336<br>В,0,-1.0396453461,-0.0812092388,1.530795378<br>В,0,0.572914246,-0.7228075415,1.1352106213<br>B,0,0.4246408677,0.896067787,1.5283058722<br>B,0,1.6627845122,0.5989550074,0.4647989151<br>В,0,0.5729135065,0.7228080753,-1.1352106177<br>В,0,0.424641804,-0.8960674064,-1.5283058695<br>В,0,1.6627851343,-0.5989533472,-0.4647989043<br>Be,0,0.530510535,2.0776079856,0.1308215368<br>Be,0,0.5305126832,-2.0776074955,-0.1308215334

## State=1-A\HF=-327.5183294



Charge $=0$ Multiplicity $=1$
B,0,2.0540526743,2.0791982548,0.
B,0,1.7194524804,0.8681254476,0.859121356
В,0,1.7194524804,-0.8681254476,0.859121356
B,0,2.0540526743,-2.0791982548,0.
В,0,1.7194524804,-0.8681254476,-0.859121356
В,0,1.7194524804,0.8681254476,-0.859121356
B,0,-2.0540526743,2.0791982548,0.
B,0,-1.7194524804,0.8681254476,0.859121356
В,0,-1.7194524804,-0.8681254476,0.859121356
В,0,-2.0540526743,-2.0791982548,0.
В,0,-1.7194524804,-0.8681254476,-0.859121356
В,0,-1.7194524804,0.8681254476,-0.859121356
Be,0,0.,0.,-1.1756927735
Be,0,0.,0.,1.1756927735


Charge $=0$ Multiplicity $=1$
B,0,-1.8234914024,0.,2.0489341675
В,0,-1.7670349245,0.9008071362,0.8250062009
В,0,-1.7670349245,0.9008071362,-0.8250062009
В,0,-1.8234914024,0.,-2.0489341675
В,0,-1.7670349245,-0.9008071362,-0.8250062009
В,0,-1.7670349245,-0.9008071362,0.8250062009
В,0,1.8234914024,0.,2.0489341675
B,0,1.7670349245,0.9008071362,0.8250062009
В,0,1.7670349245,0.9008071362,-0.8250062009
В,0,1.8234914024,0.,-2.0489341675
В,0,1.7670349245,-0.9008071362,-0.8250062009
B,0,1.7670349245,-0.9008071362,0.8250062009
Be,0,0.,0.,-1.9257016508
Be,0,0.,0.,1.9257016508

## State=1-AG\HF=-327.3574606



| 1 | 5 | 0 | 1.524615 | 1.746834 | 0.209795 |
| ---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 5 | 0 | -1.976303 | -0.720661 | 0.567069 |
| 3 | 5 | 0 | -1.369150 | 1.522907 | -0.034740 |
| 4 | 5 | 0 | 0.065197 | 2.155856 | 0.460119 |
| 5 | 5 | 0 | 0.303543 | 0.970443 | -0.658678 |
| 6 | 5 | 0 | -1.070368 | -0.015493 | -0.802266 |
| 7 | 5 | 0 | -2.595866 | 0.527624 | -0.072885 |
| 8 | 5 | 0 | -0.568289 | -1.420435 | 1.021459 |
| 9 | 5 | 0 | 0.793441 | -1.884188 | 0.265074 |
| 10 | 5 | 0 | 2.106848 | -1.103378 | -0.097804 |
| 11 | 5 | 0 | 2.345293 | 0.422803 | -0.144150 |
| 12 | 5 | 0 | 0.472348 | -0.677598 | -0.954018 |
| 13 | 4 | 0 | 0.852473 | -0.073846 | 1.042900 |
| 14 | 4 | 0 | -0.891609 | -1.832047 | -0.741619 |

State=1-A\HF=-327.489281

Charge $=0$ Multiplicity $=1$
B,0,-1.037188091,1.4565865107,0.7870656372
В,0,-1.0367628081,1.4569184281,-0.7857308661
В,0,-1.1017533363,0.0003950044,-1.5598815144
В,0,-1.0371865801,-1.4565876409,-0.7870656446
В,0,-1.0367613077,-1.4569195579,0.7857308587
В,0,-1.1017533468,-0.0003962013,1.5598815066
В,0,0.343577503,-0.8152271406,1.5543492268
В,0,0.3442154884,0.8142385601,1.5559850642
В,0,1.6198820719,-0.0001494324,0.7828686755
В,0,0.3435766712,0.8152274374,-1.5543492246
В,0,0.3442163408,-0.8142382626,-1.555985062
В,0,1.6198820772,0.0001510484,-0.7828686645
Mg,0,1.0996451468,2.2134325129,0.0009356386
Mg,0,1.0996474345,-2.2134314346,-0.0009356312

## State=1-A\HF=-698.2076604



Charge $=0$ Multiplicity $=1$
B,0,-2.2236279658,0.,2.0527396928
В,0,-2.1465273323,0.8984410567,0.8259281113
В,0,-2.1465273323,0.8984410567,-0.8259281113
В,0,-2.2236279658,0.,-2.0527396928
В,0,-2.1465273323,-0.8984410567,-0.8259281113
В,0,-2.1465273323,-0.8984410567,0.8259281113
B,0,2.2236279658,0.,2.0527396928
B,0,2.1465273323,0.8984410567,0.8259281113
В,0,2.1465273323,0.8984410567,-0.8259281113
B,0,2.2236279658,0.,-2.0527396928
В,0,2.1465273323,-0.8984410567,-0.8259281113
В,0,2.1465273323,-0.8984410567,0.8259281113
Mg,0,0.,0.,-2.1133539874
Mg,0,0.,0.,2.1133539874


```
Charge \(=0\) Multiplicity \(=1\)
B,0,1.7225559483,2.0044927242,0.
B,0,2.1315009154,0.8351287373,0.8668351831
В,0,2.1315009154,-0.8351287373,0.8668351831
В,0,1.7225559483,-2.0044927242,0.
B,0,2.1315009154,-0.8351287373,-0.8668351831
B,0,2.1315009154,0.8351287373,-0.8668351831
B,0,-1.7225559483,2.0044927242,0.
В,0,-2.1315009154,0.8351287373,0.8668351831
В,0,-2.1315009154,-0.8351287373,0.8668351831
В,0,-1.7225559483,-2.0044927242,0.
В,0,-2.1315009154,-0.8351287373,-0.8668351831
В,0,-2.1315009154,0.8351287373,-0.8668351831
Mg,0,0.,0.,-1.4203928154
Mg,0,0.,0.,1.4203928154
State=1-AG\HF=-697.9462859
```



| 1 | 5 | 0 | -3.222026 | 1.300806 | -0.016903 |
| ---: | ---: | ---: | ---: | ---: | ---: |
| 2 | 5 | 0 | 2.511446 | 1.788466 | -0.133116 |
| 3 | 5 | 0 | -0.518958 | 2.297932 | -0.140167 |
| 4 | 5 | 0 | -2.063882 | 2.297774 | -0.184886 |
| 5 | 5 | 0 | -1.648487 | 0.658827 | 0.131345 |
| 6 | 5 | 0 | 1.516584 | 0.765965 | 0.577510 |
| 7 | 5 | 0 | 1.093435 | 2.293108 | -0.095831 |
| 8 | 5 | 0 | 1.775903 | -2.035264 | -0.086309 |
| 9 | 5 | 0 | 1.096217 | -0.757903 | 0.765555 |
| 10 | 5 | 0 | 0.191073 | -1.924269 | 0.063318 |
| 11 | 5 | 0 | -3.262891 | -0.238162 | -0.006556 |
| 12 | 5 | 0 | -0.430077 | -0.426933 | 0.351672 |
| 13 | 12 | 0 | -2.080815 | -2.074217 | -0.213566 |
| 14 | 12 | 0 | 3.314842 | -0.434261 | -0.297114 |

```
C8=4
G
```



```
Charge = 0 Multiplicity = 1
B,0,-2.3424530919,0.2065397172,1.1968283575
В,0,-2.4439721051,1.7206428577,1.1178123865
B,0,-2.3421983972,1.1774528456,-0.2977386751
B,0,-2.3424505781,-0.2065656841,-1.1968289247
B,0,-2.4439532316,-1.7206699227,-1.1178129775
В,0,-2.3421857301,-1.1774788097,0.2977381079
В,0,2.5098878836,1.7135918585,1.1287554646
B,0,2.408997809,1.1801373383,-0.2904071895
В,0,2.4085324672,-0.1987625517,-1.1973125303
В,0,2.5099066831,-1.7135653375,-1.1287548983
B,0,2.4090105066,-1.1801119086,0.2904077321
В,0,2.4085300374,0.1987879763,1.1973130729
Ca,0,0.032823539,2.0606442129,1.3470782794
Ca,0,0.0328461437,-2.0606444863,-1.3470782918
```


## State=1-A\HF=-1653.1219055



Charge $=0$ Multiplicity $=1$
B,0,1.9246602254,2.0061340331,0.
B,0,2.3226891541,0.8318079869,0.8663162338
В,0,2.3226891541,-0.8318079869,0.8663162338
B,0,1.9246602254,-2.0061340331,0.
В,0,2.3226891541,-0.8318079869,-0.8663162338
В,0,2.3226891541,0.8318079869,-0.8663162338
B,0,-1.9246602254,2.0061340331,0.
В,0,-2.3226891541,0.8318079869,0.8663162338
В,0,-2.3226891541,-0.8318079869,0.8663162338
В,0,-1.9246602254,-2.0061340331,0.
В,0,-2.3226891541,-0.8318079869,-0.8663162338
В,0,-2.3226891541,0.8318079869,-0.8663162338
Са,0,0.,0.,-1.7005008697

## State=1-AG\HF=-1653.0678261

|  |  |  |  |  |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
| 1 | 5 |  |  |  |  |
| 2 | 5 | 0 | 0.841156 | -3.140536 | 0.128558 |
| 3 | 5 | 0 | 2.602897 | 1.466512 | -0.217194 |
| 4 | 5 | 0 | 2.983951 | -1.346676 | 0.143781 |
| 5 | 5 | 0 | 2.342155 | -2.793252 | 0.151348 |
| 6 | 5 | 0 | 1.219027 | -1.530729 | 0.370055 |
| 7 | 5 | 0 | 1.680545 | 0.076173 | -0.066394 |
| 8 | 5 | 0 | 3.378055 | 0.173273 | 0.017441 |
| 9 | 5 | 0 | -2.832231 | 1.034858 | 0.624995 |
| 10 | 5 | 0 | -1.061828 | 0.714629 | 0.700188 |
| 11 | 5 | 0 | -0.256953 | -2.054404 | -0.139856 |
| 12 | 20 | 0 | -0.048705 | -0.430258 | 0.066758 |
| 13 | 20 | 0 | -2.701751 | -1.179609 | -0.379030 |
| 14 | 5 | 0 | 0.431698 | 2.627267 | -0.318924 |

## State=1-A\HF=-1653.2294343

Charge $=-2$ Multiplicity $=1 \wedge \mathrm{M}$
B,0,-1.3756480317,-1.416524244,-0.0108469494
B,0,-1.8885256931,0.0299328617,-0.0030864885
B,0,-4.7120777916,1.0283841968,0.0066281215
В,0,-2.8959575698,-1.4041108264,-0.0082609674
В,0,-4.2205454239,-0.4100479781,-0.0011702824
В,0,-3.1953865079,1.0492298316,0.0041910859
Li,0,0.6474316343,-0.3760471995,-0.0046192523
C,0,2.5882061875,0.122139481,-1.2002513773
С,0,2.2353613421,1.2656700761,-0.4424179739
C,0,2.9033903722,-0.9224215654,-0.2965986051
H,0,2.5768515568,0.046724236,-2.2820496311
C,0,2.33512167,0.9285326389,0.9300926648

H,0,1.9089336118,2.2195264438,-0.84119979
C,0,2.7480106013,-0.4231319077,1.0201602774
Н,0,3.175107357,-1.9373559024,-0.5653415201
H,0,2.0971511689,1.5797742513,1.7637501504
H,0,2.879825454,-0.9895789754,1.9355160343

## |State=1-A|HF=-350.0463939

(L)

## ${ }^{4}-\mathrm{H}_{\mathrm{C}} \mathrm{Cl} \mathrm{EH}-\mathrm{H}$

Charge $=-2$ Multiplicity $=1$
B,0,0.0864834009,-2.067119785,-2.7612489933
В,0,0.0372487246,-0.8320353383,-1.8824213163
В,0,-0.0939461311,2.0782338561,-2.7559031278
В,0,0.0271163521,-0.8213913983,-3.6365793439
В,0,-0.0448979659,0.8338717335,-3.6339560296
В,0,-0.0352993538,0.8418274339,-1.8796537377
Li,0,0.0071221804,-0.0000003835,0.3915728782
C,0,1.2075314666,-0.0161448815,2.3373617419
C,0,0.3856536618,1.1385805038,2.3400123137
С,0,0.3642492511,-1.1550815367,2.3332538173
H,0,2.2914732304,-0.0263712808,2.3059858141
C,0,-0.9653400458,0.7131617068,2.3374270073
H,0,0.7287231655,2.1658946187,2.299974081
С,0,-0.9785420994,-0.7044359539,2.3332507113
H,0,0.6884446027,-2.188154628,2.2861611738
H,0,-1.8348100831,1.3597042621,2.3002183205
H,0,-1.8600359973,-1.3344833629,2.2939211701

## State=1-A\HF=-350.0300568



| 5 | 0 | 4.451740 | 1.469924 | 0.004500 |
| ---: | ---: | ---: | ---: | ---: |
| 5 | 0 | 3.655044 | 0.534073 | -0.888612 |
| 5 | 0 | 1.922724 | -1.799131 | -0.007133 |


| 5 | 0 | 3.671028 | 0.515680 | 0.892122 |
| ---: | :---: | ---: | :---: | :---: |
| 5 | 0 | 2.677054 | -0.810253 | 0.882241 |
| 5 | 0 | 2.661517 | -0.792244 | -0.889201 |
| 11 | 0 | -0.251086 | -0.453747 | -0.001831 |
| 6 | 0 | -3.011451 | -0.856717 | -0.219796 |
| 6 | 0 | -2.822725 | -0.278800 | 1.059577 |
| 6 | 0 | -2.690711 | 0.120991 | -1.193543 |
| 1 | 0 | -3.326805 | -1.876104 | -0.419121 |
| 6 | 0 | -2.384997 | 1.056449 | 0.876889 |
| 1 | 0 | -2.972170 | -0.776372 | 2.012739 |
| 6 | 0 | -2.303351 | 1.303734 | -0.515921 |
| 1 | 0 | -2.723207 | -0.015780 | -2.269946 |
| 1 | 0 | -2.143874 | 1.763082 | 1.664560 |
| 1 | 0 | -1.988119 | 2.232210 | -0.980908 |

## State=1-A $\backslash H F=-504.810682$



Charge $=-2$ Multiplicity $=1 \wedge \mathrm{M}$
B,0,-3.0478458877,2.0637100434,-0.0060858064
В,0,-3.1434569305,0.8331807187,0.8838925518
В,0,-3.0486952701,-2.0635878824,0.0050638807
В,0,-3.1427198531,0.8282638921,-0.889356313
В,0,-3.1434945399,-0.8330372777,-0.884996798
В,0,-3.1437865955,-0.8281066717,0.8882868792
С,0,2.7549560622,-1.1601263514,0.3204460895
С,0,2.7555168661,-0.6622839931,-1.0049968918
C,0,2.7529978566,-0.0529188546,1.2034632529
H,0,2.7463043245,-2.206938611,0.6088481556
С,0,2.7540722625,0.7527671603,-0.9411380246
H,0,2.751794523,-1.2610960593,-1.9110737639
С,0,2.7525480654,1.1293208914,0.4236393722
H,0,2.7486913817,-0.1019586233,2.2885432283
H,0,2.747842426,1.4307162226,-1.7895615668
H,0,2.7417072861,2.1460125188,0.8047958247
K,0,-0.1582574333,-0.0026001408,0.0003128085

## |State=1-A|HF=-942.4525441



Charge $=-1$ Multiplicity $=1 \wedge \mathrm{M}$
B,0,-2.0342730798,2.0195008766,-0.0026068285
В,0,-2.2946875735,0.8218654272,0.8908827016
В,0,-2.0127880493,-2.0427423907,0.0013434825
B,0,-2.2924791563,0.8202514674,-0.8944931137
В,0,-2.2833450321,-0.8478478078,-0.8926861525
В,0,-2.2854642712,-0.8462831968,0.8926429333
С,0,1.9467577276,-1.1553287662,0.317803639
C,0,1.9400189133,-0.654783992,-1.0079768134
С,0,1.9349519904,-0.0461294123,1.205770346
H,0,1.9213922084,-2.1985298771,0.6031022717
C,0,1.9349489275,0.767461853,-0.9412855708
Н,0,1.9329804195,-1.2503560269,-1.9117756257
С,0,1.9369080167,1.1419445475,0.4250055959
H,0,1.9344197769,-0.0969966336,2.2872598719
H,0,1.9191725911,1.444774597,-1.7853175603
H,0,1.9042032914,2.1539058901,0.8061748648
Mg,0,-0.1465413274,0.0003745659,0.0024364904
|State=1-A|HF=-542.671122


Charge $=-1$ Multiplicity $=1 \wedge \mathrm{M}$
B,0,-2.3447864134,2.0262872651,0.0089780778
В,0,-2.6262003724,0.8262327872,0.8934862699
B,0,-2.3467174242,-2.027153069,-0.0088101597
В,0,-2.6282677578,0.8338281057,-0.885122239
В,0,-2.6295750725,-0.8268490958,-0.8925796243
B,0,-2.6274825116,-0.8345275113,0.8860207207
С,0,2.2642507073,-1.1615430514,0.317065756
С,0,2.2628827089,-0.6588666806,-1.0074527558

C,0,2.2579143537,-0.0558645613,1.2045822797
H,0,2.2771149623,-2.2068135632,0.6010874684
C,0,2.2590213323,0.758217584,-0.9387900611
H,0,2.2831504441,-1.2536362478,-1.9130476834
С,0,2.2568662764,1.1305117656,0.4279136605
H,0,2.2777700837,-0.1083918829,2.2869326482
H,0,2.2737077023,1.4378916336,-1.7825595417
H,0,2.263187417,2.1436175782,0.8113414663
Ca,0,-0.1582697561,-0.0038245132,-0.001676643

## State=1-A|HF=-1020.2166393



| 5 | 0 | 1.055234 | 0.434100 | 0.656047 |
| :--- | :---: | ---: | :---: | :---: |
| 5 | 0 | 2.006785 | -0.727422 | 0.349454 |
| 5 | 0 | 4.836945 | -0.453545 | -0.390572 |
| 5 | 0 | 2.274262 | 0.947216 | -0.119598 |
| 5 | 0 | 3.788350 | 0.602050 | -0.639675 |
| 5 | 0 | 3.513034 | -1.134199 | -0.148826 |
| 3 | 0 | -0.957225 | -0.582158 | 0.578079 |
| 6 | 0 | -2.528295 | -0.905049 | -0.973406 |
| 6 | 0 | -3.020085 | -1.137075 | 0.334840 |
| 6 | 0 | -2.278619 | 0.482145 | -1.108524 |
| 1 | 0 | -2.400367 | -1.648018 | -1.749848 |
| 6 | 0 | -3.048927 | 0.098656 | 1.022272 |
| 1 | 0 | -3.334218 | -2.093429 | 0.734389 |
| 6 | 0 | -2.601657 | 1.106497 | 0.130283 |
| 1 | 0 | -2.009301 | 0.977008 | -2.038217 |
| 1 | 0 | -3.391292 | 0.259680 | 2.036258 |
| 1 | 0 | -2.645020 | 2.175167 | 0.329765 |
| 3 | 0 | -0.403674 | 1.682793 | -0.314383 |
| 3 | 0 | 3.785114 | 0.271882 | 1.643210 |

State=1-A\HF=-365.1769888


Charge $=0$ Multiplicity $=1 \wedge \mathrm{M}$
B,0,-1.9406115019,1.9358890805,0.0587206318^М
В,0,-1.5707218883,0.4330201673,0.048714349^M
В,0,-3.161091932,-1.9271629361,-0.0424817687^M
В,0,-3.0832274289,1.0823763784,-0.4467695663^М
В,0,-3.4388163419,-0.5218611633,-0.561532699^М
В,0,-1.8539849986,-1.1914371055,-0.0351954496^М
Li,0,0.5743085993,-0.6661491386,-0.0376775574^M
C,0,2.1180248505,0.8482501909,0.7387200766^M
С,0,2.4322500849,-0.4776088349,1.1290510733^М
C,0,2.1191235393,0.8952298812,-0.6874535268^M
H,0,2.0397950506,1.6894720122,1.42493052^M
С,0,2.6398549605,-1.2412176987,-0.0434177314^М
H,0,2.5302648831,-0.8289850536,2.1478071786^М
С,0,2.4343215253,-0.4013090414,-1.1635206701^М
H,0,2.0293886218,1.777414106,-1.317745111^M
H,0,2.9105148931,-2.2887458077,-0.0780052587^M
H,0,2.5277488391,-0.6853341461,-2.203290948^M
Li,0,0.245193747,2.033401666,0.0936020618^M
Li,0,-3.2384662104,-0.1865892609,1.6369924304^M
|State=1-A|HF=-365.1683717


Charge $=0$ Multiplicity $=1$
B,0,3.0500145024,2.0988749721,-0.0000040889
В,0,3.0630386614,0.8636979065,0.8903904516
В,0,3.3020854459,-2.014249392,0.0001289418
В,0,3.0636479819,0.8628467165,-0.889478343
В,0,3.1856918693,-0.788411709,-0.8920905109
В,0,3.1851215221,-0.7875311065,0.8913170846

Na,0,0.8431131634,-1.8936140794,-0.0003215768
$\mathrm{Na}, 0,0.6189020667,1.9237386727,-0.0011057091$
C,0,-1.7607348902,-0.9488114956,-0.7131850605
С,0,-1.7644031822,-0.9524843089,0.7128960457
C,0,-1.8879746741,0.3940469899,-1.1492242056
Н,0,-1.6903940663,-1.8154409645,-1.3626128765
С,0,-1.8936788001,0.3881060807,1.1550910542
Н,0,-1.6967515754,-1.8223898148,1.3581724884
C,0,-1.983746873,1.2205515411,0.00489626
Н,0,-1.8939426066,0.7284370663,-2.1793084191
H,0,-1.904193188,0.7173823604,2.1867556924
H,0,-2.1299746789,2.2965228089,0.0074408101
Na,0,-4.1156073465,-0.2018610693,-0.0053554354

## State=1-A\HF=-829.4477739



Charge $=0$ Multiplicity $=1$
B,0,3.7375104462,2.1078231117,-0.1405099109
B,0,3.076663303,1.0293318645,-0.9713245911
В,0,2.1775771482,-1.6585212262,0.0976903635
В,0,3.06988757,1.1457055759,0.8179402206
В,0,2.483887803,-0.4017537978,0.9052337299
В,0,2.4900019082,-0.5164972949,-0.86305976
С,0,-2.9857945995,-1.135485475,-0.3451294178
С,0,-2.8230864873,-0.702876873,1.0001258719
C,0,-2.5131189916,-0.1004540061,-1.199433935
H,0,-3.3668092602,-2.0988248091,-0.6624221141
С,0,-2.2501053025,0.5991764788,0.9767464569
Н,0,-3.0561771745,-1.2798976851,1.8869797239
C,0,-2.0585618341,0.9712673819,-0.3823956449
Н,0,-2.4648630861,-0.1394647931,-2.2809480997
Н,0,-1.9601622724,1.1840134103,1.8410966762
Н,0,-1.5916436345,1.8842694861,-0.7306269152
Na,0,-0.2303939665,-1.0061713535,0.0572955748
Na,0,-4.5717813679,0.8558457636,-0.0298215489
Na,0,5.06576559,-0.340200596,0.0249285674

## State=1-A\HF=-829.4640095



Charge $=0$ Multiplicity $=1$
B,0,-1.1071140836,0.0548451552,-0.6700189014
В,0,-2.0449538647,-0.8313068805,0.1559067343
B,0,-4.5984143569,-0.0296450606,1.4239011573
B,0,-2.1499383505,0.9171155986,0.0446439419
В,0,-3.5167992749,0.9155684928,0.9576233841
В,0,-3.4098475148,-0.8905388126,1.0696118278
Na,0,0.9089018998,-1.4477517203,-0.233492603
C,0,3.0825836543,-0.4518094951,1.2506327858
С,0,3.3634321777,-1.2396152417,0.1041404391
C,0,3.0303567058,0.9014841404,0.846662705
H,0,3.0142947595,-0.8104103024,2.2710034281
C,0,3.447646253,-0.3740870751,-1.015942895
H,0,3.5878833507,-2.30235691,0.1033194828
C,0,3.2582754533,0.9498137904,-0.5587001204
H,0,2.9734906678,1.7532655892,1.5188921895
Н,0,3.7025760482,-0.6635974579,-2.0286063882
H,0,3.4090209037,1.8457759879,-1.1550757728
$\mathrm{Na}, 0,0.7680074364,1.6971833076,-0.2377597475$
Na,0,-4.369695753,-0.1814593842,-1.2839651391
State=1-A\HF=-829.4786442


Charge $=0$ Multiplicity $=1$
B,0,2.7214953134,-1.9964615056,0.0434669772

B,0,2.820715523,-0.7580141338,0.9114346022
B,0,3.2571830058,2.0870481595,-0.021024914
В,0,2.8031340967,-0.7837321816,-0.8617257659
В,0,3.0497516068,0.8613141,-0.8880108782
В,0,3.0671608412,0.8871335999,0.8851360725
С,0,-3.0117946417,1.2953453044,0.0517522899
С,0,-2.8229026572,0.5315018949,-1.1292945293
С,0,-2.8213262973,0.434895705,1.1644232324
Н,0,-3.2284592116,2.3569789486,0.0964089956
С,0,-2.5153468792,-0.7998304073,-0.7462621386
Н,0,-2.8672178724,0.9080482535,-2.1452786436
C,0,-2.5142726197,-0.8594427818,0.67074891
H,0,-2.8641334948,0.7250636886,2.2084464495
H,0,-2.2702602829,-1.6161730941,-1.4159048834
H,0,-2.2673830759,-1.7287781308,1.2691928007
K,0,0.0994361654,0.6828683916,0.0273998632
K,0,-5.2991630865,-0.5056640985,-0.0195123263
K,0,5.649178489,-0.4196563606,-0.0126433255

## State=1-A\HF=-2142.3982832



Charge $=0$ Multiplicity $=1$
B,0,-2.2807349626,-1.984324997,0.4117846097
В,0,-2.267005475,-0.6372938943,1.0960578463
В,0,-1.7176901904,1.9155343373,-0.4809626474
В,0,-2.5513512661,-0.9702361598,-0.6752707583
В,0,-2.2639832844,0.6173781612,-1.0481591976
В,0,-1.9729530522,0.9422229031,0.6728788016
Li,0,0.103838412,2.3970267925,0.5440543007
C,0,1.9926281959,-0.5826084157,-0.7835534228
С,0,2.0802931071,0.8309860375,-0.7792976489
С,0,1.9106391566,-1.0184400828,0.5855268075
Н,0,2.1205425233,-1.2221857508,-1.6486656847
С,0,2.045139225,1.2702317843,0.5643937367
H,0,2.1899919428,1.4538073067,-1.6572882349
C,0,1.9167410433,0.1307821,1.4048386964
H,0,1.9338043525,-2.0449041405,0.9312951142
H,0,2.2679182023,2.2802253952,0.9080163865
Н,0,1.8948754924,0.1318054981,2.4866479008

## State=1-A\HF=-550.1584496



Charge $=0$ Multiplicity $=1$
B,0,2.0409280787,-1.2552061979,-0.0085894692
B,0,2.2422356082,-0.0184237529,0.8869620596
B,0,2.6691053621,2.7859090211,0.0107242092
В,0,2.2581320153,-0.0141077116,-0.893134457
B,0,2.5944906964,1.5939213283,-0.90552545
B,0,2.5769891974,1.5895114031,0.9198508521
С,0,-1.7281834079,0.7592787169,0.0022627967
C,0,-1.9554490895,-0.0413134009,-1.1516433815
С,0,-1.9523253945,-0.0460965435,1.1537439894
Н,0,-1.6508493131,1.8459673406,0.0049541232
С,0,-2.3064142663,-1.3407726552,-0.7173085637
H,0,-1.9020503927,0.2895405724,-2.1802097994
C,0,-2.3047941043,-1.3436558678,0.7148856904
H,0,-1.8956480957,0.2805008793,2.1834677161
H,0,-2.5828846963,-2.1698908305,-1.3556468225
Н,0,-2.5798544556,-2.1753636639,1.350496405
Li,0,0.4714762557,1.7749065835,-0.0134180991
Mg,0,-0.1024624191,-1.2273446664,-0.0021574364

## HF=-550.1673512




Charge $=0$ Multiplicity $=1$
B,0,-1.9380262163,1.9821403719,-0.0003693698
В,0,-2.3207463604,0.819125833,0.8962477584
В,0,-1.9072903206,-2.0078010308,-0.0016804337
В,0,-2.3071677196,0.8206936988,-0.9045178221
В,0,-2.2930981771,-0.8502061215,-0.9037117784
В,0,-2.3063972696,-0.851723336,0.8962598433
С,0,1.951750643,-1.1581735216,0.3212032371

C,0,1.9446551216,-0.6554385923,-1.0115102743
C,0,1.9458616336,-0.0436753208,1.2118480979
H,0,1.9101709048,-2.2000322169,0.6060175382
С,0,1.9432953777,0.7712542951,-0.9454704438 H,0,1.9144309022,-1.2520221358,-1.913003209 С,0,1.9483253928,1.1487474025,0.4277447892 H,0,1.9273573189,-0.0940590329,2.2922719737 H,0,1.9094900905,1.4482488087,-1.7879937037 Н,0,1.9053564641,2.1599590726,0.8073063572 Mg,0,-0.26965584,0.0060715624,0.0132106671 Li,0,3.7141915944,0.0150028333,0.0006843329

## State=1-A\HF=-550.1385031


©
Charge $=0$ Multiplicity $=1$
B,0,4.7989434055,1.2032447766,0.0565364341
B,0,3.7429739313,0.6061637045,0.9525865765
B,0,1.7559083875,-1.4260429269,-0.0769834671
B,0,3.6761252752,0.7800144571,-0.8565455994
В,0,2.4730881864,-0.3386321628,-0.8878446796
B, $0,2.5348990029,-0.5049072548,0.8700807715$
С,0,-2.8164679702,0.2165429396,-1.1950221339
С,0,-3.1458155991,-0.8139862156,-0.2772829099
C,0,-2.4422040348,1.3642198205,-0.4498025519
Н,0,-2.8897929062,0.1547614846,-2.2740122208
C,0,-2.975394856,-0.3029639554,1.035257008
H,0,-3.513574136,-1.8001766317,-0.5333042119
C,0,-2.5404435723,1.043150383,0.9285368022
Н,0,-2.1796103131,2.331617629,-0.8603502269
Н,0,-3.1917780493,-0.8304183056,1.9563399666
Н,0,-2.366692436,1.7230518705,1.7537400922
Са,0,-0.5483004639,-0.4268795117,-0.00294
Li,0,4.5732407896,-1.2274088713,-0.1742936222

## State=1-A\HF=-1027.7053653


(ㄴ)

(c)

Charge $=0$ Multiplicity $=1 \wedge \mathrm{M}$
B,0,3.8611154867,-1.4344184073,0.0118309285
B,0,2.9357701896,-0.6445767322,0.9078130827
В,0,1.4917340759,1.8421093567,-0.0148719528
В,0,2.9182043495,-0.6745044715,-0.8915833336
В,0,1.9964741685,0.6976525183,-0.887092435
В,0,2.0127971616,0.7263694951,0.8840681504
С,0,-2.7736019465,0.8765011238,0.2614168371
С,0,-2.4940410194,0.3798270622,-1.0426523332
C,0,-2.2337627529,-0.0423195232,1.2059259395
H,0,-3.2819303088,1.8027434188,0.4938736926
С,0,-1.7815828126,-0.8447195275,-0.904393315
H,0,-2.7504909617,0.8640027962,-1.9755246173
C,0,-1.6214353175,-1.1056764803,0.4850960007
H,0,-2.2563283223,0.0652606708,2.2820879017
H,0,-1.3945424878,-1.4519191037,-1.7114229289
Н,0,-1.0873898719,-1.9420939225,0.9152335441
Li,0,-0.4342322839,0.8403570611,-0.0066690567
Li,0,-3.6947113309,-1.0327082675,0.0118211002
Li,0,4.1678595771,1.0314083446,-0.0342948997

## |State=1-A|HF=-365.1687584


(b)

Charge $=0$ Multiplicity $=1 \wedge \mathrm{M}$
В,0,-2.6713477053,-1.8013336549,0.0002362166^M
В,0,-2.3030772174,-0.6323577951,-0.8923366301^М
В,0,-1.6288983565,2.1508426327,-0.0008019439^М
В,0,-2.3028744503,-0.6320743303,0.8920540189^М
В,0,-1.8083059319,0.9474754835,0.8985814442^M

B,0,-1.8089219992,0.947399666,-0.8996193808^М С,0,2.6971765764,0.8972176153,-0.0065748395^M
C,0,2.2803800577,0.1891715973,1.1443735363^М C,0,2.2793978557,0.1742441679,-1.1474534663^M Н,0,3.2401191348,1.8336844205,-0.0129036105^M С,0,1.6250818026,-0.9938333705,0.7191360887^М H,0,2.4553467835,0.4763175705,2.1726700807^M С,0,1.6243177553,-1.0031085188,-0.7057768523^М Н,0,2.4540385983,0.4470886844,-2.1796983757^М H,0,1.3199548324,-1.7958487071,1.3897301884^M H,0,1.3214539974,-1.8155458549,-1.3650068631^M Li,0,0.5460768362,0.9765801392,-0.0052595581^M Li,0,-0.3860988317,-1.8034020457,0.0014990891^M Li,0,-3.8972811144,0.9509535501,-0.0021018128^M

## |State=1-A|HF=-365.1741199



Charge $=0$ Multiplicity $=1$
B,0,2.5492961368,-2.0493878986,-0.0009690216
B,0,2.3814119453,-0.8478820811,0.898840117
B,0,1.6271054968,1.9395485113,0.0010803834
В,0,2.3815967814,-0.847297648,-0.899986178
В,0,1.9615111744,0.7428746432,-0.8881903448
B,0,1.9621494568,0.7424750548,0.8896649124
C,0,-2.6754470804,0.9837288137,0.004093657
С,0,-2.2921356627,0.2537261802,-1.1446733929
С,0,-2.2890191659,0.247400971,1.1475499807
H,0,-3.176447266,1.9433996347,0.0074157235
С,0,-1.6846714268,-0.9520427427,-0.7159882409
H,0,-2.4547384835,0.5452408798,-2.1738694208
C,0,-1.6824579257,-0.9559315579,0.7103945824
H,0,-2.4489690989,0.5331498946,2.1787774103
Н,0,-1.409646626,-1.7686195278,-1.3815577737
Н,0,-1.4066052794,-1.7765365429,1.3707817969
Li,0,-0.516231185,0.9316478447,0.0001974425
Li,0,3.6443652516,2.4264780293,-0.0023256038
Li,0,0.3130123884,-1.8046516179,-0.0018740372

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HF=-365.1749816
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Charge $=0$ Multiplicity $=1$
B,0,-4.8400886167,-0.4602147935,-0.389819479
В,0,-3.8152069907,0.6270854672,-0.5978413141
В,0,-1.067149067,0.457312839,0.660263888
В,0,-3.5010514269,-1.125345583,-0.1942815173
В,0,-1.9979842368,-0.7075419369,0.3039951864
B,0,-2.3032042301,0.9826225858,-0.0782501137
C,0,2.4245534685,1.008454793,-0.5312960505
С,0,2.8893091237,0.6968400428,0.7807182569
С,0,2.3553167163,-0.2080640671,-1.2696114536
H,0,2.4062951283,2.0082060755,-0.968746729
С,0,3.0960775221,-0.6948065049,0.8471532881
H,0,3.0915611001,1.4074444583,1.5721858871
C,0,2.7664253225,-1.2541359194,-0.4199339766
Н,0,2.0735106937,-0.3085190291,-2.3100219377
Н,0,3.466075654,-1.2394095979,1.7068224249
H,0,2.8389319752,-2.2993829014,-0.6932100037
Li,0,0.9538204892,-0.5412468567,0.5309043036
Li,0,-3.7784615514,0.1953904462,1.6654379866
Li,0,0.3436261857,1.769969089,-0.2861900498

## State=1-A\HF=-365.1768197


c)

Charge $=0$ Multiplicity $=1$
B,0,2.5532364965,-2.0510462568,0.0002348981
B,0,2.383755696,-0.8488003637,0.8987426336
B,0,1.6285127978,1.9381362327,0.0008206638

B,0,2.3842880886,-0.8488338837,-0.8982869015
В,0,1.9628707341,0.7409178408,-0.8870212746
В,0,1.9628229343,0.7411654417,0.888817376
С,0,-2.6783163989,0.9842703613,0.0041217551
C,0,-2.2946607234,0.2548882266,-1.1451122058
C,0,-2.2907213009,0.2480345769,1.1476867113
Н,0,-3.1801052759,1.943488689,0.0079105582
С,0,-1.6853876214,-0.9505232271,-0.7166776617
Н,0,-2.4577334262,0.5462178193,-2.1742169932
С,0,-1.6831784843,-0.9547696049,0.7097467431
H,0,-2.4492310704,0.5336761511,2.1790938256
H,0,-1.4093131498,-1.7662756046,-1.382834612
Н,0,-1.4056036143,-1.7748158603,1.3701586415
Li,0,-0.517908661,0.9315368524,0.0000956163
Li,0,3.6440107131,2.4299662259,-0.0034423565
Li,0,0.3132779391,-1.8052991605,-0.0017334097

## State=1-A\HF=-365.1749899



## State=1-A\HF=-550.1673702



Charge $=0$ Multiplicity $=1$
B,0,-2.0694405747,1.9806747105,-0.001611679
В,0,-2.452161011,0.8176598129,0.8950058296
B,0,-2.0387063662,-2.009268226,-0.0029210119
B,0,-2.4385812121,0.8192265292,-0.9057598285
В,0,-2.4245130452,-0.8516741077,-0.9049540289
В,0,-2.4378129767,-0.8531896176,0.8950184127
С,0,1.8203363068,-1.1596406025,0.3199646661
C,0,1.8132380376,-0.6569056511,-1.0127493716
С,0,1.8144484872,-0.0451425568,1.2106094371
H,0,1.7787571504,-2.2014994005,0.6047785482
C,0,1.8118779411,0.7697875625,-0.946709134
Н,0,1.7830114616,-1.2534890263,-1.9142424577
C,0,1.8169103478,1.1472801231,0.426506558
H,0,1.7959460624,-0.0955266921,2.2910331591
H,0,1.7780695537,1.4467823644,-1.7892322482
H,0,1.7739411642,2.1584919294,0.8060678577
Mg,0,-0.4010704957,0.0046011802,0.0119711684
Li,0,3.5827765875,0.0135359684,-0.0005600944

## HF=-550.1385031



Charge $=0$ Multiplicity $=1$
B,0,-1.7108961764,-1.9187629823,0.0010431745
В,0,-2.3036677533,-0.8052169301,-0.8822786601
В,0,-3.6161216048,1.6998844007,-0.0020272803
В,0,-2.3110751945,-0.8082828719,0.8827437326
В,0,-3.203534224,0.5723105522,0.9079791621
В,0,-3.1946482024,0.576106495,-0.9127269023
C,0,1.1662128863,1.4501624267,0.0173133566
С,0,1.8226106219,0.9064879985,1.1580883551

C,0,1.7997729414,0.92548642,-1.1451714021
H,0,0.5424327028,2.3440323412,0.0318879042
C,0,2.835519684,0.0380601395,0.7014335182
Н,0,1.6159967195,1.1586587198,2.1905185135
C,0,2.8212400454,0.0496225348,-0.7231467307
H,0,1.5726636096,1.1940062245,-2.169108131
H,0,3.5401222771,-0.4970594505,1.3267625278
Н,0,3.5127049901,-0.4754709095,-1.371021349
Li,0,-1.2903162016,1.4615265099,0.0130468095
Са,0,0.6175581874,-1.2352294412,0.002225256

## State=1-A\HF=-1027.694964



Charge $=0$ Multiplicity $=1 \wedge \mathrm{M}$
В,0,-2.6769227958,-1.8030202901,0.4905228969^M
В,0,-2.466703802,-0.4585093281,1.1354862013^М
В,0,-1.7964313261,2.0001504784,-0.5467330854^М
В,0,-2.9076726931,-0.7714666398,-0.5891824675^М
B,0,-2.5248340404,0.7642008225,-1.0432532497^M
В,0,-2.1119835482,1.0740332997,0.6382508391^M
Li,0,-0.0944693867,2.5210881666,0.6228983801^M
C,0,2.4325150023,-0.6006064423,-0.8927998871^М
С,0,2.1680589261,0.7826900727,-0.8161632579^M
С,0,2.3209749637,-1.1480255894,0.41729493^М
H,0,2.7269023204,-1.1391897169,-1.7855370906^М
С,0,1.8770501596,1.0948701712,0.5424017099^М
Н,0,2.2220432402,1.486885644,-1.6364257303^М
C,0,1.9839952323,-0.1040454931,1.302858266^M
H,0,2.5094243505,-2.1776144408,0.6961029377^M
H,0,1.9015721027,2.0971708493,0.9745572152^М
H,0,1.8742491086,-0.1900472233,2.3762527501^M
Са,0,-0.1611803819,-0.590835382,-0.312032573^М
|State=1-A|HF=-1027.7035375


Charge $=0$ Multiplicity $=1$
B,0,-2.3351604649,-1.7125205813,-0.0244404523
В,0,-2.5095295946,-0.4790170068,-0.8909763746
В,0,-1.1870498061,1.9872133561,0.0244872573
В,0,-2.4390269153,-0.523060967,0.9124631324
В,0,-1.9595632145,1.0621130477,0.9438343726
В,0,-2.0312618923,1.1063284812,-0.8758959103
C,0,2.2942717722,0.883639984,-0.1178827192
С,0,1.9019456486,0.2820356772,1.1030282199
C,0,1.7273309115,0.1529329349,-1.1806059841
H,0,2.8500180054,1.8062539888,-0.2134647214
С,0,1.0991572974,-0.8462561434,0.8123221901
H,0,2.1234208964,0.6550107925,2.0934853708
С,0,0.9796675856,-0.9346971306,-0.631094237
H,0,1.797554694,0.3954909404,-2.231888099
H,0,0.6808128229,-1.5460043054,1.5242217618
H,0,0.5419539067,-1.7590886411,-1.1817378717
Be,0,-0.6848188755,-0.1296411932,-0.0421257918
Li,0,3.013078441,-1.1547705282,-0.0613594055

## State=1-A\HF=-364.769685



Charge $=0$ Multiplicity $=1$
B,0,2.3846664113,2.0060977793,0.018007603
B,0,2.7844410405,0.8372912956,-0.8634770957
B,0,2.4035285146,-1.9975986999,0.0062623685
B,0,2.7209135634,0.8344097483,0.9212676913
B,0,2.733021578,-0.8262142849,0.9134989526
В,0,2.7951109005,-0.8240247705,-0.8722896993
С,0,-2.1905417856,0.2920782309,-1.1624015406
С,0,-2.1854891926,-1.0276829625,-0.6260636238

C,0,-2.1496951811,1.2107099687,-0.0746092966
H,0,-2.2180813321,0.5521027874,-2.2127945731
C,0,-2.1407961906,-0.9250085224,0.7938401189
H,0,-2.1998629734,-1.948094276,-1.1952832964
С,0,-2.1178968125,0.4586009403,1.1332734817
Н,0,-2.1272346685,2.2896881017,-0.1522287884
H,0,-2.1133695176,-1.7532522721,1.4893508491
H,0,-2.0750653105,0.8674693087,2.1346745444
Ca,0,0.4060946338,-0.0138460129,-0.0633030843
Li,0,-3.9300579804,0.022338447,0.0672530039

## State=1-A\HF=-1027.682278



Charge $=0$ Multiplicity $=1$
B,0,-1.8061846727,-2.0608594374,-0.0025562351
В,0,-1.8705098547,-0.8375473209,0.889355563
B,0,-2.4749523321,1.9819156962,0.000144107
В,0,-1.8753498589,-0.8372522967,-0.8936866666
В,0,-2.1754524909,0.7939760138,-0.8919318146
В,0,-2.1708152261,0.7936108879,0.8901291096
Na,0,-4.3581159421,-0.5505368126,0.0055922917
$\mathrm{Na}, 0,0.1598244325,2.030313523,-0.0050823217$
$\mathrm{Na}, 0,0.8052522368,-1.4797997031,-0.0115944782$
C,0,2.4606816219,0.9267087614,-0.7051616169
C,0,2.4538938251,0.919707157,0.7198191501
C,0,2.9604778166,-0.3226533891,-1.1438094788
H,0,2.2992990703,1.7838550273,-1.3564652247
C,0,2.9493661091,-0.3337752308,1.1508674418
Н,0,2.2835531617,1.7697177173,1.3780444754
С,0,3.2782189792,-1.0926093876,0.0013461856
Н,0,3.1360675498,-0.6058601097,-2.1745801091
H,0,3.114000051,-0.627453372,2.1805071252
H,0,3.7410042323,-2.0734915233,-0.0012170831

## State=1-A\HF=-829.4811829



## State=1-A\HF=-829.4786452



## (h)

Charge $=0$ Multiplicity $=1$
B,0,1.7703093506,-2.0102150958,-0.0010761676
B,0,1.8825489959,-0.78610079,-0.887801983
B,0,2.5853034857,2.0122447757,0.0007456159
В,0,1.8820313503,-0.7867813499,0.8866528944
B,0,2.2396094262,0.8313457085,0.8867911411
B,0,2.240132981,0.8320305464,-0.8864163006

K,0,4.7876189118,-0.6191821826,0.0003035687
K,0,-0.3945866675,2.3778857718,-0.0001755069
K,0,-1.2808670192,-1.7524140012,-0.0015036308
C,0,-2.955197662,0.7985175479,0.7134689656
С,0,-2.9559145262,0.8000660587,-0.710360344
С,0,-3.678212199,-0.3378010318,1.1457355499
Н,0,-2.6114268128,1.5856853285,1.3811394369
С,0,-3.6793705792,-0.3352896248,-1.1444598489
H,0,-2.613311717,1.5889039291,-1.3766655973
С,0,-4.126713114,-1.0335980445,0.0000891006
Н,0,-3.8940901004,-0.5934833761,2.1767930836
Н,0,-3.8964265843,-0.588561944,-2.1758624418
H,0,-4.7431135302,-1.9260345183,-0.0005852104

## State=1-A\HF=-2142.4092514



Charge $=0$ Multiplicity $=1$
B,0,3.2584624007,-2.0431380559,0.0084555901
В,0,3.1956204681,-0.8120527456,0.889837518
В,0,3.2165168727,2.0769602423,-0.0073005892
В,0,3.1933473553,-0.8190002654,-0.8823744776
В,0,3.1762805726,0.8448553954,-0.8885923448
В,0,3.1785479016,0.8517902132,0.8836479952
С,0,-2.5892698057,1.1489026566,0.3228559503
С,0,-2.5935104856,0.6540368893,-1.0069224457
C,0,-2.5916676371,0.036687685,1.2043675567
H,0,-2.5465563327,2.1924035208,0.6138198606
С,0,-2.5979163078,-0.763878314,-0.9473410703
Н,0,-2.5566119469,1.2540917282,-1.9092191051
C,0,-2.5967990007,-1.1455567685,0.4192126303
H,0,-2.5548623941,0.0821320296,2.2871216061
H,0,-2.5650873296,-1.4376333078,-1.7961736498
H,0,-2.5614268405,-2.161365648,0.796470769
K,0,0.2962271342,-0.0158837998,0.0047338907
K,0,-5.2314981823,-0.0037827313,0.0088448421

K,0,5.9383824476,0.0437204429,-0.0024545906
State $=1-A \backslash H F=-2142.3986603$

