**Group:** Dylan Blevins and Colin Barry

|  | 320x200 60fps | 640x360 60fps | 960x540 60fps | 1280x720 60fps | 1600x900 60fps | 1920x1080 60fps | 2560x1440 60fps | 3200x1800 60fps | 3840x2160 60fps | 4096x2160 60fps |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Serial  Time | 3.9004s | 14.945s | 31.8129s | 56.5262s | 88.3321s | 127.1198s | 226.7796s | 352.7296s | 509.0106s | 542.1115s |
| Parallel Time | 0.016062s | 0.053501s | 0.113965s | 0.200053s | 0.308341s | 0.435431s | 0.760334 | 1.180590s | 1.683925s | 1.796649s |
| Speedup | 242.83 | 279.34 | 279.14 | 282.55 | 286.47 | 291.94 | 298.26 | 298.77 | 302.27 | 301.73 |

I ran all of these times on the cisc372 server, but me and my partner met with Prof. Schiller after class on Friday 12/6 and we ran this on the darwin cluster that gave us a 1300 speedup for the 4096x2160 60fps

| Parallel Time  (Extra Credit) | 0.008776s | 0.029315s | 0.063150s | 0.110917s | 0.172067s | 0.243323s | 0.427230s | 0.663172s | 0.945935s | 1.011381s |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EC Speedup | 444.43 | 509.80 | 503.76 | 509.62 | 513.35 | 522.43 | 530.81 | 531.88 | 538.10 | 536.01 |

Extra Credit:

After changing the type double variables to type float it immediately showed that the times it took to run each resolution at 60 frames per second had almost been cut in half and the speedup from the serial time almost doubled. The reason for this is because float type values take up far less space than double type values do allowing for the faster runtimes.