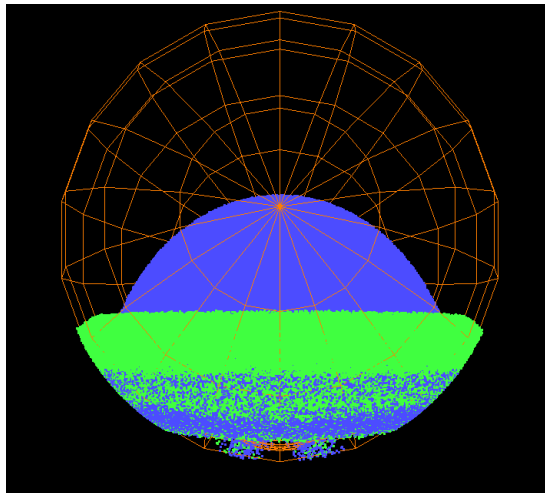


Erin Alltop  
CS475 – Spring 2018  
Project 7 Commentary

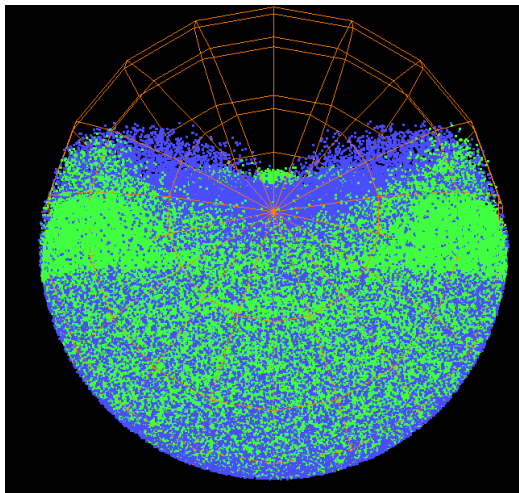
1. I ran this on my local machine. More specifically –  
Windows 10  
Visual Studio 2015  
Intel Core i5-6600K CPU @ 3.50GHz  
NVIDIA GeForce GTX 1060 6GB GPU

2. For my project, whenever a particle bounces off of the inner sphere, it changes to blue and whenever it bounces off of the outer sphere, it changes to green. There are some neat patterns created if you look at it from several different angles.

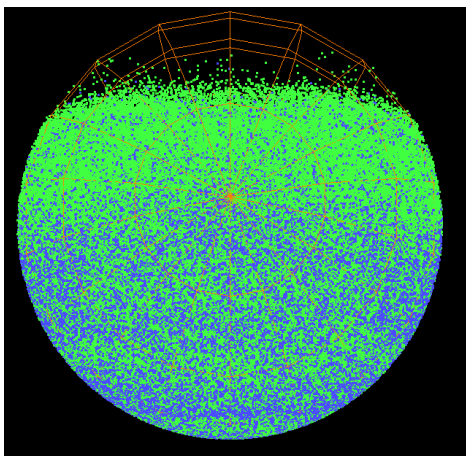
3. A few screenshots of my project in action, this is at 64 LOCAL\_SIZE and 8388608 particles.



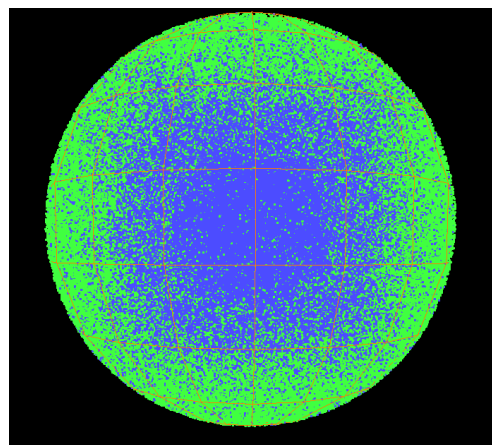
**Right after pressing Go!**



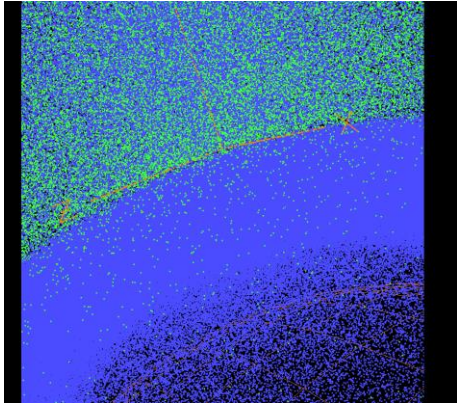
**A few seconds later**



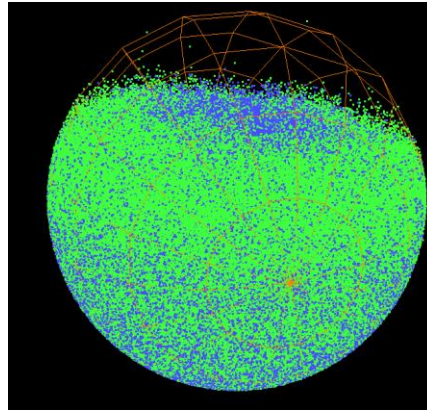
**Sufficiently mixed up now**



**The view from above. You can see the inner blue from the particles bouncing off of the internal sphere and turning blue.**



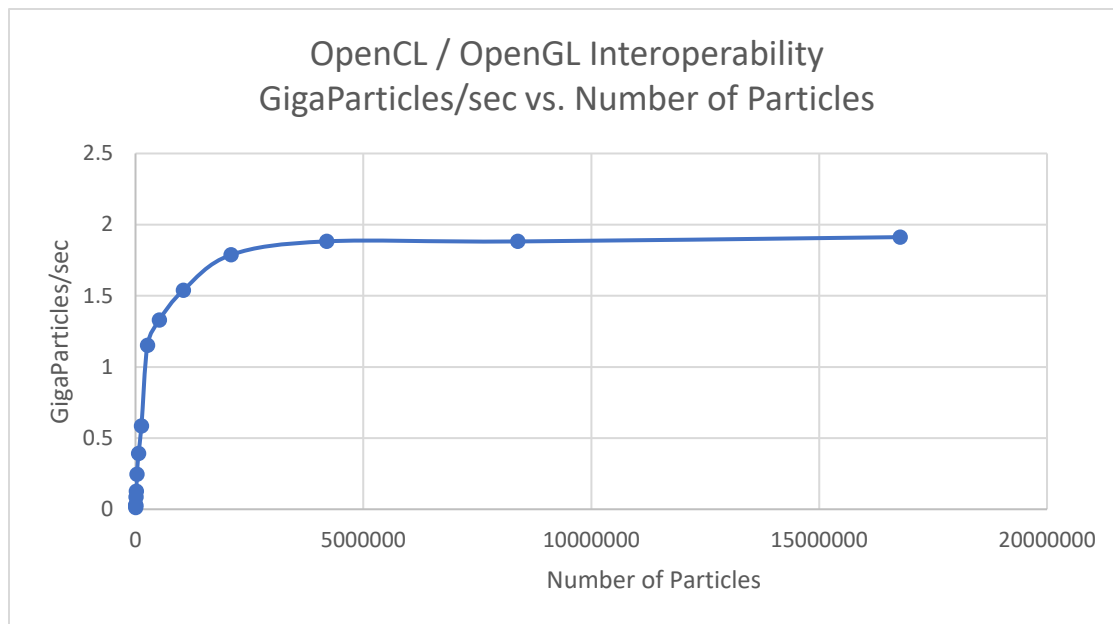
Extreme closeup of the inner sphere



Another angle from the outside

#### 4. Table and graph –

Number of Particles	GigaParticles per Second
1024	0.0122
2048	0.0244
4096	0.0302
8192	0.0862
16384	0.126
32768	0.2464
65536	0.3928
131072	0.5856
262144	1.151
524288	1.3298
1048576	1.5388
2097152	1.7878
4194304	1.8824
8388608	1.8818
16779264	1.9122



5. The performance curve has a sharp increase at the beginning, almost exponential. Around the 2M mark or so performance seems to level out around the 1.9 GigaParticles/sec mark and stays there consistently until my computer is no longer able to support the number of processors needed for further calculations.

6. I think this looks this way for similar reasons to project 6 performance. The performance increases with more processors being utilized and then levels out as performance is no longer able to be increased as it is dependent on the number of processors available. It is not possible to increase performance past this point without adding more processing power.

7. For the proper use of GPU parallel computing, it is important to keep these results in mind because you want to be sure you have enough processing power for the amount of performance you are aiming for or else you will never be able to achieve your goal. Likewise, having an overkill amount of processors will not increase your performance if you have a small amount of data, so you would want to be sure you are not wasting time and money using GPU processing if it is not necessary.