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Monte Carlo Pi Estimation - Hybrid MPI+OpenMP

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Total points: 1000000 - 1 Milhão de pontos

MPI processes: 6

OpenMP threads per process: 12

Total parallel workers: 72

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Results:

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Estimated  $\pi$ : 3.1416000000000000

Actual  $\pi$ : 3.141592653589793

Absolute error: 0.000007346410207

Relative error: 0.0002338435%

Points inside: 785400

Total points: 1000000

Execution time: 0.036727 seconds

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Monte Carlo Pi Estimation - Hybrid MPI+OpenMP

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Total points: 100000000 - 100 Milhões de pontos

MPI processes: 6

OpenMP threads per process: 12

Total parallel workers: 72

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Results:

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Estimated  $\pi$ : 3.1417462800000000

Actual  $\pi$ : 3.141592653589793

Absolute error: 0.000153626410207

Relative error: 0.0048900805%

Points inside: 78543657

Total points: 100000000

Execution time: 0.102391 seconds

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Monte Carlo Pi Estimation - Hybrid MPI+OpenMP

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Total points: 1000000000 - 1 Bilhão de pontos

MPI processes: 6

OpenMP threads per process: 12

Total parallel workers: 72

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Results:

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Estimated  $\pi$ : 3.1415145800000000

Actual  $\pi$ : 3.141592653589793

Absolute error: 0.000078073589793

Relative error: 0.0024851595%

Points inside: 785378645

Total points: 1000000000

Execution time: 0.778206 seconds

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Monte Carlo Pi Estimation - Hybrid MPI+OpenMP

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Total points: 10000000000 - 10 Bilhões de pontos

MPI processes: 6

OpenMP threads per process: 12

Total parallel workers: 72

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Results:

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Estimated  $\pi$ : 3.141583545200000

Actual  $\pi$ : 3.141592653589793

Absolute error: 0.000009108389793

Relative error: 0.0002899291%

Points inside: 7853958863

Total points: 10000000000

Execution time: 7.085858 seconds

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Monte Carlo Pi Estimation - Hybrid MPI+OpenMP
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Total points: 100000000000 - 100 Bilhões de pontos
MPI processes: 6
OpenMP threads per process: 12
Total parallel workers: 72
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Results:

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Estimated  $\pi$ :      3.141588342360000
Actual  $\pi$ :          3.141592653589793
Absolute error:     0.000004311229793
Relative error:     0.0001372307%
Points inside:      78539708559
Total points:       100000000000
Execution time:     71.007269 seconds
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Monte Carlo Pi Estimation - Hybrid MPI+OpenMP
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Total points: 1000000000000 - 1 Trilhão de pontos
MPI processes: 6
OpenMP threads per process: 12
Total parallel workers: 72
=====
```

Results:

```
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Estimated  $\pi$ :      3.141587665344000
Actual  $\pi$ :          3.141592653589793
Absolute error:     0.000004988245793
Relative error:     0.0001587808%
Points inside:      785396916336
Total points:       1000000000000
Execution time:     731.821819 seconds
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