使用 MPI函数计时的代码:

## C语言

#include "mpi.h"

#include <iostream>

#include <math.h>

using namespace std;

int main(){

int rank;

int size;

MPI\_Init(0,0);

MPI\_Comm\_rank(MPI\_COMM\_WORLD, &rank);

MPI\_Comm\_size(MPI\_COMM\_WORLD, &size);

double start , finish;

MPI\_Barrier(MPI\_COMM\_WORLD);

start = MPI\_Wtime();

for(double i =0; i < 10000; i+=0.01) {i=sin(cos(2.0))\*i/(sin(cos(2.0)));};

finish = MPI\_Wtime();

MPI\_Barrier(MPI\_COMM\_WORLD);

if(rank==0){

cout<<"mpi的计时函数：Elapsed time is "<< finish-start <<" seconds"<<endl;

cout<<"时间精度是 "<<MPI\_Wtick()<<" 秒钟"<<endl;

}

MPI\_Finalize();

return 0;

}

使用 time.h 的函数来计时的代码：

#include "mpi.h"

#include <iostream>

#include <math.h>

#include <time.h>

using namespace std;

int main(){

int rank;

int size;

MPI\_Init(0,0);

MPI\_Comm\_rank(MPI\_COMM\_WORLD, &rank);

MPI\_Comm\_size(MPI\_COMM\_WORLD, &size);

clock\_t start , finish;

MPI\_Barrier(MPI\_COMM\_WORLD);

start = clock();

for(double i =0; i < 10000; i+=0.01) {i=sin(cos(2.0))\*i/(sin(cos(2.0)));};

finish = clock();

MPI\_Barrier(MPI\_COMM\_WORLD);

if(rank==0){

cout<<"C语言的计时函数：Elapsed time is "<< double(finish-start)/CLOCKS\_PER\_SEC <<" seconds"<<endl;

cout<<"时间精度是 "<<1./CLOCKS\_PER\_SEC<<" 秒钟"<<endl;

}

MPI\_Finalize();

return 0;

}

编译命令：

tlu:mpi$ mpicxx -O3 -o mpitime.exe mpitime.cpp

tlu:mpi$ mpicxx -O3 -o mpitime1.exe mpitime1.cpp

运行结果：

tlu:mpi$ mpirun -np 1 ./mpitime.exe

mpi的计时函数：Elapsed time is 0.0233588 seconds

时间精度是 1e-06 秒钟

tlu:mpi$ mpirun -np 1 ./mpitime1.exe

C语言的计时函数：Elapsed time is 0.02 seconds

时间精度是 1e-06 秒钟

## Fortran

Real\*8 :: t1,t2

call MPI\_INIT(ierror)

call MPI\_COMM\_SIZE(MPI\_COMM\_WORLD,np,ierror)

call MPI\_COMM\_RANK(MPI\_COMM\_WORLD,myid,ierror)

...

t1 = MPI\_WTIME()

time = 0.

do while (time.le.tmax)

...

end do

...

call MPI\_BARRIER(MPI\_COMM\_WORLD,ierror)

t2 = MPI\_WTIME()

call MPI\_FINALIZE(ierror