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Electronic Supplementary Information

Current-density pathways in figure-eight-shaped octa- phyrins[†]

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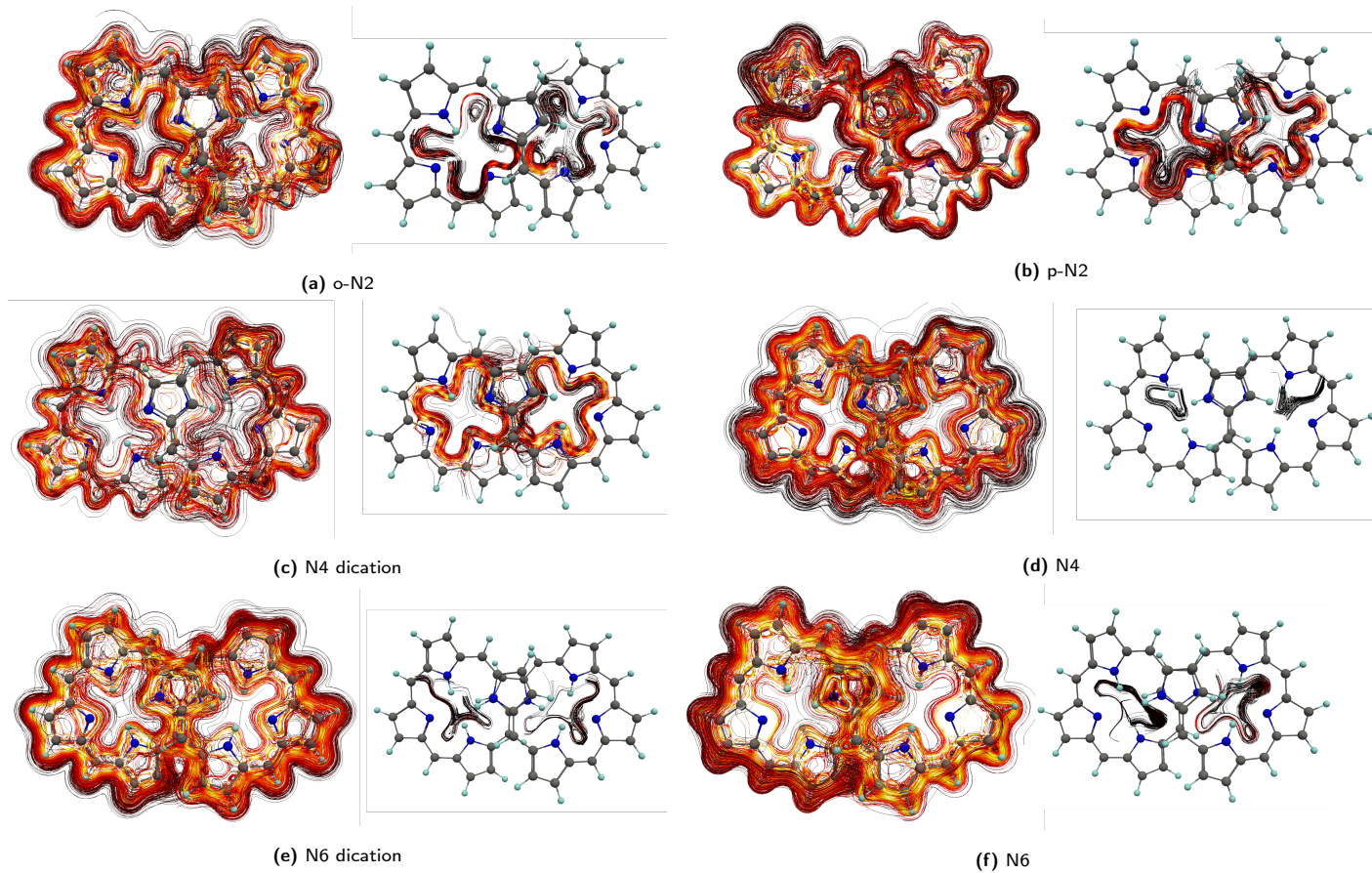


Figure S 1 The separating diatropic current-density pathways (left) and the paratropic current-density pathways of the studied molecules.

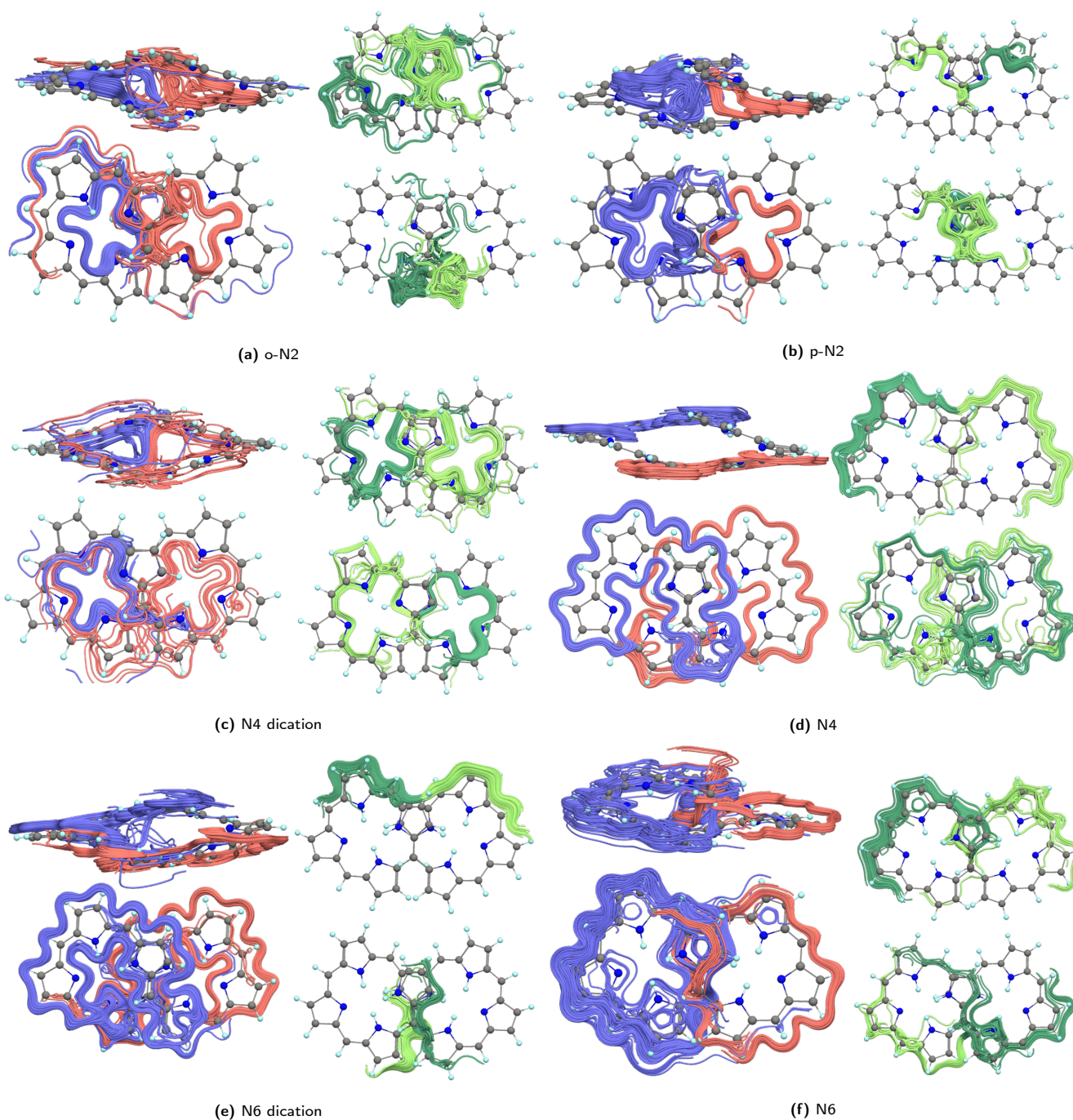


Figure S 2 Current-density pathways (left) and vertical through-space current-density pathways (right) are shown. Current-density pathways in the two halves of the molecules are visualized in purple and orange, respectively. In the right pictures, the positions of the vertical through-space current-density pathways are shown. The direction of current-density flux is from dark green to the light green.

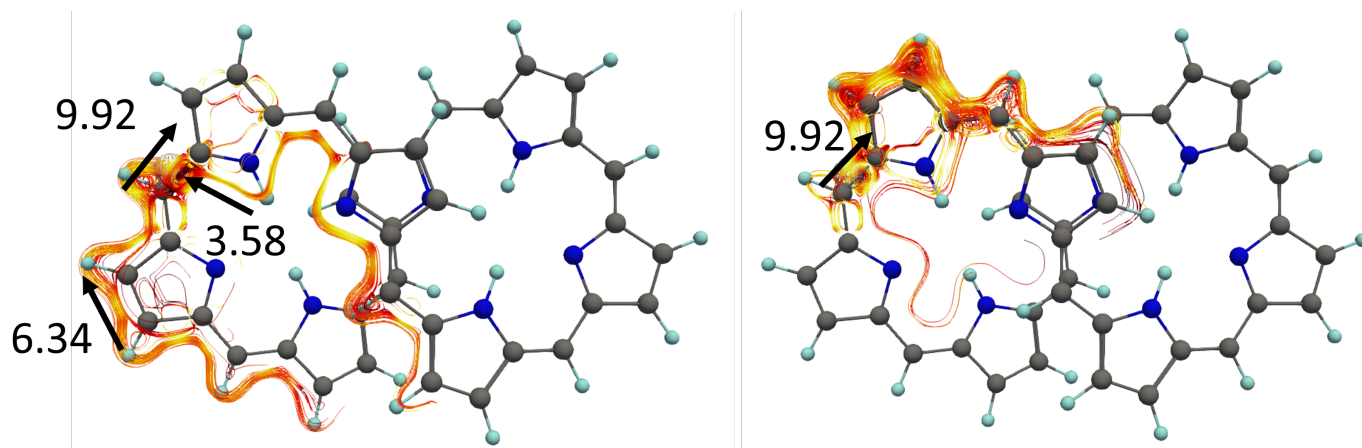


Figure S 3 A junction of the current-density pathway is shown for N4. The left picture shows the current-density pathways arriving to the junction and the right picture shows the joined current-density pathway after the junction.

Molecule	positive (A)	negative (A)	positive (B)	negative (B)	bridge
o-N2	4.08	-2.42	7.04	-2.38	2.96
p-N2	2.41	-6.32	5.46	-6.29	3.05
N4 Dication	1.02	-8.45	5.05	-8.54	4.01
N4	6.34	0	9.92	0	3.58
N6 Dication	4.83	0	10.81	0	5.93
N6	8.33	0	13.22	0	4.89

Table S 1 The positive and negative contributions to the current density (in nA/T) passing through plans A and B. bridge refers to the current density passing from the inside to the outside between the planes.

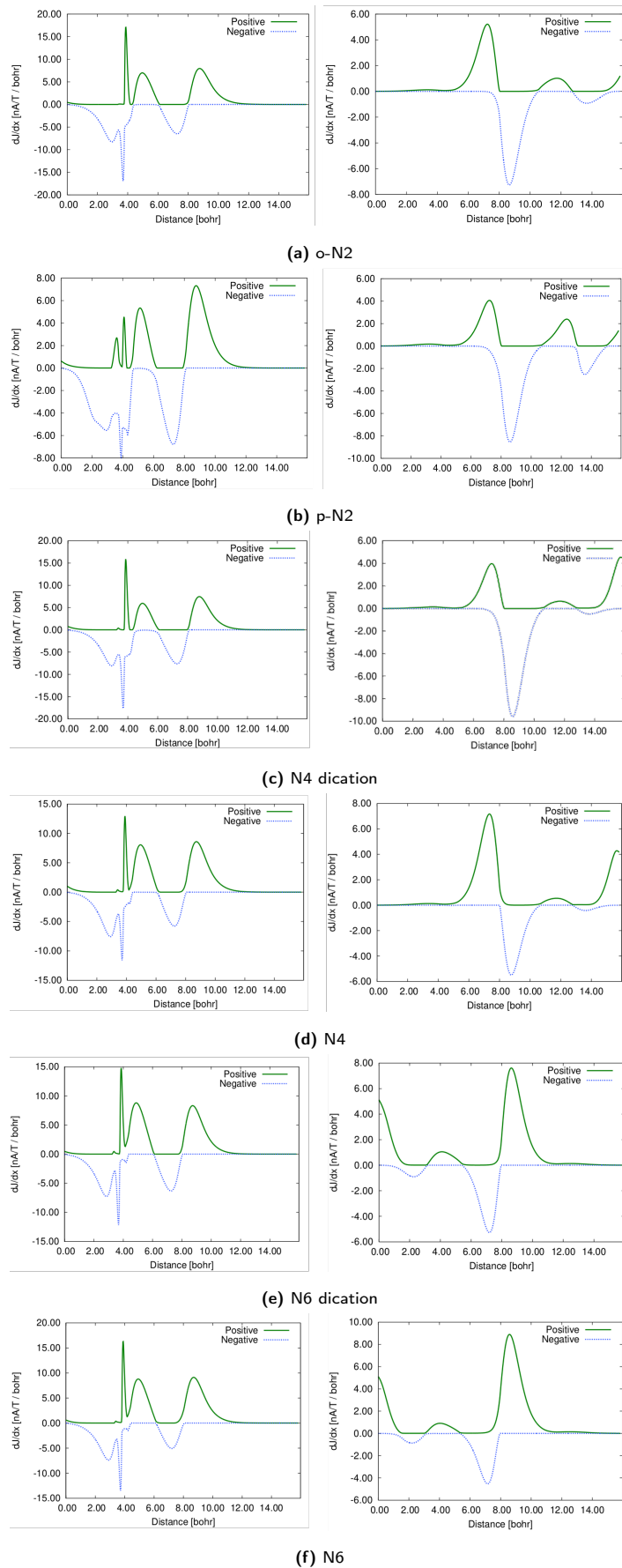


Figure S 4 The current-density profiles along plane A (left) and along plane B (right). The planes begin inside the molecule.

Inner H in N4 molecule in calculation

73	h	2	20.66283906
74	h	2	22.02699667
75	h	0	20.66283906
76	h	0	22.02699667

β -H in N4 molecule in calculation

71	h	0	24.86974805
72	h	0	24.48524293
57	h	2	24.70068266
58	h	2	24.42385092
63	h	2	24.86974805
64	h	2	24.48524293
65	h	0	24.70068266
66	h	0	24.42385092

Experimental ^1H NMR chemical shifts (in ppm) for the inner H of N4.

13.25	(s, 2H, NH)	corresponding to 18.75
8.59	(s, 2H, NH)	corresponding to 23.41

Experimental ^1H NMR chemical shifts (in ppm) for β -H of N4.

7.67	(s, 2H, β -H)	corresponding to 24.33
6.48	(d, J=5.0 Hz, 2H, β -H)	corresponding to 25.52
6.26	(d, J=5.0 Hz, 2H, β -H)	corresponding to 25.74
6.22	(s, 2H, β -H)	corresponding to 25.78
6.15	(s, 2H, β -H)	corresponding to 25.85
6.22	(s, 2H, β -H)	corresponding to 25.78
6.11	(d, J=5.0 Hz, 6H, β -H)	corresponding to 25.89

1 Cartesian coordinates of the molecular structures

1.1 o-N2

C	-6.2492537	0.0773707	1.0595731
C	-5.3672090	-0.2939894	2.0688949
C	-5.6498589	-0.4446004	3.4631852
C	-4.4892219	-0.8158563	4.0893562
C	-3.4737740	-0.9364600	3.0903389
C	-2.1426145	-1.3294220	3.2518929
C	-1.2563946	-1.5365589	2.2054707
C	0.1911164	-1.7239540	2.2983873
C	0.6543617	-1.7419291	1.0300461
C	-0.5294135	-1.6236906	0.1670198
C	-0.6038664	-1.6520426	-1.2273676
C	0.4636091	-1.5454191	-2.1145838
C	0.3442017	-1.6646790	-3.5675087
C	1.5788392	-1.4396325	-4.0617563
C	2.4432704	-1.1665577	-2.9043387
C	3.8103746	-0.9308963	-3.0340890
C	4.8125748	-0.6722355	-2.0893801
C	6.2304437	-0.7548088	-2.4559668
C	6.9301972	-0.5758573	-1.3150977
C	5.9366779	-0.3322594	-0.2738758
C	6.2492537	-0.0773707	1.0595731
C	5.3672090	0.2939894	2.0688949
C	5.6498589	0.4446004	3.4631852
C	4.4892219	0.8158563	4.0893562
C	3.4737740	0.9364600	3.0903389

C	2.1426145	1.3294220	3.2518929
C	1.2563946	1.5365589	2.2054707
C	-0.1911164	1.7239540	2.2983873
C	-0.6543617	1.7419291	1.0300461
C	0.5294135	1.6236906	0.1670198
C	0.6038664	1.6520426	-1.2273676
C	-0.4636091	1.5454191	-2.1145838
C	-0.3442017	1.6646790	-3.5675087
C	-1.5788392	1.4396325	-4.0617563
C	-2.4432704	1.1665577	-2.9043387
C	-3.8103746	0.9308963	-3.0340890
C	-4.8125748	0.6722355	-2.0893801
C	-6.2304437	0.7548088	-2.4559668
C	-6.9301972	0.5758573	-1.3150977
C	-5.9366779	0.3322594	-0.2738758
H	-7.2879009	0.1730855	1.3505144
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H	-1.5997071	-1.7317160	-1.6432255
H	4.1797001	-1.0185289	-4.0506902
H	7.2879009	-0.1730855	1.3505144
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H	1.5997071	1.7317160	-1.6432255
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N	4.0463735	0.5974461	1.8978130
N	1.6486888	1.5100462	0.9050287
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H	1.6658752	-1.8154760	0.6695678
H	-0.5653585	-1.8842569	-4.1037224
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H	6.6078059	-0.9579800	-3.4465572
H	8.0001049	-0.5879464	-1.1745835
H	6.6147652	0.2727901	3.9118057
H	4.3402805	1.0115371	5.1387754
H	-0.7608211	1.7859450	3.2126510
H	-1.6658752	1.8154760	0.6695678
H	0.5653585	1.8842569	-4.1037224
H	-1.8981791	1.4473199	-5.0929026
H	-6.6078059	0.9579800	-3.4465572
H	-8.0001049	0.5879464	-1.1745835
H	-3.5469849	-0.6122831	1.0080141
H	3.5469849	0.6122831	1.0080141

1.2 p-N2

C	-6.1877097	0.9364397	1.3175023
C	-5.2746055	0.4198513	2.2218628
C	-5.5212019	0.1788981	3.6415727
C	-4.3824294	-0.3653515	4.1240013

C	-3.4654638	-0.4834657	2.9842394
C	-2.1926640	-1.0690364	3.0810903
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C	0.4894943	-1.6782886	-3.6268891
C	1.7465851	-1.6028345	-4.1128023
C	2.6238860	-1.4863164	-2.9452088
C	4.0179792	-1.4529674	-3.0338279
C	4.9654062	-1.3615950	-2.0243217
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C	6.9655752	-1.5465913	-0.9777176
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C	6.1877097	-0.9364397	1.3175023
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C	5.5212019	-0.1788981	3.6415727
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C	2.1926640	1.0690364	3.0810903
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C	-0.0901713	1.7360745	2.2422420
C	-0.6270593	1.8268022	1.0102052
C	0.4928098	1.6256466	0.0758589
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C	-0.6074256	1.6222708	-2.1714210
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H	1.8362197	1.2566261	4.0881699
H	1.4685756	1.6332019	-1.7828326
H	-4.4327080	1.5807052	-4.0264228
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N	1.6416356	1.3910040	0.7304551
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H	3.9108909	-0.7783281	-0.2708635

1.3 N4 dication

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C	0.0320068	-1.7226699	0.0602473
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C	2.1198512	-1.3022717	-4.1851289
C	2.9748513	-0.9251364	-3.0987120
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C	5.1109564	-0.1783281	-2.0784365
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C	5.8916400	0.3551126	1.3170185
C	4.8750822	0.6046113	2.2237250
C	5.0294883	0.7033417	3.6495552
C	3.8121455	1.0012312	4.1837141
C	2.8791785	1.1241307	3.1004204
C	1.5366240	1.4823281	3.1834359
C	0.6836130	1.6626071	2.1027439
C	-0.7514228	1.9301795	2.1842429
C	-1.2072174	1.9362079	0.9142923
C	-0.0320068	1.7226699	0.0602473
C	0.0459646	1.7194090	-1.3334540
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C	-5.1109564	0.1783281	-2.0784365
C	-6.5578505	-0.0023663	-2.1816957
C	-7.0015981	-0.1738486	-0.9220979

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H	4.7607247	-0.5166114	-4.1399411
H	6.8871634	0.3332755	1.7424875
H	1.1370033	1.6266263	4.1785092
H	1.0330435	1.8544216	-1.7577969
H	-4.7607247	0.5166114	-4.1399411
N	-3.5572017	-0.8528588	1.9457972
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N	4.6868727	-0.0541661	-0.7862378
N	3.5572017	0.8528588	1.9457972
N	1.0810753	1.5689610	0.8067114
N	-2.2528088	1.0646761	-1.9488235
N	-4.6868727	0.0541661	-0.7862378
H	-5.9611157	-0.5547438	4.1709605
H	-3.5661056	-1.1491183	5.2225519
H	1.3091864	-2.0995859	3.0917552
H	2.2111995	-2.1485776	0.5850758
H	0.0310114	-1.9784733	-4.1895017
H	2.4187035	-1.3175762	-5.2206414
H	7.1291878	-0.0372762	-3.0955103
H	8.0146276	0.3191004	-0.5817103
H	5.9611157	0.5547438	4.1709605
H	3.5661056	1.1491183	5.2225519
H	-1.3091864	2.0995859	3.0917552
H	-2.2111995	2.1485776	0.5850758
H	-0.0310114	1.9784733	-4.1895017
H	-2.4187035	1.3175762	-5.2206414
H	-7.1291878	0.0372762	-3.0955103
H	-8.0146276	-0.3191004	-0.5817103
H	-3.1299183	-0.9386977	1.0287695
H	2.6409292	-0.7891244	-1.0535675
H	3.1299183	0.9386977	1.0287695
H	-2.6409292	0.7891244	-1.0535675

1.4 N4

C	-5.8735076	-0.4062874	1.3532440
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C	0.8365212	-1.8313557	2.1473215
C	1.2690809	-1.8522153	0.8661681
C	0.0813109	-1.6518661	0.0311765
C	0.0052035	-1.6317393	-1.3861288
C	1.0216555	-1.3772485	-2.2620729
C	0.9401192	-1.4372809	-3.7052131
C	2.1398853	-1.0772983	-4.2220874
C	3.0253813	-0.7539965	-3.1259044
C	4.3295854	-0.3384115	-3.1767002

C	5.1407344	-0.0596070	-2.0478300
C	6.5899064	0.0871826	-2.1202581
C	7.0201192	0.2270457	-0.8460853
C	5.8314288	0.2213968	-0.0063341
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C	4.8228843	0.6099469	2.2713406
C	4.9436167	0.6696498	3.6787284
C	3.6905949	0.9376901	4.2021828
C	2.7939416	1.0676633	3.1199568
C	1.4238372	1.3946919	3.1683450
C	0.5944738	1.5844688	2.0950230
C	-0.8365212	1.8313557	2.1473215
C	-1.2690809	1.8522153	0.8661681
C	-0.0813109	1.6518661	0.0311765
C	-0.0052035	1.6317393	-1.3861288
C	-1.0216555	1.3772485	-2.2620729
C	-0.9401192	1.4372809	-3.7052131
C	-2.1398853	1.0772983	-4.2220874
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C	-5.1407344	0.0596070	-2.0478300
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H	-0.9780453	-1.7801365	-1.8129378
H	4.7893780	-0.2691149	-4.1531602
H	6.8614966	0.4283149	1.7976760
H	0.9962382	1.4889186	4.1588169
H	0.9780453	1.7801365	-1.8129378
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H	2.4246024	-1.0326810	-5.2610682
H	7.1771130	0.0557947	-3.0251272
H	8.0318483	0.3498891	-0.4911207
H	5.8640539	0.5220131	4.2196070
H	3.4222950	1.0526521	5.2397074
H	-1.4229714	1.9471452	3.0452620
H	-2.2762631	2.0219348	0.5223599
H	-0.0533228	1.7378579	-4.2386025
H	-2.4246024	1.0326810	-5.2610682
H	-7.1771130	-0.0557947	-3.0251272
H	-8.0318483	-0.3498891	-0.4911207

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H	3.0942106	0.9210060	1.0487077
H	-2.6849387	0.6835655	-1.0781505

1.5 N6 dication

C	-6.1085111	0.3237713	-1.5722461
C	-4.9927416	0.6343272	-2.3787385
C	-4.9704655	0.8495149	-3.7765429
C	-3.6786748	1.1676792	-4.1271937
C	-2.8823802	1.1728860	-2.9502513
C	-1.5264377	1.4913802	-2.9190972
C	-0.6251419	1.6335156	-1.8811670
C	0.7793881	1.8102742	-2.0132726
C	1.3437842	1.8029373	-0.7610899
C	0.2967800	1.6508582	0.1919362
C	0.3066044	1.5785742	1.5952916
C	1.3901334	1.2970009	2.3936723
C	1.3915558	1.2680461	3.8409476
C	2.6284534	0.9106321	4.2636341
C	3.4521508	0.6807350	3.0998526
C	4.7683779	0.3262928	3.0389056
C	5.5207973	0.1310748	1.8497854
C	6.9804432	0.0950500	1.8480674
C	7.3548555	-0.0055587	0.5576162
C	6.1265756	-0.0960273	-0.2216910
C	6.1085111	-0.3237713	-1.5722461
C	4.9927416	-0.6343272	-2.3787385
C	4.9704655	-0.8495149	-3.7765429
C	3.6786748	-1.1676792	-4.1271937
C	2.8823802	-1.1728860	-2.9502513
C	1.5264377	-1.4913802	-2.9190972
C	0.6251419	-1.6335156	-1.8811670
C	-0.7793881	-1.8102742	-2.0132726
C	-1.3437842	-1.8029373	-0.7610899
C	-0.2967800	-1.6508582	0.1919362
C	-0.3066044	-1.5785742	1.5952916
C	-1.3901334	-1.2970009	2.3936723
C	-1.3915558	-1.2680461	3.8409476
C	-2.6284534	-0.9106321	4.2636341
C	-3.4521508	-0.6807350	3.0998526
C	-4.7683779	-0.3262928	3.0389056
C	-5.5207973	-0.1310748	1.8497854
C	-6.9804432	-0.0950500	1.8480674
C	-7.3548555	0.0055587	0.5576162
C	-6.1265756	0.0960273	-0.2216910
H	-7.0614424	0.3152639	-2.0851318
H	-1.0953819	1.6507453	-3.8997672
H	-0.6361209	1.7119199	2.1101757
H	5.2988488	0.2387435	3.9772677
H	7.0614424	-0.3152639	-2.0851318
H	1.0953819	-1.6507453	-3.8997672
H	0.6361209	-1.7119199	2.1101757
H	-5.2988488	-0.2387435	3.9772677
N	-3.7260283	0.8344472	-1.9082654

N	-0.8686919	1.5568138	-0.5184126
H	-1.7740700	1.5431542	-0.0821033
N	2.6500707	0.9253040	2.0019098
N	5.0167040	0.0087921	0.6107907
N	3.7260283	-0.8344472	-1.9082654
N	0.8686919	-1.5568138	-0.5184126
H	1.7740700	-1.5431542	-0.0821033
N	-2.6500707	-0.9253040	2.0019098
N	-5.0167040	-0.0087921	0.6107907
H	-5.8282484	0.7759986	-4.4243635
H	-3.3082605	1.4047892	-5.1114500
H	1.2893500	1.9257369	-2.9557651
H	2.3834914	1.9640296	-0.5331422
H	0.5361391	1.5207862	4.4458878
H	2.9748618	0.8099917	5.2795864
H	7.6061903	0.1649081	2.7236144
H	8.3527118	-0.0500725	0.1507492
H	5.8282484	-0.7759986	-4.4243635
H	3.3082605	-1.4047892	-5.1114500
H	-1.2893500	-1.9257369	-2.9557651
H	-2.3834914	-1.9640296	-0.5331422
H	-0.5361391	-1.5207862	4.4458878
H	-2.9748618	-0.8099917	5.2795864
H	-7.6061903	-0.1649081	2.7236144
H	-8.3527118	0.0500725	0.1507492
H	-3.5272480	0.6822841	-0.9299010
H	3.0281221	0.8399496	1.0699018
H	3.5272480	-0.6822841	-0.9299010
H	-3.0281221	-0.8399496	1.0699018

1.6 N6

C	-5.9778624	0.2352256	-1.5839407
C	-4.9060737	0.5501665	-2.3999314
C	-4.9016959	0.7763863	-3.8075977
C	-3.6333798	1.1300899	-4.1804137
C	-2.8005132	1.1500491	-3.0188501
C	-1.4591234	1.4946187	-2.9982281
C	-0.5829273	1.6188506	-1.9227520
C	0.8282513	1.7720065	-1.9875085
C	1.3358820	1.7538435	-0.7110039
C	0.2505828	1.6134357	0.1998293
C	0.1994767	1.5067862	1.5826312
C	1.2678774	1.2501475	2.4369324
C	1.2478015	1.2073829	3.8599692
C	2.5002686	0.8420408	4.3008031
C	3.3248763	0.6363152	3.1620377
C	4.6659805	0.2890321	3.0737747
C	5.3948810	0.0958008	1.9008052
C	6.8397065	0.0090198	1.8820703
C	7.2065501	-0.0504241	0.5780764
C	5.9808924	-0.0638420	-0.1951463
C	5.9778624	-0.2352256	-1.5839407
C	4.9060737	-0.5501665	-2.3999314
C	4.9016959	-0.7763863	-3.8075977
C	3.6333798	-1.1300899	-4.1804137

C	2.8005132	-1.1500491	-3.0188501
C	1.4591234	-1.4946187	-2.9982281
C	0.5829273	-1.6188506	-1.9227520
C	-0.8282513	-1.7720065	-1.9875085
C	-1.3358820	-1.7538435	-0.7110039
C	-0.2505828	-1.6134357	0.1998293
C	-0.1994767	-1.5067862	1.5826312
C	-1.2678774	-1.2501475	2.4369324
C	-1.2478015	-1.2073829	3.8599692
C	-2.5002686	-0.8420408	4.3008031
C	-3.3248763	-0.6363152	3.1620377
C	-4.6659805	-0.2890321	3.0737747
C	-5.3948810	-0.0958008	1.9008052
C	-6.8397065	-0.0090198	1.8820703
C	-7.2065501	0.0504241	0.5780764
C	-5.9808924	0.0638420	-0.1951463
H	-6.9403346	0.1820955	-2.0765790
H	-1.0154791	1.6653983	-3.9698633
H	-0.7707593	1.5791469	2.0574227
H	5.2078206	0.2100702	4.0071663
H	6.9403346	-0.1820955	-2.0765790
H	1.0154791	-1.6653983	-3.9698633
H	0.7707593	-1.5791469	2.0574227
H	-5.2078206	-0.2100702	4.0071663
N	-3.6175107	0.7792410	-1.9661072
N	-0.8900682	1.5559464	-0.5834570
H	-1.8142007	1.5147120	-0.1939311
N	2.5396768	0.8946209	2.0609498
N	4.8926173	0.0376627	0.6231381
N	3.6175107	-0.7792410	-1.9661072
N	0.8900682	-1.5559464	-0.5834570
H	1.8142007	-1.5147120	-0.1939311
N	-2.5396768	-0.8946209	2.0609498
N	-4.8926173	-0.0376627	0.6231381
H	-5.7710176	0.6877995	-4.4386388
H	-3.2870526	1.3871496	-5.1685315
H	1.3868154	1.8516459	-2.9053450
H	2.3719914	1.8722638	-0.4439281
H	0.3806881	1.4366179	4.4565190
H	2.8270877	0.7258984	5.3214334
H	7.4740301	0.0241558	2.7549323
H	8.2021261	-0.1118475	0.1659298
H	5.7710176	-0.6877995	-4.4386388
H	3.2870526	-1.3871496	-5.1685315
H	-1.3868154	-1.8516459	-2.9053450
H	-2.3719914	-1.8722638	-0.4439281
H	-0.3806881	-1.4366179	4.4565190
H	-2.8270877	-0.7258984	5.3214334
H	-7.4740301	-0.0241558	2.7549323
H	-8.2021261	0.1118475	0.1659298
H	-3.3784794	0.5870512	-1.0060937
H	2.9240759	0.7824813	1.1334261
H	3.3784794	-0.5870512	-1.0060937
H	-2.9240759	-0.7824813	1.1334261

2 The ^1H NMR shielding constants

2.1 o-N2

No.	Type	Mult.	Isotropic
41	h	2	25.47441227
42	h	2	26.55029397
43	h	2	26.43402158
44	h	2	25.69537934
45	h	0	25.47441227
46	h	0	26.55029397
47	h	0	26.43402158
48	h	0	25.69537934
57	h	2	25.04395804
58	h	2	25.37196745
59	h	2	26.64445592
60	h	2	23.42778384
61	h	2	26.56485761
62	h	2	25.81436554
63	h	2	24.71860343
64	h	2	24.76117397
65	h	0	25.04395804
66	h	0	25.37196745
67	h	0	26.64445592
68	h	0	23.42778384
69	h	0	26.56485761
70	h	0	25.81436554
71	h	0	24.71860343
72	h	0	24.76117397
73	h	2	18.35469394
74	h	0	18.35469394

2.2 p-N2

No.	Type	Mult.	Isotropic
41	h	2	26.30801970
42	h	2	27.00457550
43	h	2	24.85952826
44	h	2	26.85164480
45	h	0	26.30801970
46	h	0	27.00457550
47	h	0	24.85952826
48	h	0	26.85164480
57	h	2	25.21377991
58	h	2	25.21220187
59	h	2	26.69413283
60	h	2	22.47712630
61	h	2	26.86175542
62	h	2	26.31955288
63	h	2	25.57328834
64	h	2	25.52037107
65	h	0	25.21377991
66	h	0	25.21220187
67	h	0	26.69413283
68	h	0	22.47712630
69	h	0	26.86175542
70	h	0	26.31955288
71	h	0	25.57328834

72	h	0	25.52037107
73	h	2	16.91756658
74	h	0	16.91756658

2.3 N4 dication

No.	Type	Mult.	Isotropic
41	h	2	26.05143974
42	h	2	27.70822468
43	h	2	24.09046828
44	h	2	26.49113619
45	h	0	26.05143974
46	h	0	27.70822468
47	h	0	24.09046828
48	h	0	26.49113619
57	h	2	25.26663414
58	h	2	25.67390470
59	h	2	25.41567451
60	h	2	22.56075522
61	h	2	26.50316411
62	h	2	25.93360889
63	h	2	25.02219475
64	h	2	24.96624470
65	h	0	25.26663414
66	h	0	25.67390470
67	h	0	25.41567451
68	h	0	22.56075522
69	h	0	26.50316411
70	h	0	25.93360889
71	h	0	25.02219475
72	h	0	24.96624470
73	h	2	15.53895912
74	h	2	16.66548751
75	h	0	15.53895912
76	h	0	16.66548751

2.4 N4

No.	Type	Mult.	Isotropic
41	h	2	24.73301392
42	h	2	24.65763128
43	h	2	25.26251872
44	h	2	25.10992536
45	h	0	24.73301392
46	h	0	24.65763128
47	h	0	25.26251872
48	h	0	25.10992536
57	h	2	24.70068266
58	h	2	24.42385092
59	h	2	24.24320356
60	h	2	25.13627886
61	h	2	24.43826854
62	h	2	24.66328601
63	h	2	24.86974805
64	h	2	24.48524293
65	h	0	24.70068266
66	h	0	24.42385092

67	h	0	24.24320356
68	h	0	25.13627886
69	h	0	24.43826854
70	h	0	24.66328601
71	h	0	24.86974805
72	h	0	24.48524293
73	h	2	20.66283906
74	h	2	22.02699667
75	h	0	20.66283906
76	h	0	22.02699667

2.5 N6 dication

No.	Type	Mult.	Isotropic
41	h	2	24.16318862
42	h	2	23.63369685
43	h	2	24.90612936
44	h	2	23.84560411
45	h	0	24.16318862
46	h	0	23.63369685
47	h	0	24.90612936
48	h	0	23.84560411
51	h	2	24.43321552
56	h	0	24.43321552
59	h	2	24.03050822
60	h	2	23.49561000
61	h	2	23.06270032
62	h	2	24.90738797
63	h	2	23.36751044
64	h	2	23.43484604
65	h	2	24.42752480
66	h	2	23.96220400
67	h	0	24.03050822
68	h	0	23.49561000
69	h	0	23.06270032
70	h	0	24.90738797
71	h	0	23.36751044
72	h	0	23.43484604
73	h	0	24.42752480
74	h	0	23.96220400
75	h	2	22.22166240
76	h	2	22.72581872
77	h	0	22.22166240
78	h	0	22.72581872

2.6 N6

No.	Type	Mult.	Isotropic
41	h	2	24.22975150
42	h	2	25.10890771
43	h	2	31.35824941
44	h	2	24.41128773
45	h	0	24.22975150
46	h	0	25.10890771
47	h	0	31.35824941
48	h	0	24.41128773
51	h	2	31.60576025

56	h	0	31.60576025
59	h	2	24.01712102
60	h	2	24.30882599
61	h	2	27.35002672
62	h	2	27.39164894
63	h	2	25.18082398
64	h	2	24.06037921
65	h	2	23.85368080
66	h	2	23.77515427
67	h	0	24.01712102
68	h	0	24.30882599
69	h	0	27.35002672
70	h	0	27.39164894
71	h	0	25.18082398
72	h	0	24.06037921
73	h	0	23.85368080
74	h	0	23.77515427
75	h	2	27.74463424
76	h	2	25.05355948
77	h	0	27.74463424
78	h	0	25.05355948