|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Threads/  Method | 2 | 4 | 6 | 8 | 16 | 24 | 32 | 36 | 64 |
| OpenMP | 18.338s  Procs | 10.777s | 13.530s | 10.649s | 4.969s | 5.995s | 4.988s | 5.700s | 5.338s |
| Pthreads | 19.468s | 11.230s | 14.006s | 11.065s | 6.866s | 6.030s | 6.070s | 6.073s | 6.824s |
| MPI | 20.988s | 15.659s | 17.832s | 17.923s | 15.726s | 28.264s | 48.104s | 1m3.656s | 3m25.111s |

Haswell:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Threads/  Method | 2  Procs | 4 | 6 | 8 | 16 | 24 | 32 | 36 | 64 |
| OpenMP | 32.856s | 17.823s | 19.658s | 15.420s | 9.024s | 8.126s | 9.188s | 9.157s | 8.746s |
| Pthreads | 33.809s | 18.417s | 20.225s | 16.041s | 9.808s | 9.971s | 10.234s | 10.210s | 11.338s |
| MPI | 57.453s | 32.734s | 25.521s | 23.180s | 23.997s | 34.587s | 53.536s | 1m7.440s | 3m42.450s |

Nehalem:

Haswell 8 threads OpenMP benchmarks:

|  |  |  |  |
| --- | --- | --- | --- |
| Scheduling  Chunk size | 10 | 50 | 100 |
| static | 11.831s | 13.696s | 16.002s |
| dynamic | 11.532s | 14.623s | 16.083s |
| guided | 10.873s | 13.304s | 17.022s |

|  |  |  |  |
| --- | --- | --- | --- |
| Scheduling  Chunk size | 10 | 50 | 100 |
| static | 11.831s | 13.696s | 16.002s |
| dynamic | 11.532s | 14.623s | 16.083s |
| guided | 10.873s | 13.304s | 17.022s |

Chunk size

|  |  |  |  |
| --- | --- | --- | --- |
| Scheduling  Chunk size | 10 | 50 | 100 |
| static | 4.956s | 5.901s | 9.602s |
| dynamic | 4.929s | 6.389s | 9.850s |
| guided | 4.616s | 5.949s | 9.768s |

Haswell 16 threads OpenMP benchmarks:

Chunk size

|  |  |  |  |
| --- | --- | --- | --- |
| Scheduling  Chunk size | 10 | 50 | 100 |
| static | 5.014s | 6.941s | 10.594s |
| dynamic | 4.939s | 9.716s | 16.130s |
| guided | 4.967s | 9.640s | 15.134s |

Chunk size

Haswell 32 threads OpenMP benchmarks:

MPI 16 procs hotspots:

A computer screen with white text

Description automatically generated

MPI 16 procs threading:

A computer screen with white text

Description automatically generated

MPI 32 procs hotspots:

A computer screen shot of a computer program

Description automatically generated

MPI 32 procs threading:

A screenshot of a computer screen

Description automatically generated