Project #7A
OpenGL/OpenCL Particle System

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Machine this ran on:

- I ran this on my MacBook Pro running on OS Monterey version 12.0.1
  CPU: 2 GHz Dual-Core Intel Core i5
  Memory: 8 GB 1867 MHz LPDDR3
  GPU: Intel Iris Graphics 540 1536 MB

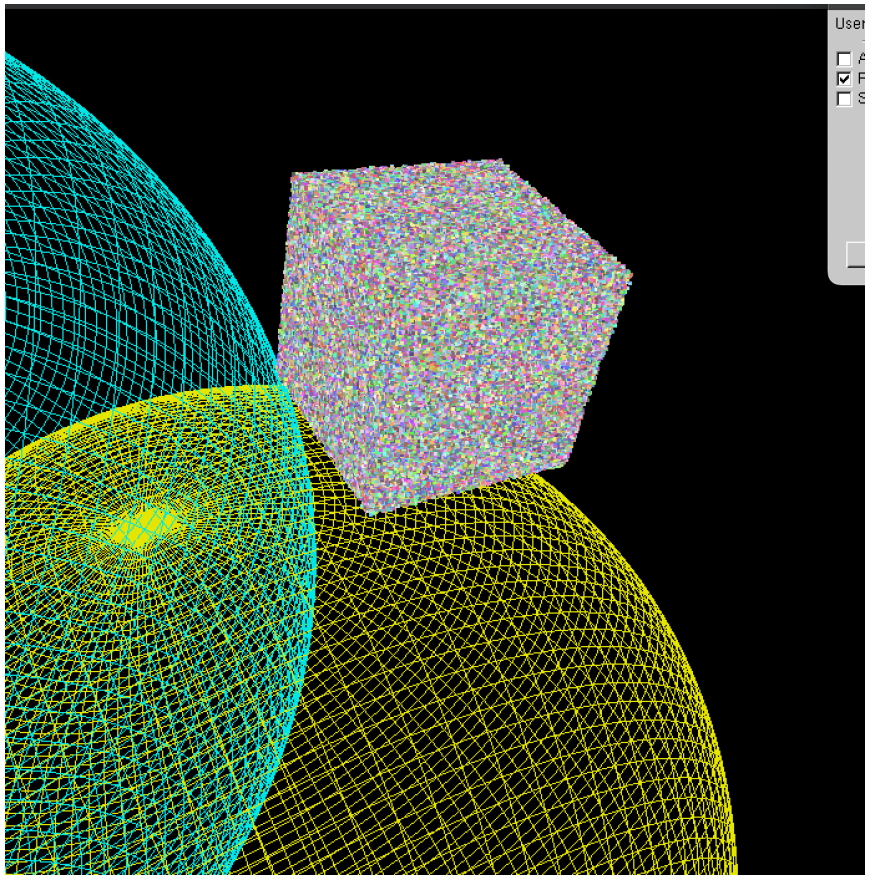
Dynamic color attribute:

- I made it so that the particles change to either red or green when they bounce off a specific sphere buffer. In this case, the particles change to green when they hit sphere 1 and red when they hit sphere 2.

Kaltura Video Link:

- https://media.oregonstate.edu/media/t/1_buc0ouk2

Program Screenshots:



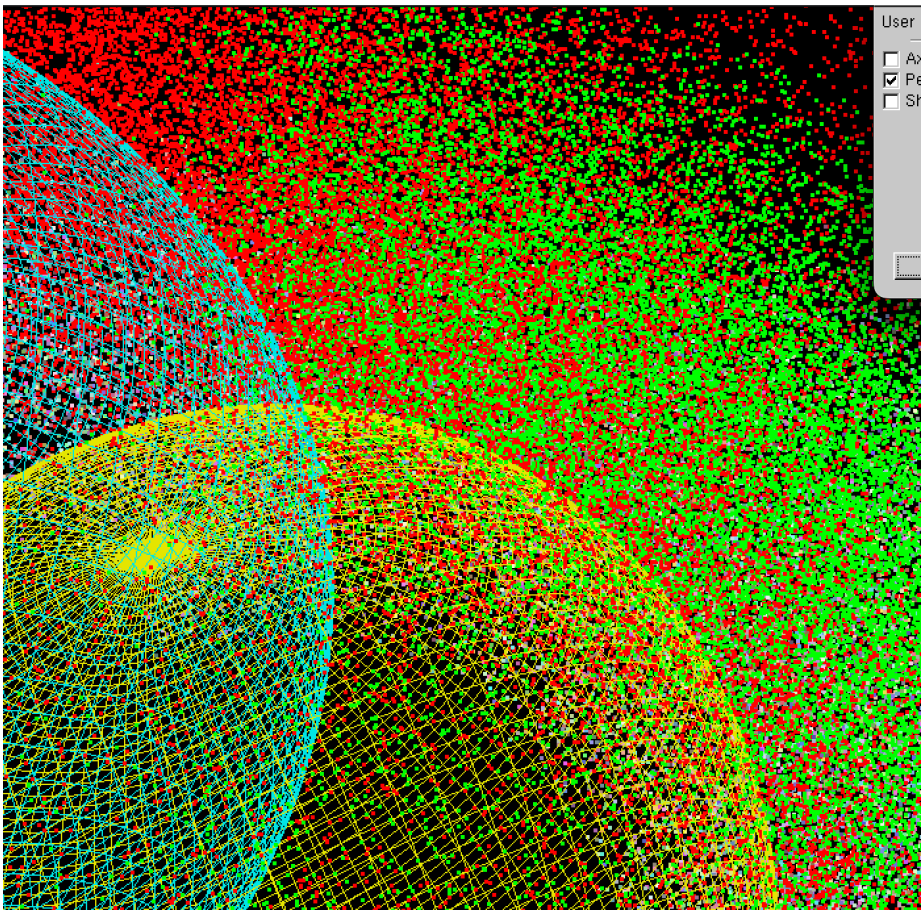
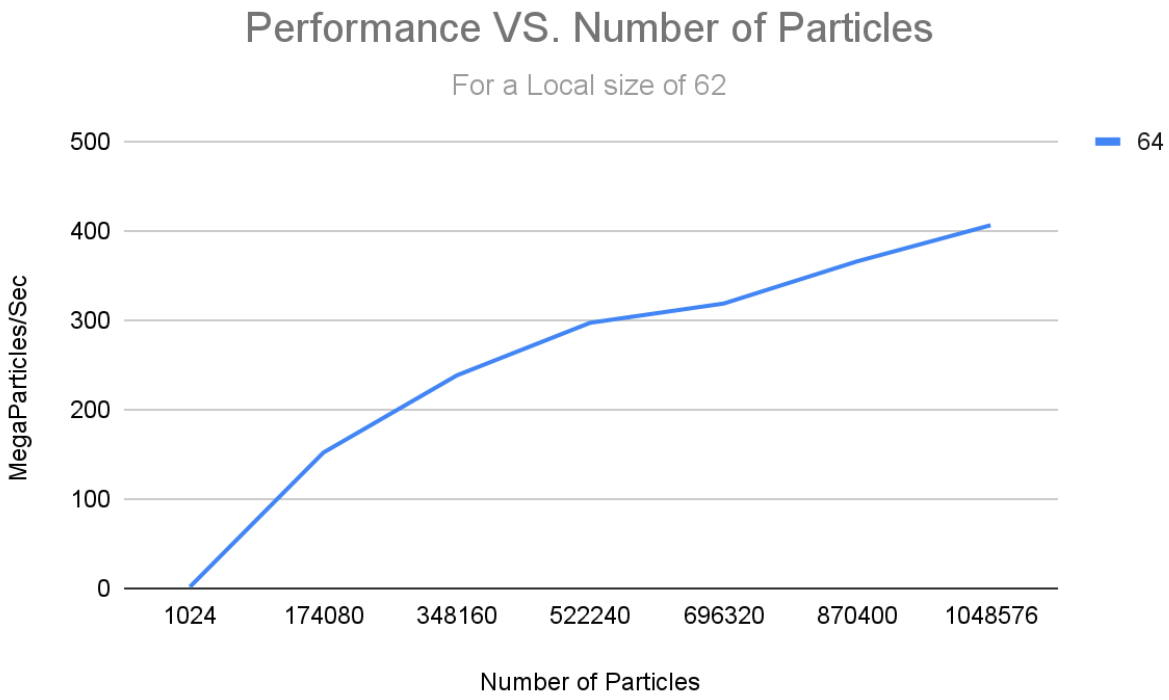


Table of Data:

- Changed the results to megaParticles/sec for better results.

Number of Particles	LOCAL_SIZE of 64
1024	1.7
174080	151.9
348160	238.3
522240	297.2
696320	318.7
870400	365.9
1048576	406.3

Graph of Data:



Patterns and Analysis:

- Judging from the graph, the performance increases as the number of particles increases. There seems to be the beginnings of a plateau around 400 megaparticles/sec and I would assume the program would eventually start crashing as the number of particles becomes too large.

GPU Computing:

- This means that having a larger Work group size helps optimize GPU computing. This reinforces what I wrote in project #6 and shows that GPU computing performs better when dealing with a larger amount of elements. This project shows how we could find the best work group size by increasing the Number of elements while maintaining a constant local size.