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Microsolvation of the charges in hydroges	Mg2+, Ca2+: Strong i n bonding networks	nfluence of formal	
Juan David Gonzale Universidad de Ant			
Elizabeth Florez Universidad de Med	ellin, Colombia		
Jonathan Romero, A Universidad Nacion			
Albeiro Restrepo Universidad de Ant	ioquia, Colombia		
Optimized Geometri	es at the MP2/6-311+	+G** level	
	tes for the [Ca(H2O)	3]2+ clusters	
W3S1 1	$\begin{array}{cccc} 00 & -1.673376000 \\ 00 & -2.513212000 \\ 00 & 2.658975000 \\ 00 & 2.241064000 \\ 00 & 2.978954000 \\ 00 & -0.143394000 \\ 00 & -0.567488000 \\ 00 & -1.283934000 \\ \end{array}$	0.483640000 0.000368000 -0.482446000 -0.485576000 0.000302000 0.486585000 -0.480839000 0.000304000 0.481709000 -0.000543000	
W3S2 1 0.1955000 8 0.1504830 1 1.0830980 1 3.0126930 8 2.4136340 1 3.0127090 1 0.1954890 8 0.1504830 1 1.0831030 20 -1.5149700	$\begin{array}{cccc} 00 & -1.535545000 \\ 00 & -1.220850000 \\ 00 & -0.000022000 \\ 00 & -0.000001000 \\ 00 & 0.000024000 \\ 00 & 2.501679000 \\ 00 & 1.535546000 \\ 00 & 1.220865000 \\ \end{array}$	-0.000085000 -0.000026000 -0.00002000 -0.760712000 0.00027000 0.760753000 -0.000079000 -0.000029000 -0.000008000 0.000018000	
W3S4  1	00 0.216498000 00 0.376201000 00 -0.264529000 00 -0.253124000 00 -0.256178000 00 0.466705000 00 0.824508000 00 1.786076000	0.767637000 0.005672000 -0.751778000 -0.758377000 0.005470000 0.771987000 -0.001458000 -0.005678000 -0.011005000 -0.003036000	
W3S6  1	$\begin{array}{cccc} 00 & -0.000022000 \\ 00 & -0.810519000 \\ 00 & -2.564148000 \\ 00 & -2.210280000 \\ 00 & -2.564138000 \\ 00 & 2.564325000 \\ 00 & 2.210465000 \\ 00 & 2.564459000 \\ \end{array}$	-0.000057000 -0.000052000 -0.000015000 -0.763491000 0.763533000 0.763542000 0.000015000 -0.763481000 0.000010000	

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1	ian coordinates	for the [Ca(H2O)4	]2+ clusters	
W4S1 1 8 1 1 8 1 1 8 1 1 8 1 1 20	1.337961000 1.422460000 2.235005000 -1.373767000 -1.441052000 -2.246584000 2.208085000 1.409638000 1.332143000 -2.199422000 -1.392850000 -1.300612000 0.001081000	2.673028000 1.722392000 1.650125000 0.589735000 0.750000000 1.278692000 -1.646142000 -1.718184000 -2.668261000 -1.285883000 -0.755976000 -0.598184000 0.001052000	0.578216000 0.735928000 1.255624000 -2.651770000 -1.700185000 -1.615705000 -1.308521000 -0.767381000 -0.602856000 1.669237000 1.733822000 2.683722000 -0.001271000	
W4S2 1 8 1 1 8 1 1 8 1 1 20	-2.959619000 -2.361875000 -2.960422000 -0.597989000 0.003002000 0.612863000 2.963940000 2.359127000 2.950524000 -0.604243000 0.002294000 0.604901000 -0.001517000	-0.600245000 -0.006737000 0.584943000 2.979113000 2.940082000 0.581278000 -0.006781000 -0.602894000 -2.936012000 -2.354830000 -2.969076000 0.003739000	-0.495266000 -0.020217000 0.455936000 -0.390579000 0.048472000 0.526848000 -0.494745000 -0.021905000 0.457701000 0.526959000 0.047938000 -0.393200000 -0.031397000	
W4S3 1 8 1 1 8 1 1 8 1 1 8 1 1 2 0	3.698433000 3.100437000 3.699582000 -3.812312000 -3.212685000 -3.814791000 0.872770000 0.872570000 0.872553000 0.824008000 1.753380000 -0.865521000	-0.000394000 -0.000163000 -0.000018000 -0.026042000 -0.000119000 0.025715000 2.516180000 1.551447000 1.236173000 -2.516097000 -1.551360000 -1.236145000 0.000109000	0.762169000 0.001408000 -0.758449000 0.761788000 0.002041000 -0.755747000 0.002632000 0.000671000 -0.002671000 -0.0012970000 0.0001297000 0.000129000 -0.001653000	
W4S4 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 2 0	2.250092000 1.385161000 1.651615000 4.002393000 3.473002000 4.096677000 -1.132154000 -1.424286000 -2.085385000 -2.030560000 -2.215282000 -3.182266000 -0.665959000	-0.333787000 -0.511044000 -0.926087000 -0.656794000 0.014699000 0.720593000 2.954130000 2.211950000 2.610593000 -2.656793000 -1.719068000 -1.677871000 -0.000314000	0.353616000 0.840688000 1.670753000 -1.001677000 -0.555392000 -0.348107000 0.499490000 -0.632821000 -0.632821000 -0.298646000 -0.295790000 0.035299000	

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W4S5 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 1 8 1 1 1 8 1 1 1 1 8 1 1 1 8 1 1 1 1 8 1 1 1 1 8 1 1 8 1 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 8 1 1 8 8 1 1 8 8 1 8	-2.891105000 -2.000908000 -2.029328000 -4.722226000 -4.134296000 -4.736746000 4.721571000 4.734595000 4.710091000 2.228574000 2.000561000 2.890977000 0.000028000  2.886851000 2.015969000 2.277707000 -4.643879000 -4.647834000 4.647834000 4.647834000 4.647834000 -2.886475000 -2.015196000 -2.276207000 -0.000290000  4.120020000 3.517491000 4.129020000 -1.616502000 -1.616502000 -1.616506000 -2.798152000 -2.329123000 -2.798787000 -2.798937000	0.301409000 0.758212000 1.652029000 -0.889108000 -0.570395000 -0.424694000 -0.889641000 -0.570112000 -0.423511000 1.651312000 0.757859000 0.301303000 -0.214180000 -1.008214000 -1.008214000 -1.937447000 -0.593631000 -0.593631000 -0.627154000 0.595494000 0.595494000 0.595494000 0.595494000 0.1938099000 0.493546000 1.938099000 0.493546000 1.938099000 0.00005000 -0.001178000 0.000974000 0.000974000 0.000974000 0.000974000 0.000974000 0.000974000 0.000974000 0.000974000 0.000974000 0.000974000 0.000974000 0.000055000 -0.001178000 0.802298000 -0.00008000 -0.802312000 2.246778000 2.246778000 2.6055104000 -2.604671000	-0.142971000 -0.298104000 -0.584668000 -0.548597000 0.146837000 0.908176000 0.550985000 -0.144881000 -0.905258000 0.586889000 0.298870000 0.144267000 -0.01530000  -0.012732000 -0.025925000 -0.057403000 0.793083000 0.013090000 -0.759344000 0.759344000 0.759344000 0.759442000 -0.012624000 -0.012624000 -0.012738000 -0.01308000 -0.75948000 -0.013798000 -0.75949000 0.013798000 -0.759629000 0.000492000 0.759629000 0.000035000 0.000072000 0.762508000 0.000141000 -0.761811000 0.762237000	
8 1 20 W4S8 1 1 8 1 1 1 8 1 1 1 8 1 20	-2.329147000 -2.798055000 1.174212000  0.301300000 -0.577915000 -0.503757000 -0.505941000 -0.579268000 0.300235000 4.128897000 3.561466000 4.129765000 1.811799000 1.475363000 2.296482000 -2.149797000	-2.246773000 -2.605469000 0.000009000  -1.150917000 -1.516532000 -2.478884000 2.479494000 1.517042000 0.761902000 -0.000712000 -0.763603000 0.002083000 0.001409000 0.001483000 -0.000684000	0.000161000 -0.762083000 -0.000456000 0.497145000 0.205189000 0.242329000 0.240110000 0.496266000 -0.848093000 -0.691291000 -0.843526000 1.782776000 0.876559000 0.304298000 -0.331306000	

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	3, 12 10:52		sup.txt	Page 4/18
W4S10 1	0.018430000	0.782034000	-0.342095000	
8	-0.637828000	0.702034000	-0.298396000	
1	0.018431000	-0.781626000	-0.342155000	
1	1.350705000	-2.539228000	-0.761616000	
8	1.153090000	-1.776682000	-0.208081000	
1 1	2.008911000 4.078304000	-1.367414000 -0.000610000	0.010277000 -0.181946000	
8	3.301462000	-0.000010000	0.391618000	
1	3.680369000	0.000078000	1.279695000	
1	2.009365000	1.367266000	0.009564000	
8	1.153467000	1.776780000	-0.207999000	
1 20	1.350847000 -2.713844000	2.539827000 -0.000040000	-0.760927000 0.183603000	
20	2.713011000	0.000010000	0.103003000	
1	an coordinates	for the [Ca(H2O)	5]2+ clusters	
W5S1   1	2.890484000	0.011755000	-1.196158000	
8	2.374575000	0.009422000	-0.379467000	
1	3.045310000	0.012373000	0.315772000	
1	0.774047000	-2.844691000	-0.878025000	
8	0.010380000	-2.276552000	-0.715481000	
1 1	-0.748251000 0.745956000	-2.851498000 2.853051000	-0.877660000 -0.879445000	
8	-0.011809000	2.277251000	-0.716205000	
1	-0.776303000	2.844539000	-0.877850000	
1	0.003720000	-0.760166000	2.895562000	
8	0.000068000	0.000642000	2.299975000	
1 1	-0.003458000	0.761556000	2.895428000	
8	-2.890027000 -2.373899000	-0.013740000 -0.011594000	-1.195661000 -0.379110000	
li	-3.044424000	-0.015559000	0.316321000	
20	0.000421000	0.000451000	-0.069799000	
W5S2				
1	1.960863000	-0.271959000	-1.195692000	
8	1.035068000	-0.332147000	-1.508489000	
1 1	1.089792000 1.089466000	-0.488740000	-2.458966000 2.459090000	
8	1.034855000	0.487557000 0.331506000	1.508518000	
li	1.960690000	0.271510000	1.195792000	
1	3.931114000	-0.741019000	0.169020000	
8	3.333147000	-0.000060000	0.000150000	
1	3.931007000	0.741000000	-0.168654000	
1 8	-1.925371000 -2.096651000	-2.784935000 -1.877738000	-0.016676000 0.270249000	
1	-2.951263000	-1.938571000	0.717988000	
1	-1.924721000	2.784882000	0.020332000	
8	-2.095082000	1.878686000	-0.270281000	
1 20	-2.948236000 -0.695202000	1.941076000 -0.000139000	-0.720579000 -0.000141000	
20	0.095202000	-0.000139000	-0.000141000	
W5S3	4 21222622	0 700427000	0 5046000	
1 8	-4.312206000 -3.729727000	0.708437000 0.572787000	0.760460000 0.000183000	
1	-4.312305000	0.707911000	-0.760111000	
1	-0.982284000	2.519148000	-0.000855000	
8	-1.152478000	1.568955000	-0.000470000	
1	-2.127841000	1.472261000	-0.000277000	
1 8	2.750470000 2.339773000	-1.818281000 -0.944934000	-0.001743000 -0.000860000	
1	3.112549000	-0.302407000	-0.00080000	
1	4.743456000	1.047010000	0.764750000	
8	4.188593000	0.851152000	0.000804000	
1	4.743469000	1.048510000	-0.762746000	
1	-2.694212000	-0.942167000	0.000584000	
8	-1.863386000 -2.133089000	-1.462293000 -2.389270000	0.000626000 0.000987000	
20	0.147490000	-0.336824000	-0.000151000	

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W5S4		<b>-</b>	
1 3.169375000	2.066332000	-0.759035000	
8 2.745436000	1.643810000	0.000174000	
1 3.168715000	2.066485000	0.759666000	
1 2.671780000	-0.150625000	0.000455000	
8 2.294671000	-1.058258000	0.000578000	
1 3.051045000	-1.657786000	0.001077000	
1 -2.671788000	-0.150649000	0.000472000	
8 -2.294668000	-1.058276000	0.000584000	
$\begin{bmatrix} 1 & -3.051036000 \\ 1 & -0.792522000 \end{bmatrix}$	-1.657812000 1.574517000	0.001085000	
$\begin{bmatrix} 1 & -0.792522000 \\ 8 & -0.000018000 \end{bmatrix}$	1.009429000	-0.000467000 -0.000650000	
1 0.792460000	1.574550000	-0.000463000	
1 -3.169358000	2.066328000	-0.759050000	
8 -2.745428000	1.643819000	0.000171000	
1 -3.168711000	2.066509000	0.759651000	
20 0.000005000	-1.262102000	-0.000512000	
WEGE			
W5S5 1 -0.697040000	3.508279000	0.301957000	
8 0.000681000	2.910498000	-0.000285000	
1 0.698704000	3.507801000	-0.302776000	
1 4.433199000	-1.224137000	0.684200000	
8 3.550204000	-1.571088000	0.511833000	
1 3.646519000	-2.528176000	0.577916000	
1 2.530202000	-0.875901000	-0.478341000	
8 1.809624000 1 2.067982000	-0.396633000	-0.987110000	
1 2.067982000 1 -2.530630000	-0.474050000 -0.875078000	-1.913483000 0.478418000	
8 -1.810280000	-0.395361000	0.987090000	
1 -2.069172000	-0.471788000	1.913396000	
1 -4.433271000	-1.224292000	-0.684374000	
8 -3.550287000	-1.571045000	-0.511550000	
1 -3.646486000	-2.528185000	-0.577045000	
20 0.000023000 W5S7	0.568728000	0.000015000	
1 3.202630000	-1.857443000	-0.759374000	
8 2.642606000	-1.647359000	0.000051000	
1 3.202592000	-1.857461000	0.759499000	
1 1.781033000	0.167818000	0.000051000	
8 0.971801000	0.705875000	0.00006000	
1 1.256519000	1.663414000	-0.000009000	
1 -0.239371000 8 0.010730000	-3.234079000 -2.302037000	0.000018000 -0.000030000	
1 0.995504000	-2.284388000	-0.000030000	
1 1.822682000	3.742537000	0.763422000	
8 1.509126000	3.245035000	-0.000043000	
1 1.823060000	3.742425000	-0.763425000	
1 -4.093593000	-0.019379000	-0.000682000	
8 -3.275582000	0.497436000	0.000058000	
1 -3.589161000 20 -1.051567000	1.412755000	0.000729000	
20 -1.051567000 W5S9	-0.273390000	-0.000028000	
1 2.981938000	0.000201000	-0.163547000	
8 2.226259000	0.000838000	-0.813927000	
1 2.653320000	0.001446000	-1.680435000	
1 1.003837000	1.170932000	-0.549484000	
8 0.104641000	1.538397000	-0.350147000	
1 0.190286000 1 4.705605000	2.498922000 0.761114000	-0.377581000 1.181592000	
1 4.705605000 8 4.157546000	-0.000824000	0.965638000	
1 4.705052000	-0.763429000	1.180638000	
1 -4.424957000	0.757871000	0.611522000	
8 -3.831833000	-0.000547000	0.513119000	
1 -4.413272000	-0.759290000	0.664484000	
1 1.003933000	-1.169853000	-0.551654000	
8 0.104658000	-1.537725000	-0.353409000	
1 0.189667000 20 -1.534279000	-2.498161000 -0.000043000	-0.385480000 0.018988000	
-1.3342/9000	-0.000043000	0.010900000	

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Nov 18, 12 10:52		sup.txt	Page 6/18
W5S10 1	0.419076000 0.239107000 0.583414000 2.037906000 1.111923000 0.681615000 -2.840374000 -2.043912000 -1.272604000 1.477969000 0.618387000 0.809090000 3.383002000 2.713257000	1.791903000 0.886820000 0.321475000 -0.889439000 -0.685488000 -0.791449000 0.355697000 0.271417000 0.552580000 0.104987000 0.117881000 0.422594000 -0.670392000 0.022372000	
1 -2.820191000 20 -1.458696000	3.157389000 -1.477329000	0.788375000 -0.344517000	
W5S13  1	-1.293493000 -1.750466000 -2.462566000 0.001676000 0.002063000 0.784919000 -0.000026000 -0.784325000 2.464487000 1.752220000 1.296193000 0.758338000 -0.002011000 -0.763086000 -0.763086000 -0.000971000	0.323874000 0.00003000 -0.573217000 0.369304000 0.848864000 1.779207000 -0.270528000 -0.301782000 -0.269898000 -0.574800000 -0.01364000 0.322611000 -0.629518000 -0.514772000 -0.621777000 -0.005143000	
Cartesian coordinates	for the [Ca(H2O)6	]2+ clusters	
W6S1  1	-0.950755000 -0.480476000 -0.247084000 -2.037637000 -1.106010000 -0.720823000 -2.735744000 -2.071718000 -2.431281000 2.736571000 2.072404000 2.432009000 0.244168000 0.477483000 0.947051000 0.723567000 1.107917000 2.039616000 0.000177000	1.719950000 1.775425000 2.708065000 -1.806366000 -1.555652000 -2.073560000 1.088368000 0.420438000 -0.039949000 -1.088405000 -0.420890000 0.38647000 -2.707566000 -1.774926000 -1.774926000 -1.774926000 1.555399000 1.555399000 1.805843000 0.000136000	

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	-,			1 9 - 1 - 1		-,			1 3.92 5, 10
W6S2 1 8 1 1 8 1 1 8 1 1 8 1 1 1 8 1 1 1 1	-2.194768000 -1.344542000 -0.870552000 2.112940000 1.168057000 1.150910000 1.480491000 2.265031000 -1.2977434000 -1.619199000 -2.432083000 4.163459000 3.595776000 4.218124000 -2.393995000	-1.232226000 -1.290927000 -1.983340000 1.385262000 1.583504000 2.546866000 -2.341690000 -1.413885000 -1.045697000 -0.568074000 -0.680933000 -1.190854000 0.222897000 0.238071000 0.331421000 2.162067000	-2.263267000 -1.810355000 -2.287481000 -0.052612000 -0.044305000 -0.059537000 0.413472000 0.181150000 0.112722000 2.943223000 2.039749000 2.146708000 -0.820742000 -0.038930000 0.694392000 -1.143793000		W6S6 1 8 1 1 8 1 1 8 1 1 8 1 1 1 8 1 1 1 1	3.500566000 2.648567000 2.756252000 -1.783443000 -1.550401000 -0.418533000 0.060893000 1.023024000 1.249757000 0.380505000 0.156516000 3.100358000 2.605650000 3.047386000 -3.649182000	-2.477345000 -2.635118000 -3.474733000 -0.155143000 -0.698436000 -1.604103000 2.983784000 2.149229000 2.414976000 -2.136227000 -1.764049000 -2.295837000 3.019759000 2.708787000 3.111295000 -0.118444000	-0.403239000 0.018023000 0.478324000 2.858864000 2.094818000 0.125726000 0.072091000 0.057524000 -0.607890000 -0.926426000 -1.698671000 0.789389000 0.023182000 -0.732717000 -1.022995000	
8	-2.240217000 -2.913946000	1.606970000 1.894510000	-0.369221000 0.259638000		8	-2.775738000 -2.919792000	0.225818000 0.687313000	-1.250519000 -2.086939000	
20 W6S4 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 1 1 8 8 1 8 1 8 1 8 1 8 1 8 8 8 8 8 8 8 8 8 8 8 8 8	-2.769120000 -0.533506000  -2.769120000 -2.062888000 -2.383729000 2.182322000 1.881926000 2.627491000 -1.366662000 0.060852000 3.793528000 3.793528000 4.361744000 1.999895000 1.092034000 0.898637000 -4.635944000 -3.791275000 -3.949478000 -0.092034000  -2.786509000 -2.351747000 -2.724588000 -1.766560000 -1.300419000 -1.987586000 1.781548000 2.135039000 3.086161000	-0.023677000 -0.023677000 -0.023677000 -0.148906000 -0.148906000 -0.020567000 0.892898000 0.464186000 -0.094748000 3.112047000 -2.618550000 3.201047000 -2.128816000 -1.276227000 -0.962620000 -1.209696000 -0.939010000 -1.385772000 -1.238960000 -1.574950000 -2.5511198000 0.494582000  3.358292000 2.884858000 3.264059000 1.361831000 0.488185000 -0.197279000 1.148019000 0.7375600000 0.696317000	0.259636000 0.019628000 0.019628000 1.068194000 1.968122000 2.121714000 1.311829000 1.015197000 -0.821031000 -0.852873000 -1.339238000 0.311946000 -0.069666000 -0.480186000 -1.082499000 -1.325079000 -2.157421000 -0.581355000 -0.261267000 -0.096299000 0.077507000  0.541570000 -0.175789000 -0.978882000 -0.978882000 -0.057307000 0.013343000 0.038820000 2.676141000 1.876058000 2.040673000		20 W6S8 1 8 1 1 1 8 1 1 1 8 1 1 1 8 1 1 1 8 1 1 1 8 1 1 1 8 1 1 8 1 1 1 8 1 1 1 8 1 1 8 1 8 1 8 1 1 8 1 1 8 1 8 1 8 1 8 1 1 8 1 8 1 1 8 1 1 8 1 8 1 1 8 1 1 8 1 8 1 1 1 1 8 1 1 8 1 1 8 1 1 8 1 1 1 8 1 1 1 1 1 1 8 1 1 1 8 1	-2.919792000 -0.7676060000  3.214751000 2.813176000 3.214961000 -2.545004000 -2.383896000 -3.296452000 2.451387000 1.767157000 2.237302000 1.194394000 0.227656000 -0.203418000 -5.237076000 -4.650232000 -5.236901000 3.457962000 2.949096000 3.4579673000 -0.424662000  3.685512000 2.900668000 3.284819000 1.681191000 0.793727000 0.877940000 5.481766000 4.924783000 5.4817763000	3.329590000 2.900372000 3.329507000 2.994254000 1.143244000 0.730852000 -0.176638000 0.512592000 1.390790000 -2.420344000 -2.241628000 -0.159328000 -0.110613000 -0.160409000 -2.432175000 -2.118423000 -2.43247000 -0.033702000  -0.00027000 -0.000173000 -1.175508000 -1.537461000 -2.497936000 0.761217000 -0.000774000 -0.0762961000	-2.0869393000 -0.020830000 -0.020830000 -0.763281000 -0.763257000 0.001341000 0.000627000 0.000446000 0.000175000 -0.000015000 -0.000114000 -0.000114000 -0.000114000 -0.000186000 -0.763227000 -0.00001000 0.763227000 -0.758837000 0.763290000 -0.758837000 0.759941000 -0.75884705000 -0.898781000 -1.784705000 -0.898781000 -0.321648000 -0.321648000 -0.331040000 0.980210000 0.789565000 0.979526000	
1 8 1 1 8 1 1 8 1 20	-3.053589000 -2.546857000 -3.066335000 -0.783872000 0.184383000 0.597122000 2.396437000 2.292811000 2.850340000 0.907587000	-2.404825000 -2.105353000 -2.418058000 -2.417689000 -2.256500000 -3.124548000 -0.185162000 0.365949000 1.133499000 -0.056602000	0.828623000 0.062482000 -0.689690000 0.051192000 0.051504000 0.125600000 -2.642529000 -1.855638000 -2.038584000 0.016434000		1 8 1 1 8 1 1 8 1 20	-5.563463000 -4.990409000 -5.563763000 0.878512000 0.794081000 1.681446000 -3.779298000 -2.928494000 -3.212227000 -0.844451000	-0.764464000 -0.000998000 0.762064000 2.498442000 1.537948000 -0.000067000 0.000450000 0.000821000 0.000481000	-0.642777000 -0.507884000 -0.643787000 -0.331463000 -0.321880000 -0.520547000 1.050628000 1.972688000 0.119134000	

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W6S14				•
1	-0.224409000	4.220008000	0.704863000	
8	-0.465630000	3.657815000	-0.039192000	
1	-0.526597000	4.257963000	-0.790277000	
1	4.752263000	0.313112000	1.272813000	
8	4.240367000	-0.443673000	0.969546000	
1	4.825354000	-1.197799000	1.096350000	
1 8	2.707123000 2.282939000	-0.242511000 -0.338761000	-1.677930000 -0.816396000	
1	3.036929000	-0.368755000	-0.172613000	
1	0.909688000	0.876983000	-0.423829000	
8	-0.019564000	1.087800000	-0.204974000	
1	-0.105033000	2.077152000	-0.155823000	
1	-4.379261000	-0.154220000	0.726685000	
8	-3.740064000	-0.852071000	0.526783000	
1	-4.267243000	-1.661389000	0.578706000	
1	0.446750000	-2.950211000	-0.609752000	
8	0.278632000	-2.008615000	-0.490526000	
1	1.142739000	-1.541288000	-0.656698000	
20	-1.446587000	-0.622450000	0.027279000	
	an coordinates	for the [Mg(H2O)3	3]2+ clusters	
W3S1	0 000140000	1 440202000	0 401754000	
1 8	-2.223140000 -1.380598000	-1.448303000 -1.438901000	-0.481754000	
1	-1.355864000	-2.281225000	0.000067000 0.481727000	
1	-1.303144000	2.311553000	0.481727000	
8	-0.557282000	1.914239000	0.000149000	
1	-0.141917000	2.650496000	-0.476825000	
1	2.655137000	-0.026632000	0.475359000	
8	1.937378000	-0.474971000	0.000045000	
1	2.366435000	-1.204454000	-0.475227000	
12	0.000543000	-0.000364000	-0.000245000	
W3S3				
1	-1.792425000	0.220517000	0.000117000	
8	-0.895203000	0.805332000	0.000212000	
1	-1.176020000	1.732311000	0.001211000	
1	-3.457333000	-0.710167000	-0.773138000	
8	-2.885139000	-0.613717000	-0.000052000	
1	-3.456676000	-0.711323000	0.773375000	
1 8	3.363315000	-0.583502000	-0.771842000	
1	2.799018000	-0.407243000	0.000219000	
12	3.362550000 0.917265000	-0.583986000 0.196765000	0.772728000 -0.000457000	
12	0.91/203000	0.190703000	-0.000437000	
W3S5				
1	3.645766000	-0.701880000	-0.839496000	
8	3.080205000	-0.600762000	-0.063095000	
1	3.643114000	-0.712044000	0.713390000	
1	0.269458000	0.517215000	0.113330000	
8	-1.206945000	0.000698000	0.518496000	
1	-1.120484000	-0.213646000	1.456571000	
1	1.313856000	1.768304000	0.143442000	
8	1.161680000	0.871970000	-0.186057000	
1	2.033012000	0.228918000	-0.093891000	
12	-2.838686000	-0.255176000	-0.304009000	
W3S6				
1	-0.843048000	-0.440047000	0.000001000	
8	0.000001000	0.158013000	0.000001000	
1	0.843051000	-0.440046000	-0.000006000	
1	2.478504000	-1.613398000	-0.768241000	
8	2.133847000	-1.140621000	-0.708241000	
1	2.478175000	-1.613356000	0.768404000	
1	-2.478530000	-1.613347000	0.768260000	
8	-2.133846000	-1.140624000	0.000004000	
1	-2.478147000	-1.613412000	-0.768385000	
12	-0.000002000	2.026622000	-0.000002000	
1				

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Cartesian coordinates W4S1	for the [Mg(H2O)4]2+ clusters	
1 2.015522000 8 1.206441000 1 1.105343000 1 -2.024558000 8 -1.211662000 1 -1.111205000 1 -2.016194000 8 -1.209301000 1 -1.112870000 1 2.025172000 8 1.214265000 1 1.117131000 12 0.000309000	1.824413000     -0.198824000       1.500287000     -0.620234000       2.036198000     -1.420340000       -0.201855000     -1.813300000       -0.620912000     -1.495737000       -1.419358000     -2.034237000       0.191956000     1.824099000       0.616854000     1.499086000       -1.814545000     0.194727000       -1.496005000     0.616881000       -2.033224000     1.416593000       -0.000370000     -0.000115000	
W4S3  1	-1.229379000	
W4S4  1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
W4S6  1	0.015084000       -0.262952000         -0.523495000       -0.643469000         -1.049365000       -1.382364000         0.387838000       0.857661000         0.784333000       0.329839000         1.549480000       -0.108469000         0.016134000       0.263400000         -1.043459000       1.386866000         1.549761000       0.103765000         0.782736000       -0.331651000         0.383928000       -0.856979000         -0.499332000       -0.000122000	

No. 40 40 50	oup tyt	D 44/40
Nov 18, 12 10:52	sup.txt	Page 11/18
W4S7  1	00	
1 3.18450500 1 1.51004600 8 0.63870100 1 0.78589900 12 -2.86551400	00       0.000069000       1.217546000         00       1.357396000       -0.003320000         00       1.755420000       -0.189970000         00       2.488775000       -0.798135000	
W5S1  1	00 -2.494425000 -0.908448000 010 -1.940236000 -0.727515000 010 -2.494803000 -0.906837000 010 0.001054000 0.504665000 010 0.000378000 -0.241984000 010 -0.00158000 -1.029221000 010 -0.771329000 2.572711000 010 -0.001690000 1.987844000 010 -0.66846000 2.574158000 010 -0.001769000 0.503762000 010 -0.001769000 -0.242756000 010 0.002248000 -1.030108000 010 2.496167000 -0.904309000 010 1.941158000 -0.725386000 010 2.495583000 -0.904638000	

Nov 1	8, 12 10:52		sup.txt	Page 12/18
	0, 12 10.32		Sup.txt	Page 12/18
W5S2 1	3.629960000	0.636060000	-0.417046000	
8	3.031534000	-0.000027000	0.000033000	
1	3.629784000	-0.636228000	0.417193000	
1	-2.758490000	-1.336542000	1.130829000	
8	-1.917470000	-1.442276000	0.664717000	
	-1.756100000 -1.755307000	-2.396044000 2.396244000	0.642735000 -0.642839000	
8	-1.916996000	1.442531000	-0.664824000	
1	-2.758042000	1.337077000	-1.130952000	
1	1.665066000	-0.661944000	-1.003025000	
8	0.716476000	-0.798760000	-1.216514000	
1	0.670218000	-1.226139000	-2.080900000	
1 8	1.665043000 0.716442000	0.661852000 0.798588000	1.003101000 1.216587000	
1	0.670144000	1.225973000	2.080968000	
12	-0.661847000	-0.000062000	-0.000005000	
W5S3				
1	-2.302765000	1.814564000	-0.002549000	
8	-1.945814000	0.916802000	-0.001228000	
1	-2.756200000	0.285066000	-0.000409000	
1	-4.407389000	-0.882386000	-0.766061000	
8	-3.844135000 -4.406648000	-0.724079000 -0.880859000	0.001462000 0.769841000	
1	0.460005000	-2.295344000	-0.001957000	
8	0.792635000	-1.388248000	-0.001189000	
1	1.775514000	-1.423077000	-0.000608000	
1	2.464667000	0.927177000	0.001102000	
8	1.619625000	1.430817000	0.000874000	
1	1.833172000 3.983033000	2.373277000 -0.788386000	0.001606000 -0.760287000	
8	3.407867000	-0.788386000	0.000738000	
1	3.982284000	-0.789298000	0.762130000	
12	-0.072257000	0.396261000	-0.000673000	
W5S5				
1 8	-0.753833000 -0.000176000	3.331050000	0.161604000	
1	0.753361000	2.745166000 3.331200000	-0.000002000 -0.161618000	
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8	3.067791000	-1.696539000	0.426043000	
1	3.103805000	-2.639333000	0.225011000	
1	2.227149000	-0.728342000	-0.336860000	
8	1.602676000	-0.051550000	-0.786677000 -1.674988000	
1	1.952886000 -2.227045000	0.092581000 -0.728526000	0.336872000	
8	-1.602554000	-0.051804000	0.786765000	
1	-1.952721000	0.092194000	1.675114000	
1	-3.937616000	-1.476532000	-0.780754000	
8	-3.067723000	-1.696604000 -2.639372000	-0.426156000	
12	-3.103677000 -0.000010000	0.737672000	-0.224989000 0.000026000	
W5S6	0.000010000	0.757072000	0.00020000	
1	4.386975000	0.768235000	-1.030560000	
8	3.833941000	-0.000156000	-0.843835000	
1	4.387371000	-0.768139000	-1.031070000	
1 8	2.352346000 1.979495000	0.000653000 0.000226000	1.732360000 0.840994000	
1	2.777084000	-0.000472000	0.191413000	
1	-1.147233000	-2.426423000	0.077164000	
8	-1.208660000	-1.462380000	0.054098000	
1	-2.137555000	-1.219720000	-0.159004000	
1	-1.146206000	2.426375000	0.077199000	
8	-1.208069000 -2.137011000	1.462363000 1.220185000	0.053976000 -0.159369000	
1	-4.200445000	0.000449000	0.152734000	
8	-3.448804000	0.00011000	-0.457630000	
1	-3.864397000	0.000100000	-1.332110000	
12	0.095488000	-0.000280000	0.358368000	

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W5S7	2 4727/3000	_2 492890000	-0.759093000	
1	2.472743000 2.139437000	-2.492890000 -1.996255000	0.001220000	
1	2.473076000	-2.491517000	0.762283000	
1	-3.496989000	-1.858533000	-0.765877000	
8	-3.033714000	-1.499143000	0.000026000	
1	-3.498088000 0.001214000	-1.853624000 -1.582242000	0.767550000 0.000538000	
8	-0.596605000	-0.817986000	0.000173000	
1	-1.555530000	-1.155307000	0.000212000	
1	-0.387453000	3.622133000	0.027747000	
8	-0.782299000 -1.739594000	2.737491000 2.886370000	0.000966000 -0.024707000	
1	2.349910000	-0.332864000	-0.000693000	
8	2.094509000	0.629013000	-0.001780000	
1	2.900012000	1.161276000	-0.004830000	
12	0.159173000	0.972686000	-0.000664000	
W5S8 1	_4 806149000	_1 100328000	-0.137707000	
8	-4.806149000 -4.158434000	-1.100328000 -0.606632000	-0.652007000	
1	-4.605201000	-0.387204000	-1.476798000	
1	2.219084000	2.510874000	-0.156316000	
8	2.352162000	1.624344000	-0.523573000	
1	2.944201000 -3.012396000	1.746697000 0.281210000	-1.279861000 -0.057001000	
8	-2.253059000	0.846930000	0.280923000	
1	-2.623625000	1.556766000	0.818105000	
1	2.425789000	-2.542580000	-0.377104000	
8	2.702029000	-1.622514000	-0.251160000	
1	3.669631000 -1.224566000	-1.639452000 0.316399000	-0.284572000 0.684873000	
8	-0.206014000	-0.154125000	1.001205000	
1	-0.371859000	-0.649914000	1.811773000	
12	1.490968000	-0.066374000	0.134292000	
W5S11	0.000004000	1 005001000	0.00670000	
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1	-3.649454000	0.881324000	-0.326904000	
1	2.941178000	-1.764023000	-0.566100000	
8	2.693553000	-0.880443000	-0.262483000	
1	3.557911000	-0.311628000	-0.272758000	
1	-5.280601000	-0.856006000 -0.538587000	-1.021228000	
8	-4.821016000 -5.483507000	-0.496924000	-0.235176000 0.463870000	
1	-0.998851000	0.308985000	1.765145000	
8	-0.776907000	0.251322000	0.828225000	
1	-1.941075000	0.611598000	0.138564000	
1 8	5.120065000 4.704596000	0.944638000 0.591331000	-1.034837000 -0.238683000	
1	5.410473000	0.519908000	0.415585000	
12	0.936463000	-0.294702000	0.301523000	
W5S13				
1	-0.682052000	-1.273126000	0.323621000	
8	0.132973000 -0.139888000	-1.722579000 -2.403270000	0.003214000 -0.621950000	
1	-2.673479000	0.000326000	0.362785000	
8	-1.804341000	0.000613000	0.836863000	
1	-2.048523000	0.001103000	1.770420000	
1	1.150474000	0.821728000	-0.231572000	
8 1	1.833148000 1.149968000	-0.000164000 -0.821794000	-0.284057000 -0.231311000	
1	-0.138837000	2.404144000	-0.622236000	
8	0.133611000	1.723154000	0.002780000	
1	-0.681673000	1.274132000	0.323064000	
1	-4.682875000	0.760706000	-0.615709000	
8	-4.103383000	-0.000558000	-0.509924000	
1 12	-4.683321000 3.657845000	-0.761817000 -0.000488000	-0.613287000 -0.019569000	
14	3.03/045000	-0.000400000	-0.019309000	

Nov 18, 12 10:52	sup.txt	Page 14/18
W6S1 1 -0.989332000	for the [Mg(H2O)6]2+ clusters 2.433335000 -0.952120000	
8 -0.979072000 1 -1.511537000 1 1.539185000 8 0.712990000	1.483970000 -1.123962000 1.356447000 -1.918413000 1.965647000 1.253810000 1.472038000 1.322271000	
1 0.281780000 1 1.837712000 8 1.719280000 1 2.553394000 1 -1.837839000	$\begin{array}{cccc} 1.794070000 & 2.123072000 \\ 0.841951000 & -1.928857000 \\ 0.234551000 & -1.188611000 \\ -0.243445000 & -1.106738000 \\ -0.842422000 & 1.928582000 \end{array}$	
8 -1.719562000 1 -2.553627000 1 1.511796000 8 0.980012000 1 0.990374000 1 -0.282440000 8 -0.713396000 1 -1.539761000 12 -0.000143000	$\begin{array}{ccccc} -0.234764000 & 1.188518000 \\ 0.243415000 & 1.107187000 \\ -1.355711000 & 1.918403000 \\ -1.483523000 & 1.123544000 \\ -2.432953000 & 0.952064000 \\ -1.794302000 & -2.122787000 \\ -1.472263000 & -1.321850000 \\ -1.965573000 & -1.253323000 \\ -0.000045000 & -0.0000130000 \end{array}$	
W6S2 1	-1.607602000	
W6S3  1	-0.539571000       -0.536662000         -0.000128000       -0.000031000         0.539243000       0.53656800         -0.536749000       0.53934800         -0.000121000       -0.00006200         0.536444000       -0.53950200         -1.017063000       1.70564900         -0.845509000       0.84983900         1.696126000       -1.70534000         1.705610000       1.69586600         1.705610000       1.69586600         1.705610000       1.69586600         1.705537000       -1.69594900         -1.705537000       -1.69594900         -1.022451000       -1.01709300         -0.849911000       0.84545800         0.000125000       0.000021000	

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