

High Performance Computing

2023 Fall

Lab 5. Multithreading

Lab 6. OpenMP

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Chapter 1

Introduction to the Environment

1.1 Host Machine

Item	Value
OS version	macOS Sonoma 14.0
Apple clang version	15.0.0
CPU	Apple M2 Max
CPU Frequency	3.54 - 3.70 GHz
CPU Cores	12
Memory	64 GB

1.2 Virtual Machine

Item	Value
Virtualization	Parallels
OS version	Ubuntu 22.04.3 LTS
gcc version	11.4.0
CPU	Apple M2 Max
CPU Frequency	3.66 GHz
CPU Cores	4 or 12
Memory	32 GB

Chapter 2

Lab 5. Multithreading

In this chapter, a 4 threads naive DGEMM will be implemented. This chapter will introduce the basic designing. The comparison and analysis of multithreading will not be shown in this chapter but in Chapter 4.

Steps

0. Naive DGEMM Calculation
1. Break the matrix into 4 smaller ones.
2. Distribute the processes to different threads.

Step 1

We first define $\mathbf{A}(x_l, y_l; x_r, y_r)$ means the rectangle block from the corner element \mathbf{A}_{x_l, y_l} to the other corner \mathbf{A}_{x_r, y_r} .

We know that

$$(\mathbf{A} \times \mathbf{B} + \beta \mathbf{C})(x_l, y_l; x_r, y_r) = \beta \mathbf{C}(x_l, y_l; x_r, y_r) + \mathbf{A}(x_l, 0; x_r, k) \times \mathbf{B}(0, y_l; k, y_r)$$

Based on this formula, we can divide this result matrix into 4 blocks, we can just divide it evenly, as four $\frac{m}{2} \times \frac{n}{2}$ blocks.

Step 2

We use the header **pthread.h** to create different threads. Here we create 4 threads named p1,p2,p3 and p4.

To create a thread and let it do something (using function pointer) in C language, we need these lines:

```
1 pthread_t p;
2 arg_t arg = {...};
3 Pthread_create(p, NULL, (void*), arg);
4 Pthread_join(p, NULL);
```

arg_t is a struct defined by user. (void*) is a function pointer.

For this problem, we can design the struct arg_t as following

```
1 typedef struct {
2     int x_l; int y_l;
3     int x_r; int y_r;
4     int m; int n; int k;
5     double *a; int lda;
6     double *b; int ldb;
7     double *c; int ldc;
8 } arg_t;
```

Then we can design the code of DGEMM in a block:

```
1 void dgemm(int m, int n, int k, int beta, double* a, double *b,
2             double *c, int lda, int ldb, int ldc, int lrangeX,
3             int lrangeY, int rrangeX, int rrangeY){
4     for(int i = x_l; i <= x_r; i ++){
5         for(int j = y_l; j <= y_r; j ++){
6             C(i,j) = beta*C(i,j);
7             for(int p=0; p < k; p++){
8                 C(i,j) += A(i,p) * B(p,j);
9             }
10        }
11    }
12 }
```

Design the function pointer part:

```
1 void *thread(void *arg) {
2     arg_t *args = (arg_t *) arg;
3     dgemm(args->m,args->n,args->k,1,args->a,args->b,
4            args->c,args->lda,args->ldb,args->ldc,args->lrangeX,
5            args->lrangeY, args->rrangeX, args->rrangeY);
6     return NULL;
7 }
```

Distribute the tasks:

```
1 void MY_MMult( int m, int n, int k, double *a, int lda, double *b,
2                 int ldb, double *c, int ldc )
3     pthread_t p1,p2,p3,p4;
4     arg_t args1 = { 0, 0 , m/2-1 , n/2-1,m,n,k,a,lda,b,ldb,c,ldc};
5     arg_t args2 = { 0, n/2 , m/2-1 , n-1,m,n,k,a,lda,b,ldb,c,ldc};
6     arg_t args3 = { m/2, 0 , m-1 , n/2-1,m,n,k,a,lda,b,ldb,c,ldc};
7     arg_t args4 = { m/2, n/2 , m-1 , n-1,m,n,k,a,lda,b,ldb,c,ldc};
8     Pthread_create(p1, NULL, mythread, args1);
9     Pthread_create(p2, NULL, mythread, args2);
10    Pthread_create(p3, NULL, mythread, args3);
11    Pthread_create(p4, NULL, mythread, args4);
12    Pthread_join(p1, NULL);
13    Pthread_join(p2, NULL);
14    Pthread_join(p3, NULL);
15    Pthread_join(p4, NULL);}
```

Headers used: stdio.h stdlib.h pthread.h string.h unistd.h common_threads.h
-lpthread needed when compiling.

Chapter 3

Lab 6. OpenMP

In this chapter, an all cores naive DGEMM will be implemented. This chapter will introduce the basic designing. The comparison and analysis of OpenMP will not be shown in this chapter but in Chapter 4.

This one is easy to implement, we just need to add a pragma instruction before the first for statement,

```
#pragma omp parallel for
```

However we need to use **omp.h** and use the instruction **-fopenmp** when compiling and linking.

```
1 void MY_MMult( int m, int n, int k, double *a, int lda, double *b,
     int ldb, double *c, int ldc ){
2 #pragma omp parallel for
3 for(int i=0; i< m;i++){
4     for(int j=0; j<n ;j++){
5         for(int p=0; p< k; p++){
6             C( i,j ) += A( i,p ) * B( p,j );
7         } } }
```

We can specify the number of thread(s) used in terminal.

```
export OMP_NUM_THREADS=4
```

Chapter 4

Comparison and Analysis

In this chapter we will take a look at the data from different types of DGEMM:

Naive DGEMM, OpenBLAS (4 and 12) DGEMM,
Multithreading DGEMM, OpenMP (4 and 12) DGEMM.

and do some comparison.

The result shows different GFlops when doing DGEMM of different sizes.
More detailed, the sizes are:

1,2,3,· · · ,998,999,1000,1100,1200,· · · ,2800,2900,3000,4000,5000,10000

All raw data has been attached to **Appendix**.

4.1 %CPU screenshot

```
top - 16:39:09 up 8 min, 1 user, load average: 0.71, 0.40, 0.25
Tasks: 213 total, 1 running, 212 sleeping, 0 stopped, 0 zombie
%Cpu0 : 100.0/0.0 100[||||||||||||||||||||||||||||||||]
%Cpu1 : 100.0/0.0 100[||||||||||||||||||||||||||||]
%Cpu2 : 100.0/0.0 100[||||||||||||||||||||||||||||]
%Cpu3 : 100.0/0.0 100[||||||||||||||||||||||||||||]
MiB Mem : 32037.1 total, 26839.8 free, 3889.3 used, 1308.0 buff/cache
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used. 27378.1 avail Mem

          PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM     TIME+ COMMAND
        4580 paralle+  20   0 3160304  3.0g  1052 S 394.0  9.5  0:34.04 MMult_3+
```

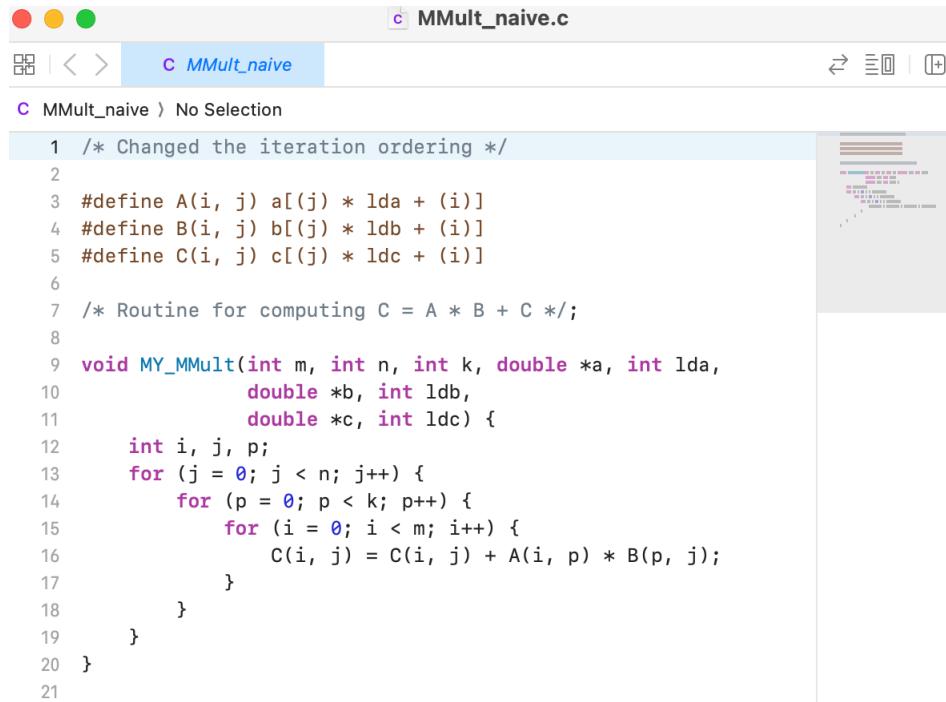
Figure 4.1: pthread (4)

```
top - 14:23:03 up 41 min, 1 user, load average: 2.91, 1.09, 2.41
Tasks: 277 total, 2 running, 275 sleeping, 0 stopped, 0 zombie
%Cpu0 : 100.0/0.0 100[||||||||||||||||||||||||||||]
%Cpu1 : 95.0/5.0 100[||||||||||||||||||||||||]
%Cpu2 : 95.2/4.8 100[||||||||||||||||||||||||]
%Cpu3 : 95.0/5.0 100[||||||||||||||||||||||||]
%Cpu4 : 85.7/14.3 100[||||||||||||||||||||||||]
%Cpu5 : 95.0/5.0 100[||||||||||||||||||||||||]
%Cpu6 : 95.0/5.0 100[||||||||||||||||||||||||]
%Cpu7 : 84.2/15.8 100[||||||||||||||||||||||||]
%Cpu8 : 95.0/5.0 100[||||||||||||||||||||||||]
%Cpu9 : 95.0/5.0 100[||||||||||||||||||||||||]
%Cpu10 : 90.0/10.0 100[||||||||||||||||||||||||]
%Cpu11 : 100.0/0.0 100[||||||||||||||||||||||||]
MiB Mem : 32036.1 total, 17249.1 free, 13161.2 used, 1625.8 buff/cache
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used. 17808.6 avail Mem

          PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM     TIME+ COMMAND
       11991 paralle+  20   0 12.4g  11.9g  3116 R 1200 38.2 2:50.90 MMult_2+
```

Figure 4.2: OpenMP (12)

4.2 Code Screenshot

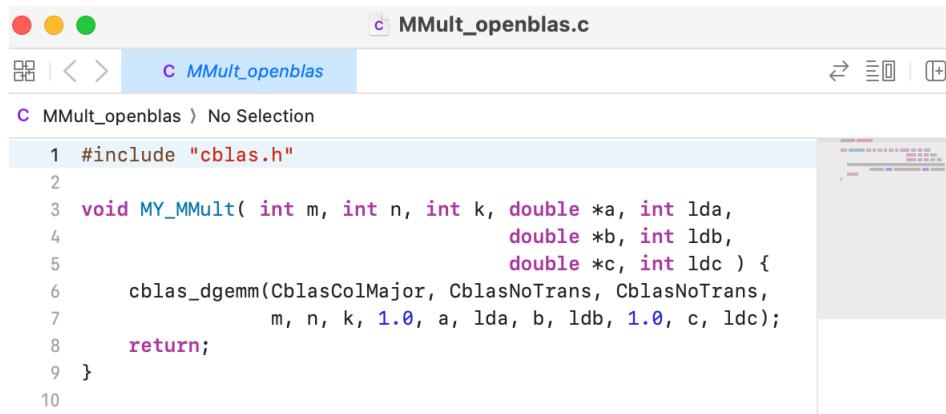


```

1  /* Changed the iteration ordering */
2
3  #define A(i, j) a[(j) * lda + (i)]
4  #define B(i, j) b[(j) * ldb + (i)]
5  #define C(i, j) c[(j) * ldc + (i)]
6
7  /* Routine for computing C = A * B + C */;
8
9  void MY_MMult(int m, int n, int k, double *a, int lda,
10               double *b, int ldb,
11               double *c, int ldc) {
12     int i, j, p;
13     for (j = 0; j < n; j++) {
14         for (p = 0; p < k; p++) {
15             for (i = 0; i < m; i++) {
16                 C(i, j) = C(i, j) + A(i, p) * B(p, j);
17             }
18         }
19     }
20 }
21

```

Figure 4.3: MMult_naive



```

1  #include "cblas.h"
2
3  void MY_MMult( int m, int n, int k, double *a, int lda,
4                  double *b, int ldb,
5                  double *c, int ldc ) {
6      cblas_dgemm(CblasColMajor, CblasNoTrans, CblasNoTrans,
7                  m, n, k, 1.0, a, lda, b, ldb, 1.0, c, ldc);
8      return;
9  }
10

```

Figure 4.4: MMult_openblas



```

MMult_pthread.c
C MMult_pthread > No Selection
1 /* Create macros so that the matrices are stored in column-major order */
2
3 #define A(i,j) a[ (j)*lda + (i) ]
4 #define B(i,j) b[ (j)*ldb + (i) ]
5 #define C(i,j) c[ (j)*ldc + (i) ]
6 #include <stdio.h>
7 #include <stdlib.h>
8 #include <pthread.h>
9 #include <string.h>
10 #include <unistd.h>
11 #include "common_threads.h"
12
13 typedef struct {
14     int lrangeX; int lrangeY; int rrangeX; int rrangeY;
15     int m; int n; int k;
16     double *a; int lda; double *b; int ldb; double *c; int ldc;
17 } myarg_t;
18
19 void dgemm(int m, int n, int k, int beta,
20             double* a, double* b, double* c, int lda,int ldb,int ldc,int lrangeX, int
21             lrangeY, int rrangeX, int rrangeY){
22     for(int i=lrangeX; i<= rrangeX;i++){ //C[i]
23         for(int j=lrangeY; j<=rrangeY; j++){ //C[i][j]
24             C(i,j) = beta*C(i,j);
25             for(int p=0; p< k; p++){
26                 C(i,j) += A(i,p) * B(p,j);
27             }
28         }
29     }
30 }
31 void *mythread(void *arg) {
32     myarg_t *args = (myarg_t *) arg;
33     dgemm
34     (args->m,args->n,args->k,1,args->a,args->b,args->c,args->lda,args->ldb
35     ,args->ldc,args->lrangeX, args->lrangeY, args->rrangeX, args->rrangeY);
36     return NULL;
37 }
38 void MY_MMult( int m, int n, int k, double *a, int lda,double *b, int ldb,
39                 double *c, int ldc ){
40     pthread_t p1,p2,p3,p4;
41     myarg_t args1 = { 0, 0 , m/2-1 , n/2-1,m,n,k,a,lda,b,ldb,c,ldc};
42     myarg_t args2 = { 0, n/2 , m/2-1 , n-1,m,n,k,a,lda,b,ldb,c,ldc};
43     myarg_t args3 = { m/2, 0 , m-1 , n/2-1,m,n,k,a,lda,b,ldb,c,ldc};
44     myarg_t args4 = { m/2, n/2 , m-1 , n-1,m,n,k,a,lda,b,ldb,c,ldc};
45     Pthread_create(&p1, NULL, mythread, &args1);
46     Pthread_create(&p2, NULL, mythread, &args2);
47     Pthread_create(&p3, NULL, mythread, &args3);
48     Pthread_create(&p4, NULL, mythread, &args4);
49     Pthread_join(p1, NULL); Pthread_join(p2, NULL);
50     Pthread_join(p3, NULL); Pthread_join(p4, NULL);
51     //print_row_matrix(m,n,c,ldc);
52 }
53

```

Figure 4.5: MMult_pthread

```

1  /* Create macros so that the matrices are stored in column-major order */
2  #include <omp.h>
3  #define A(i,j) a[ (j)*lda + (i) ]
4  #define B(i,j) b[ (j)*ldb + (i) ]
5  #define C(i,j) c[ (j)*ldc + (i) ]
6
7  /* Routine for computing C = A * B + C */
8  // void print_row_matrix( int m, int n, double *a, int lda );
9  // void print_matrix( int m, int n, double *a, int lda );
10
11 void MY_MMult( int m, int n, int k, double *a, int lda,
12                 double *b, int ldb,
13                 double *c, int ldc )
14 {
15     // print_row_matrix(m,k,a,lda);
16     // print_row_matrix(k,n,b,ldb);
17
18     #pragma omp parallel for
19     for(int i=0; i< m;i++){      //C[i]
20         for(int j=0; j<n ;j++){  //C[i][j]
21             for(int p=0; p< k; p++){
22                 C( i,j ) += A( i,p ) * B( p,j );
23             }
24         }
25     }
26     // print_row_matrix(m,n,c,ldc);
27 }
28
29
30
31

```

Figure 4.6: MMult_openmp

These are designed scripts.

4.3 Brief Re-introduction

DGEMM: Double Precision General Matrix Multiply

Naive DGEMM: the very basic way of solving $\alpha \mathbf{A} \times \mathbf{B} + \beta \mathbf{C}$

OpenBLAS DGEMM: DGEMM in Basic Linear Algebra Subprograms

pthread DGEMM: using multithread to accelerate naive DGEMM

OpenMP DGEMM: using OpenMP to multithread naive DGEMM

4.4 Comparison and Analysis

We first generate some charts using the data. (I did not use **PlotAll.py** because the charts generated were so ugly...)

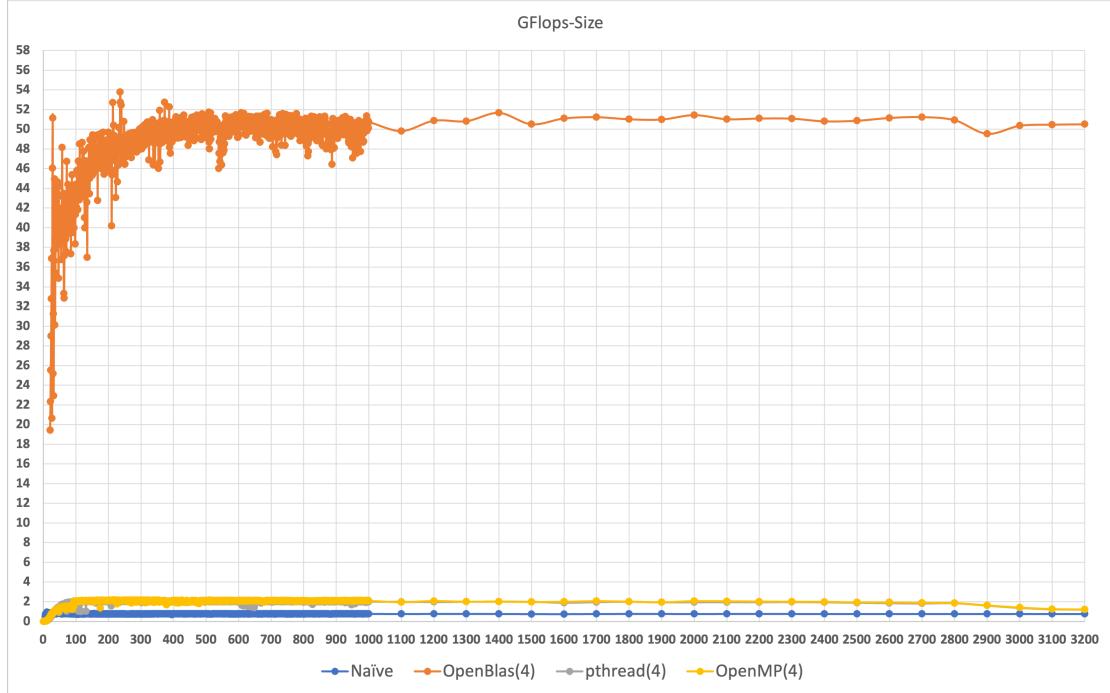


Figure 4.7:
Naive, OpenBLAS (4 threads), pthread (4 threads), OpenMP (4 threads)

From this chart, it is not hard to mind that OpenBLAS tops all 4 methods. It is extremely efficient. The efficiency is about 70 times of the naive one. That is not surprising, for BLAS is well designed for DGEMM.
To take a look at the other three, we need to zoom in the lower part.

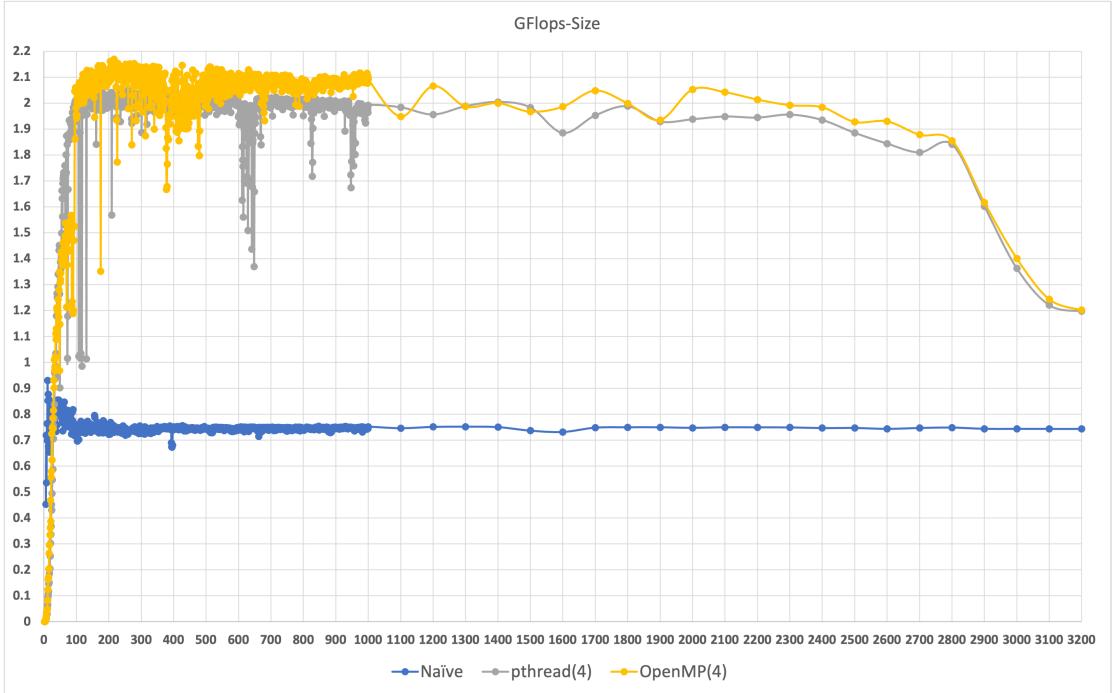


Figure 4.8: Naive, pthread (4 threads), OpenMP (4 threads)

From this chart, we can be aware of the consistency of OpenMP and pthread methods. This is consistent with the instructions in class 'OpenMP results should be around the pthread ones.'

In fact, OpenMP performs better than pthread here.

The efficiency is about 3 times of the naive one. While the 4 cores are 3 P cores + 1 E core, these results are acceptable.

Since the naive method is very easy, it performs better when the size is small (less than 30).

And there is something making us down, the efficiency of pthread and OpenMP decreases sharply when the size reaches 2900. I guess this situation is caused by false sharing.

Further test (size 3300 to 4200) showed that the GFlops stays at around 1.15 after decreasing.

This part tested the max DGEMM performance of this VM.

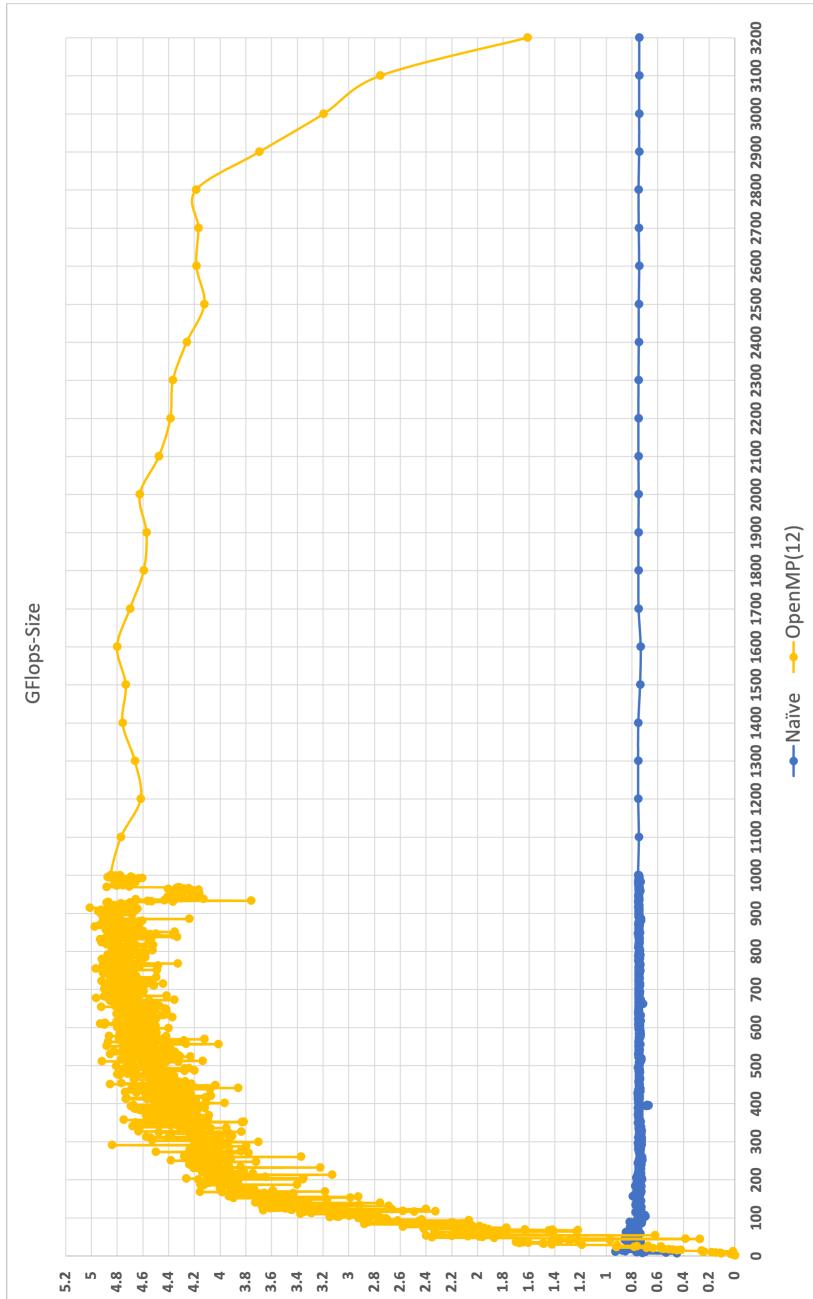


Figure 4.9: Naive, OpenMP (12)

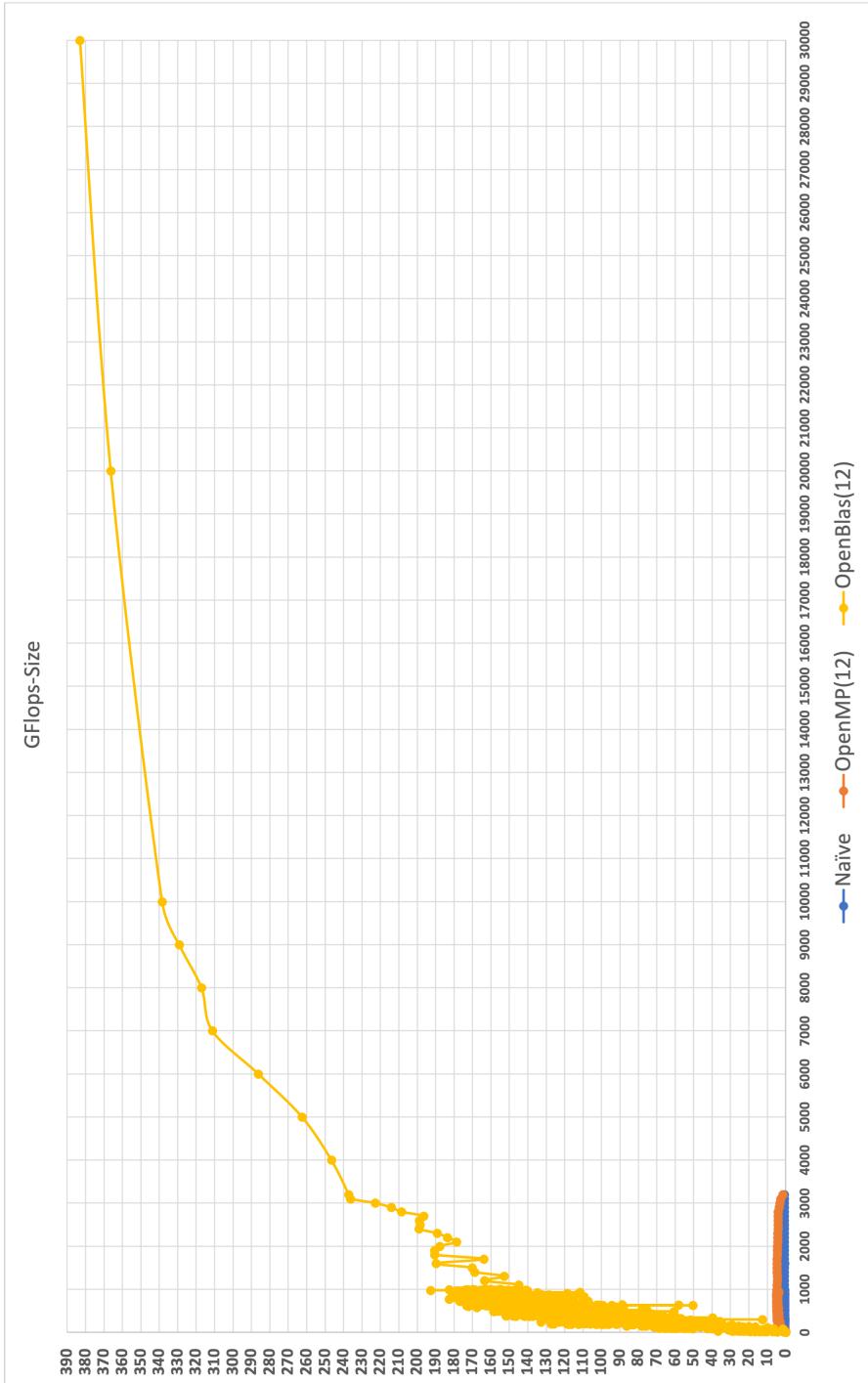


Figure 4.10: Naive, OpenBlas (12)

Problems and solution

1. OpenMP and pthread functioned abnormally, only 1 cpu running at the same time.

Solution:

CPU virtualization problem.

It seemed that the cores allocated to the VM were not virtualized as physical cores, but as a cluster. The problem solved through tuning the virtualize method.

2. Calculation failed abnormally, for example, the result is correct for size 5000 and 7000 but incorrect for 6000.

Solution:

Power management problem.

Power supply is not stable when using batteries. Connecting to the power cable solved this problem.

Appendix

The raw data.

Green blocks: too fast to calculate Gflops

Size	Naïve	OpenBlas(4)	pthread(4)	OpenMP(4)	OpenBlas(12)	OpenMP(12)
1			4.766255E-05	2.504062E-05	2.097152E-03	4.619278E-06
2			2.631720E-04	3.078388E-04		3.195660E-03
3			1.224283E-03	2.004358E-03		1.332308E-02
4			3.463683E-03	1.583690E-03	1.342177E-01	3.158064E-02
5			5.090175E-03	7.825194E-03		1.038194E-02
6	4.529848E-01		1.161500E-02	6.863407E-03		1.065847E-01
7	7.193231E-01		1.203888E-02	1.970748E-02	7.193231E-01	1.150917E-01
8	5.368709E-01		2.556528E-02	3.800856E-02		1.481023E-01
9	7.644119E-01		2.983071E-02	4.529848E-02		1.798616E-01
10	6.990507E-01		5.412005E-02	4.877098E-02		2.467238E-01
11	9.304364E-01		6.645975E-02	8.270546E-02		2.427225E-01
12	8.526773E-01		9.599679E-02	1.238933E-01		1.685525E-02
13	8.776082E-01		1.071498E-01	1.630953E-01	4.607443E+00	2.595743E-01
14	6.770100E-01		1.168444E-01	1.717787E-01	5.754585E+00	4.513400E-01
15	8.579258E-01		1.466920E-01	2.036802E-01	7.077888E+00	4.225605E-01
16	6.871948E-01		1.513645E-01	2.643057E-01		4.839400E-01
17	6.541783E-01		1.856452E-01	2.964981E-01	1.030331E+01	5.151654E-01
18	7.765454E-01		2.046961E-01	3.350847E-01	1.223059E+01	5.559359E-01
19	7.671662E-01		2.534690E-01	3.618708E-01	1.438437E+01	5.753746E-01
20	8.388608E-01		3.022922E-01	4.692928E-01	1.677722E+01	6.391320E-01
21	8.444228E-01	1.942172E+01	3.363069E-01	3.865020E-01	1.942172E+01	6.874947E-01
22	7.904593E-01	2.233047E+01	3.675798E-01	5.582619E-01	1.116524E+01	9.208443E-01
23	8.100333E-01	2.551605E+01	4.516115E-01	5.799102E-01	1.134047E+01	7.851092E-01
24	8.166487E-01	2.899103E+01	4.310934E-01	7.247757E-01	2.899103E+01	5.769359E-01
25	7.801905E-01	3.276800E+01	4.946113E-01	6.241524E-01	1.638400E+01	7.620465E-01
26	8.191010E-01	3.685954E+01	5.480973E-01	7.484171E-01	3.685954E+01	6.763219E-01
27	8.173909E-01	2.063912E+01	5.875906E-01	7.862522E-01	2.063912E+01	9.172943E-01
28	8.148085E-01	4.603668E+01	7.578054E-01	7.455333E-01	2.301834E+01	9.161528E-01
29	8.118641E-01	5.114744E+01	7.054819E-01	8.150986E-01	1.704915E+01	1.189475E+00
30	8.206247E-01	2.516582E+01	7.810083E-01	9.320676E-01	2.516582E+01	1.424481E+00
31	8.275001E-01	3.123813E+01	7.858648E-01	9.021842E-01	2.082542E+01	1.487530E+00
32	8.205311E-01	2.290649E+01	8.380424E-01	1.010581E+00	1.717987E+01	1.493902E+00
33	7.499040E-01	3.768268E+01	9.600682E-01	9.693293E-01	2.318934E+01	1.674786E+00
34	8.100881E-01	3.663398E+01	9.366643E-01	9.812674E-01	2.536199E+01	1.608321E+00
35	8.082282E-01	4.495770E+01	9.853742E-01	1.021766E+00	2.115656E+01	1.649824E+00
36	8.187843E-01	3.010607E+01	1.035394E+00	1.111872E+00	2.446118E+01	1.701647E+00
37	7.338656E-01	3.540901E+01	9.463433E-01	1.089508E+00	2.124541E+01	1.370671E+00

38	8.075433E-01	3.835831E+01	1.180256E+00	1.130957E+00	2.707645E+01	1.425076E+00
39	8.238474E-01	3.827722E+01	1.118211E+00	1.210715E+00	2.369542E+01	1.222614E+00
40	7.582922E-01	4.129776E+01	1.266205E+00	1.113840E+00	2.556528E+01	1.290555E+00
41	8.552533E-01	4.447317E+01	1.251410E+00	1.199484E+00	2.312605E+01	9.716828E-01
42	8.467237E-01	3.884345E+01	1.268358E+00	1.213858E+00	2.143087E+01	1.276171E+00
43	8.507054E-01	4.168457E+01	1.292545E+00	1.195256E+00	2.299838E+01	1.407074E+00
44	8.516987E-01	4.466095E+01	1.340666E+00	1.242739E+00	2.858301E+01	2.734693E-01
45	8.560044E-01	3.822060E+01	1.338725E+00	1.176018E+00	2.635903E+01	3.845130E-01
46	8.532012E-01	3.888160E+01	1.432480E+00	1.279802E+00	2.474283E+01	1.369989E+00
47	8.170079E-01	3.483722E+01	1.451551E+00	1.348190E+00	2.639183E+01	1.872969E+00
48	8.410815E-01	4.417681E+01	1.263914E+00	9.693970E-01	3.092376E+01	2.354601E+00
49	7.978265E-01	3.947645E+01	9.021127E-01	1.147571E+00	2.667328E+01	1.962050E+00
50	8.361850E-01	4.194304E+01	1.309084E+00	1.309084E+00	2.833989E+01	1.985939E+00
51	8.341509E-01	3.837094E+01	1.387478E+00	1.319997E+00	2.419037E+01	2.076040E+00
52	8.248289E-01	4.067260E+01	1.358877E+00	1.344932E+00	2.808346E+01	2.200570E+00
53	8.336921E-01	4.162903E+01	1.411153E+00	1.425652E+00	2.714937E+01	2.401675E+00
54	7.853173E-01	4.002739E+01	1.499323E+00	1.393358E+00	2.641808E+01	6.221874E-01
55	7.685323E-01	3.672775E+01	1.663474E+00	1.415471E+00	2.406301E+01	2.280481E+00
56	8.280909E-01	3.876773E+01	1.633230E+00	1.378086E+00	2.946348E+01	1.416513E+00
57	8.433830E-01	4.198680E+01	1.562889E+00	1.382128E+00	2.678468E+01	2.090863E+00
58	7.362654E-01	4.813877E+01	1.690824E+00	1.419530E+00	1.501576E+01	2.145109E+00
59	8.383669E-01	4.102009E+01	1.710868E+00	1.461276E+00	1.705786E+01	2.075716E+00
60	8.056644E-01	4.314141E+01	1.720740E+00	1.464785E+00	3.124033E+01	1.946229E+00
61	7.708723E-01	4.139249E+01	1.732534E+00	1.437022E+00	2.841873E+01	2.183549E+00
62	8.478542E-01	4.346174E+01	1.732444E+00	1.462502E+00	2.815831E+01	1.791434E+00
63	7.717242E-01	3.329439E+01	1.660765E+00	1.440622E+00	2.497079E+01	2.335798E+00
64	8.117472E-01	3.282124E+01	1.759219E+00	1.376110E+00	2.364541E+01	1.230567E+00
65	8.198297E-01	3.715680E+01	1.721765E+00	1.488192E+00	1.252023E+01	1.880589E+00
66	7.527126E-01	4.087612E+01	1.529291E+00	1.537088E+00	2.593216E+01	1.448463E+00
67	8.107272E-01	4.004735E+01	1.724527E+00	1.485856E+00	1.828248E+01	1.222375E+00
68	7.523237E-01	4.186741E+01	1.801671E+00	1.449256E+00	1.911338E+01	1.419616E+00
69	8.052990E-01	3.881314E+01	1.733166E+00	1.434531E+00	1.522505E+01	1.633511E+00
70	7.795428E-01	4.294466E+01	1.874458E+00	1.214047E+00	2.438384E+01	1.916917E+00
71	7.566469E-01	3.752969E+01	1.840819E+00	1.376605E+00	2.382837E+01	2.419319E+00
72	7.991402E-01	4.673181E+01	1.015579E+00	1.469278E+00	2.653416E+01	1.782033E+00
73	7.795774E-01	4.130774E+01	1.178516E+00	1.510792E+00	1.052681E+01	1.949409E+00
74	7.875962E-01	4.249082E+01	1.667124E+00	1.436714E+00	3.008199E+01	1.776929E+00
75	8.144865E-01	4.021527E+01	1.879418E+00	1.493225E+00	1.619654E+00	2.032708E+00
76	7.620856E-01	4.436624E+01	1.856047E+00	1.429502E+00	2.832614E+01	2.582326E+00

77	7.919099E-01	4.162692E+01	1.863589E+00	1.516704E+00	2.775128E+01	2.163659E+00
78	7.592658E-01	4.280463E+01	1.933381E+00	1.542958E+00	2.783798E+01	1.985452E+00
79	7.632240E-01	3.938963E+01	1.878252E+00	1.498518E+00	2.975475E+01	2.410204E+00
80	7.864800E-01	4.427801E+01	1.869002E+00	1.490790E+00	3.112295E+01	2.048148E+00
81	7.763933E-01	4.245762E+01	1.861399E+00	1.505589E+00	3.032687E+01	2.177846E+00
82	7.871358E-01	4.404962E+01	1.920768E+00	1.514972E+00	3.557854E+01	2.356195E+00
83	7.474672E-01	4.099570E+01	1.893603E+00	1.549256E+00	6.570544E+00	2.880779E+00
84	7.682264E-01	4.075378E+01	1.939899E+00	1.567947E+00	1.714469E+01	2.393819E+00
85	7.245645E-01	3.733083E+01	1.886362E+00	1.537348E+00	3.844518E+01	2.120895E+00
86	7.747386E-01	4.234623E+01	1.933197E+00	1.218457E+00	3.952314E+01	2.212116E+00
87	8.074731E-01	3.974046E+01	1.917363E+00	1.235501E+00	4.249172E+01	2.194646E+00
88	7.766066E-01	4.536985E+01	1.964468E+00	1.194442E+00	4.025776E+01	2.851173E+00
89	8.183931E-01	4.135461E+01	1.900292E+00	1.188685E+00	5.054452E+01	2.426635E+00
90	7.554410E-01	4.276430E+01	1.983553E+00	1.200961E+00	5.226748E+01	2.719117E+00
91	7.607909E-01	3.950882E+01	1.924912E+00	1.526911E+00	5.402916E+01	2.458737E+00
92	7.656908E-01	4.325900E+01	1.956893E+00	1.470533E+00	5.535685E+01	2.622284E+00
93	7.375859E-01	4.114290E+01	1.892689E+00	1.523467E+00	5.971182E+01	2.067863E+00
94	7.188119E-01	4.147288E+01	1.994117E+00	1.525272E+00	5.904613E+01	2.700560E+00
95	7.501234E-01	3.995657E+01	1.928716E+00	2.046140E+00	6.849698E+01	2.435551E+00
96	7.412808E-01	4.216877E+01	2.006408E+00	1.862410E+00	6.567879E+01	2.858900E+00
97	7.524379E-01	4.160900E+01	1.942176E+00	2.060295E+00	6.124845E+01	2.778968E+00
98	7.500039E-01	3.832665E+01	2.013078E+00	1.981252E+00	6.266104E+01	2.712226E+00
99	7.580050E-01	4.131705E+01	1.950038E+00	1.956130E+00	3.970467E+01	2.927863E+00
100	7.530169E-01	4.438417E+01	2.000145E+00	1.941807E+00	6.034970E+01	2.751265E+00
101	7.367480E-01	4.387204E+01	1.953173E+00	1.949648E+00	6.449844E+01	3.150854E+00
102	7.288405E-01	4.342467E+01	1.991066E+00	1.953920E+00	6.643327E+01	3.080297E+00
103	6.973342E-01	4.204797E+01	1.959901E+00	2.004912E+00	6.410111E+01	3.099918E+00
104	7.395598E-01	4.580603E+01	1.951208E+00	2.026642E+00	5.616692E+01	3.150599E+00
105	7.456701E-01	4.296842E+01	1.960206E+00	2.016794E+00	6.790813E+01	2.999031E+00
106	7.269329E-01	4.180321E+01	1.980370E+00	2.032750E+00	6.445785E+01	3.141813E+00
107	7.028044E-01	4.372939E+01	1.023852E+00	2.055692E+00	6.422753E+01	2.781165E+00
108	7.511537E-01	4.675766E+01	2.002887E+00	2.070382E+00	6.443433E+01	2.992702E+00
109	7.513827E-01	4.310909E+01	1.950357E+00	2.080331E+00	6.624080E+01	2.920293E+00
110	7.448457E-01	4.520339E+01	1.029339E+00	2.025991E+00	5.667633E+01	3.378287E+00
111	7.414542E-01	4.280791E+01	1.885067E+00	1.998001E+00	5.823614E+01	2.796811E+00
112	7.305598E-01	4.849955E+01	1.024371E+00	2.021161E+00	6.696244E+01	3.290170E+00
113	7.598178E-01	4.449962E+01	1.016451E+00	2.026435E+00	9.888805E+00	3.301663E+00
114	7.736611E-01	4.637348E+01	1.034640E+00	2.049150E+00	6.308676E+01	3.115591E+00
115	7.464325E-01	4.399319E+01	1.017305E+00	2.069092E+00	6.750277E+01	3.350321E+00

116	7.551615E-01	4.530707E+01	1.951087E+00	2.057794E+00	6.784324E+01	2.493572E+00
117	7.363828E-01	4.448776E+01	9.852819E-01	2.066652E+00	6.961297E+01	2.329687E+00
118	7.471946E-01	4.504167E+01	1.954723E+00	2.087979E+00	7.141322E+01	2.581040E+00
119	7.389127E-01	4.309798E+01	1.999171E+00	2.094553E+00	3.830932E+01	3.666962E+00
120	7.310997E-01	4.864267E+01	1.975943E+00	2.111202E+00	3.971374E+01	3.445570E+00
121	7.306977E-01	4.615196E+01	1.984898E+00	2.088089E+00	4.658599E+01	3.453621E+00
122	7.333865E-01	4.658238E+01	2.027747E+00	2.047371E+00	6.481888E+01	2.666276E+00
123	7.387640E-01	4.372572E+01	1.998730E+00	2.001036E+00	6.757612E+01	2.402660E+00
124	7.352851E-01	4.774305E+01	1.988304E+00	2.017397E+00	1.657401E+01	3.495175E+00
125	7.447611E-01	4.488767E+01	2.005140E+00	2.035532E+00	6.023529E+01	3.609606E+00
126	7.441736E-01	4.392767E+01	1.991499E+00	2.058941E+00	6.554832E+01	3.588616E+00
127	7.274186E-01	4.100974E+01	2.001524E+00	2.072248E+00	6.712141E+01	3.034808E+00
128	7.400070E-01	3.998224E+01	1.961881E+00	2.065053E+00	6.564249E+01	3.625013E+00
129	7.316647E-01	4.617367E+01	2.001526E+00	2.084228E+00	5.716740E+01	3.675798E+00
130	7.691249E-01	4.677607E+01	1.983616E+00	2.076594E+00	5.705812E+01	3.346608E+00
131	7.637435E-01	4.544182E+01	1.013781E+00	2.100975E+00	2.316751E+01	2.692128E+00
132	7.581849E-01	4.649043E+01	1.957542E+00	2.127650E+00	5.544118E+01	3.562979E+00
133	7.525969E-01	4.475136E+01	1.999731E+00	2.067395E+00	5.166322E+01	3.397375E+00
134	7.730319E-01	4.258199E+01	2.021014E+00	2.072478E+00	2.006348E+01	2.918430E+00
135	7.409751E-01	3.698767E+01	2.018496E+00	2.031610E+00	5.593258E+01	3.596919E+00
136	7.684332E-01	4.368773E+01	2.003720E+00	2.046075E+00	6.532871E+01	3.415535E+00
137	7.566323E-01	4.668847E+01	1.989309E+00	2.056251E+00	6.596352E+01	3.313884E+00
138	7.676672E-01	4.573831E+01	2.017744E+00	2.076664E+00	5.832240E+01	3.458175E+00
139	7.458815E-01	4.551233E+01	2.007181E+00	2.090822E+00	6.626060E+01	2.758830E+00
140	7.432224E-01	4.815552E+01	2.049354E+00	2.065537E+00	6.539301E+01	3.728270E+00
141	7.422703E-01	4.601785E+01	2.002309E+00	2.040889E+00	6.757219E+01	3.628877E+00
142	7.435072E-01	4.343400E+01	2.017047E+00	2.082452E+00	6.439410E+01	3.558898E+00
143	7.439654E-01	4.500922E+01	2.008518E+00	2.112108E+00	7.594435E+01	3.346068E+00
144	7.306105E-01	4.892236E+01	2.030665E+00	2.125254E+00	8.637327E+01	3.576278E+00
145	7.615986E-01	4.658237E+01	2.019563E+00	2.123005E+00	7.820709E+01	3.605487E+00
146	7.365144E-01	4.790181E+01	2.015011E+00	2.074083E+00	2.559460E+01	3.379043E+00
147	7.384604E-01	4.602177E+01	1.997796E+00	2.035646E+00	6.483359E+01	3.697836E+00
148	7.384490E-01	4.873499E+01	1.978474E+00	2.051148E+00	6.353767E+01	3.171696E+00
149	7.452821E-01	4.624848E+01	2.009638E+00	2.061750E+00	6.735215E+01	3.687586E+00
150	7.424812E-01	4.718592E+01	2.030084E+00	2.081426E+00	6.677253E+01	3.718843E+00
151	7.408189E-01	4.533998E+01	2.022802E+00	2.088629E+00	6.624212E+01	3.682464E+00
152	7.576560E-01	4.942816E+01	2.045919E+00	2.088563E+00	6.695268E+01	3.897748E+00
153	7.468541E-01	4.709161E+01	2.027427E+00	2.079344E+00	6.828283E+01	2.990985E+00
154	7.455809E-01	4.802102E+01	2.024543E+00	2.021738E+00	3.042444E+01	3.542716E+00

155	7.463416E-01	4.627871E+01	2.027134E+00	2.103861E+00	5.774146E+01	2.928758E+00
156	7.954900E-01	4.832571E+01	2.009252E+00	1.945903E+00	6.020160E+01	3.932170E+00
157	7.885497E-01	4.664226E+01	2.013460E+00	2.118166E+00	5.735515E+01	3.678529E+00
158	7.473131E-01	4.720012E+01	1.980089E+00	2.075349E+00	7.177286E+01	3.891706E+00
159	7.430151E-01	4.569039E+01	1.986422E+00	2.047702E+00	7.298596E+01	3.435508E+00
160	7.596334E-01	4.936744E+01	2.016180E+00	2.052185E+00	6.658864E+01	3.727057E+00
161	7.389555E-01	4.711712E+01	1.842043E+00	2.070133E+00	6.131001E+01	3.565334E+00
162	7.355608E-01	4.748922E+01	2.004519E+00	2.082593E+00	7.147175E+01	3.786030E+00
163	7.340218E-01	4.633793E+01	2.024686E+00	2.098241E+00	7.054163E+01	3.832571E+00
164	7.358247E-01	4.817927E+01	2.008123E+00	2.093921E+00	7.115708E+01	3.432756E+00
165	7.465168E-01	4.652182E+01	2.017598E+00	2.104472E+00	7.191350E+01	3.659578E+00
166	7.689158E-01	4.737281E+01	2.038894E+00	2.124576E+00	6.989431E+01	3.818107E+00
167	7.501849E-01	4.274577E+01	2.004085E+00	2.140333E+00	7.168740E+01	3.985884E+00
168	7.394901E-01	4.941080E+01	2.002401E+00	2.145052E+00	7.027507E+01	4.159332E+00
169	7.279793E-01	4.757956E+01	1.995771E+00	2.124467E+00	7.308702E+01	3.186198E+00
170	7.508742E-01	4.814630E+01	1.999187E+00	2.091511E+00	7.562061E+01	3.894286E+00
171	7.406164E-01	4.650201E+01	2.033491E+00	2.059348E+00	6.754398E+01	3.593627E+00
172	7.475219E-01	4.895068E+01	1.979089E+00	2.070981E+00	2.915642E+01	3.819003E+00
173	7.428524E-01	4.705725E+01	1.972831E+00	2.077776E+00	6.091702E+01	3.918253E+00
174	7.393697E-01	4.767140E+01	2.012633E+00	2.098357E+00	7.025658E+01	3.736167E+00
175	7.399469E-01	4.601607E+01	2.022752E+00	1.352518E+00	7.193231E+01	3.850107E+00
176	7.372217E-01	4.954801E+01	2.040732E+00	2.092460E+00	8.330203E+01	3.783323E+00
177	7.653934E-01	4.756318E+01	2.019747E+00	2.127454E+00	8.277008E+01	3.905036E+00
178	7.411940E-01	4.862248E+01	2.011380E+00	2.127425E+00	7.278411E+01	4.001156E+00
179	7.653756E-01	4.661968E+01	2.024129E+00	2.139621E+00	7.648889E+01	3.770790E+00
180	7.535792E-01	4.902040E+01	2.042005E+00	2.144965E+00	6.584436E+01	3.987478E+00
181	7.380378E-01	4.653159E+01	1.973586E+00	2.124649E+00	4.857644E+01	3.926918E+00
182	7.286195E-01	4.708687E+01	2.022043E+00	2.126900E+00	4.045704E+01	3.849824E+00
183	7.759569E-01	4.644036E+01	2.015268E+00	2.105306E+00	9.645305E+01	3.889648E+00
184	7.698305E-01	4.967383E+01	2.018029E+00	2.098585E+00	9.878425E+01	3.924072E+00
185	7.312185E-01	4.815369E+01	2.022217E+00	2.081414E+00	9.983744E+01	3.949842E+00
186	7.351149E-01	4.871795E+01	1.987243E+00	2.092634E+00	1.030143E+02	4.127503E+00
187	7.572448E-01	4.540961E+01	2.014499E+00	2.110125E+00	9.203827E+01	3.405862E+00
188	7.460888E-01	4.743791E+01	1.986725E+00	2.102427E+00	1.126051E+02	4.156876E+00
189	7.565288E-01	4.593167E+01	2.028284E+00	2.112096E+00	1.165303E+02	3.896907E+00
190	7.407939E-01	4.747315E+01	2.028395E+00	2.120571E+00	1.023798E+02	3.981831E+00
191	7.517393E-01	4.646323E+01	2.017351E+00	2.127958E+00	1.180823E+02	4.088036E+00
192	7.389743E-01	4.862705E+01	2.016151E+00	2.074115E+00	1.274112E+02	3.891056E+00
193	7.383586E-01	4.774836E+01	2.005593E+00	2.064644E+00	1.187130E+02	4.027662E+00

194	7.617114E-01	4.868716E+01	1.981637E+00	2.122849E+00	1.260256E+02	3.899188E+00
195	7.321924E-01	4.737279E+01	1.998088E+00	2.073488E+00	4.286732E+01	3.862904E+00
196	7.425969E-01	4.888725E+01	2.010835E+00	2.111746E+00	1.061552E+02	4.078936E+00
197	7.392206E-01	4.764787E+01	2.014576E+00	2.083492E+00	9.557979E+01	3.992159E+00
198	7.527126E-01	4.837716E+01	2.005040E+00	2.093684E+00	1.022224E+02	4.002192E+00
199	7.543821E-01	4.609990E+01	2.018850E+00	2.110502E+00	9.837389E+01	4.041280E+00
200	7.228676E-01	4.967347E+01	2.019952E+00	2.115264E+00	8.749526E+01	4.172140E+00
201	7.555098E-01	4.720758E+01	2.014745E+00	2.082496E+00	1.003248E+02	3.359829E+00
202	7.570853E-01	4.907192E+01	2.036173E+00	2.133957E+00	8.077375E+01	3.980102E+00
203	7.384047E-01	4.754356E+01	2.017952E+00	2.135683E+00	3.456861E+01	4.265914E+00
204	7.244734E-01	4.838075E+01	1.989176E+00	2.161874E+00	1.035123E+02	3.354994E+00
205	7.685892E-01	4.559552E+01	2.018515E+00	2.089059E+00	9.253381E+01	3.959289E+00
206	7.291532E-01	4.712832E+01	2.019600E+00	2.131115E+00	1.017083E+02	3.994535E+00
207	7.381941E-01	4.584399E+01	2.019071E+00	2.119191E+00	1.087789E+02	3.651590E+00
208	7.476685E-01	4.750683E+01	2.041771E+00	2.147972E+00	1.111758E+02	4.093284E+00
209	7.327755E-01	4.768516E+01	1.569021E+00	2.128529E+00	1.074086E+02	4.062078E+00
210	7.417685E-01	4.016903E+01	2.012614E+00	2.097378E+00	1.034446E+02	3.951722E+00
211	7.428685E-01	4.536673E+01	1.994281E+00	2.101331E+00	1.031440E+02	4.007629E+00
212	7.480368E-01	4.838240E+01	2.018275E+00	2.111028E+00	9.526547E+01	4.103488E+00
213	7.582606E-01	4.892223E+01	2.011816E+00	2.116446E+00	9.118574E+01	3.132429E+00
214	7.443367E-01	5.269952E+01	2.029256E+00	2.121307E+00	4.985521E+01	4.103996E+00
215	7.545401E-01	4.720789E+01	2.013844E+00	2.129262E+00	1.056643E+02	4.038224E+00
216	7.302728E-01	5.038012E+01	2.014917E+00	2.169807E+00	1.076915E+02	3.746248E+00
217	7.366381E-01	4.686573E+01	2.025268E+00	2.117787E+00	7.020264E+01	3.944477E+00
218	7.388057E-01	4.935146E+01	1.994079E+00	2.134805E+00	8.253364E+01	4.070057E+00
219	7.531233E-01	4.711733E+01	2.016787E+00	2.142478E+00	9.018362E+01	4.140090E+00
220	7.512860E-01	4.828211E+01	2.024935E+00	2.156128E+00	1.013869E+02	4.057873E+00
221	7.460284E-01	4.582261E+01	2.004638E+00	2.133393E+00	9.632497E+01	4.131478E+00
222	7.449749E-01	4.777728E+01	2.000570E+00	2.063403E+00	9.722475E+01	4.078575E+00
223	7.415801E-01	4.304768E+01	1.985233E+00	2.113748E+00	8.373180E+01	3.820057E+00
224	7.374223E-01	4.781091E+01	1.946711E+00	1.935323E+00	1.071399E+02	3.960311E+00
225	7.473426E-01	4.727931E+01	2.006246E+00	2.136470E+00	9.770091E+01	3.926505E+00
226	7.440253E-01	4.870784E+01	1.991223E+00	1.772718E+00	1.017134E+02	4.113649E+00
227	7.477747E-01	4.659176E+01	2.017440E+00	2.121516E+00	1.016811E+02	4.129550E+00
228	7.313116E-01	4.464514E+01	2.011954E+00	2.153589E+00	9.634180E+01	4.157248E+00
229	7.387864E-01	4.861906E+01	2.013928E+00	2.132668E+00	4.655208E+01	4.149553E+00
230	7.483206E-01	4.876455E+01	2.007083E+00	2.148675E+00	9.512040E+01	4.207792E+00
231	7.466011E-01	4.634750E+01	1.989595E+00	2.142809E+00	1.075976E+02	4.179855E+00
232	7.455672E-01	5.014359E+01	2.038056E+00	2.121690E+00	6.659247E+01	3.223373E+00

233	7.478352E-01	4.773294E+01	2.004502E+00	2.110682E+00	1.057930E+02	3.843742E+00
234	7.396462E-01	4.916854E+01	2.018563E+00	2.090691E+00	1.081312E+02	3.946047E+00
235	7.410206E-01	4.817093E+01	2.015520E+00	2.115223E+00	7.866063E+01	4.026568E+00
236	7.435366E-01	5.376012E+01	1.929445E+00	2.123322E+00	1.104830E+02	4.039937E+00
237	7.427951E-01	5.272408E+01	2.016352E+00	2.131302E+00	1.173000E+02	4.116244E+00
238	7.486271E-01	4.806167E+01	2.010795E+00	2.130942E+00	9.330784E+01	4.069857E+00
239	7.276185E-01	4.666691E+01	2.017131E+00	2.055841E+00	1.202947E+02	3.936633E+00
240	7.508344E-01	5.244872E+01	2.030575E+00	2.094084E+00	1.328340E+02	4.241710E+00
241	7.412767E-01	4.810312E+01	2.017660E+00	2.131494E+00	1.232106E+02	4.080899E+00
242	7.434926E-01	4.912704E+01	1.986058E+00	2.032611E+00	1.191257E+02	4.153709E+00
243	7.538791E-01	4.750093E+01	2.023661E+00	2.111041E+00	1.210939E+02	4.085651E+00
244	7.551652E-01	4.866593E+01	2.028591E+00	2.122840E+00	1.211327E+02	4.016331E+00
245	7.473974E-01	4.870269E+01	2.037557E+00	2.101493E+00	1.084995E+02	4.129198E+00
246	7.288429E-01	4.847852E+01	2.048164E+00	2.109827E+00	1.062814E+02	4.097673E+00
247	7.405942E-01	4.770181E+01	2.041634E+00	2.113064E+00	9.511648E+01	3.723521E+00
248	7.465074E-01	5.077435E+01	2.039456E+00	2.127948E+00	1.003540E+02	4.041676E+00
249	7.384402E-01	4.899940E+01	2.013486E+00	2.133708E+00	7.455695E+01	4.134515E+00
250	7.468235E-01	4.643004E+01	2.018480E+00	2.140266E+00	1.059596E+02	4.384119E+00
251	7.192611E-01	4.644649E+01	2.028243E+00	2.087121E+00	1.061209E+02	4.211817E+00
252	7.468440E-01	4.885115E+01	2.016144E+00	2.150812E+00	9.413952E+01	4.088660E+00
253	7.254211E-01	4.715288E+01	2.033949E+00	2.077369E+00	9.930369E+01	4.234382E+00
254	7.337279E-01	4.848841E+01	2.033260E+00	2.100108E+00	1.030470E+02	3.919946E+00
255	7.336874E-01	4.745638E+01	2.047859E+00	2.114961E+00	1.056148E+02	4.188210E+00
256	7.268860E-01	4.725906E+01	2.019044E+00	2.086329E+00	3.584755E+01	3.966224E+00
257	7.356427E-01	4.800850E+01	1.994331E+00	2.112189E+00	9.480240E+01	4.009608E+00
258	7.401110E-01	4.942088E+01	2.049477E+00	2.135990E+00	8.479215E+01	4.263068E+00
259	7.236016E-01	4.806844E+01	2.024131E+00	2.092242E+00	9.024365E+01	4.167434E+00
260	7.286007E-01	4.869160E+01	2.021640E+00	1.979381E+00	9.349282E+01	3.373254E+00
261	7.308567E-01	4.837688E+01	2.025696E+00	2.133765E+00	9.609919E+01	4.279654E+00
262	7.350895E-01	4.887167E+01	2.019961E+00	2.140532E+00	9.720801E+01	4.218399E+00
263	7.340288E-01	4.762825E+01	2.022276E+00	2.135145E+00	5.397981E+01	3.928154E+00
264	7.389609E-01	4.953409E+01	2.035370E+00	2.152395E+00	9.707436E+01	4.164708E+00
265	7.400909E-01	4.923016E+01	2.024548E+00	2.138302E+00	8.198994E+01	4.268768E+00
266	7.398375E-01	4.947753E+01	2.036252E+00	2.139362E+00	8.899819E+01	3.965609E+00
267	7.413208E-01	4.825329E+01	1.994456E+00	2.145787E+00	9.176444E+01	4.225531E+00
268	7.380684E-01	4.867980E+01	1.986747E+00	2.130476E+00	9.431712E+01	4.143148E+00
269	7.381121E-01	4.848134E+01	2.022884E+00	2.128270E+00	8.671544E+01	4.011723E+00
270	7.387704E-01	4.915539E+01	1.939015E+00	2.095050E+00	8.519761E+01	3.782310E+00
271	7.360946E-01	4.710902E+01	1.922662E+00	1.838988E+00	6.493752E+01	4.138167E+00

272	7.377517E-01	4.963522E+01	2.027960E+00	2.109722E+00	1.123897E+02	4.080972E+00
273	7.473001E-01	4.884892E+01	2.030166E+00	2.030384E+00	1.091292E+02	4.501480E+00
274	7.433406E-01	4.944429E+01	2.021705E+00	2.134224E+00	9.439857E+01	4.145301E+00
275	7.457141E-01	4.808623E+01	2.036715E+00	2.066045E+00	1.006675E+02	3.841308E+00
276	7.396638E-01	4.929204E+01	2.009330E+00	2.147647E+00	1.038063E+02	4.180599E+00
277	7.436783E-01	4.858063E+01	2.023619E+00	2.140913E+00	1.036575E+02	4.102697E+00
278	7.338876E-01	4.928325E+01	2.020027E+00	2.153349E+00	1.042991E+02	4.072600E+00
279	7.494652E-01	4.774129E+01	1.994818E+00	2.119835E+00	1.054287E+02	4.237550E+00
280	7.521412E-01	4.966201E+01	2.023613E+00	2.096364E+00	1.120114E+02	4.213016E+00
281	7.408355E-01	4.898073E+01	1.981421E+00	2.128769E+00	1.079622E+02	4.118396E+00
282	7.346926E-01	4.962305E+01	2.025900E+00	2.135991E+00	1.115783E+02	4.016761E+00
283	7.408840E-01	4.863888E+01	2.035407E+00	1.986432E+00	1.074177E+02	4.011507E+00
284	7.362541E-01	4.940910E+01	2.038467E+00	1.933022E+00	1.151300E+02	3.933752E+00
285	7.327884E-01	4.853510E+01	1.953434E+00	2.124652E+00	1.163505E+02	4.178982E+00
286	7.311538E-01	4.888894E+01	2.025852E+00	2.132026E+00	1.130416E+02	4.127289E+00
287	7.355859E-01	4.765823E+01	2.009158E+00	2.140792E+00	5.156159E+01	4.203088E+00
288	7.495184E-01	4.961277E+01	2.022181E+00	2.142799E+00	1.327060E+02	3.799219E+00
289	7.485337E-01	4.971289E+01	2.007282E+00	2.132475E+00	1.127398E+02	4.201540E+00
290	7.512513E-01	4.962158E+01	2.036570E+00	2.134501E+00	1.244463E+02	4.088034E+00
291	7.388404E-01	4.842200E+01	2.027995E+00	2.118856E+00	1.216678E+02	4.841860E+00
292	7.259137E-01	4.959675E+01	2.015887E+00	2.068209E+00	1.158358E+02	4.063820E+00
293	7.320742E-01	4.878728E+01	1.998627E+00	2.123406E+00	1.072725E+02	4.163148E+00
294	7.477703E-01	4.934557E+01	2.022781E+00	1.996393E+00	1.162972E+02	3.998440E+00
295	7.446336E-01	4.794201E+01	2.015739E+00	1.983034E+00	1.085461E+02	4.155517E+00
296	7.550567E-01	5.001218E+01	2.007613E+00	2.123939E+00	1.186868E+02	4.033614E+00
297	7.487517E-01	4.915351E+01	1.999539E+00	2.117180E+00	1.124120E+02	4.200408E+00
298	7.372503E-01	4.988600E+01	2.008239E+00	2.139173E+00	1.100608E+02	3.984290E+00
299	7.389132E-01	4.886359E+01	2.023234E+00	2.125894E+00	1.276529E+01	3.704099E+00
300	7.340946E-01	4.995422E+01	2.040509E+00	2.128408E+00	1.018859E+02	3.938177E+00
301	7.264592E-01	4.913335E+01	1.886223E+00	2.120845E+00	1.185310E+02	4.180416E+00
302	7.342017E-01	4.958209E+01	2.042002E+00	2.135658E+00	1.197784E+02	4.116235E+00
303	7.362994E-01	4.800563E+01	2.029848E+00	1.966638E+00	1.193634E+02	4.529149E+00
304	7.393955E-01	5.021808E+01	2.044871E+00	2.106654E+00	1.294198E+02	4.049372E+00
305	7.413319E-01	4.896252E+01	2.025814E+00	2.093619E+00	1.175342E+02	4.140834E+00
306	7.264394E-01	4.974246E+01	2.029944E+00	2.132684E+00	1.155000E+02	4.033556E+00
307	7.361880E-01	4.882714E+01	2.029056E+00	2.138387E+00	9.029751E+01	4.059265E+00
308	7.308456E-01	4.923650E+01	2.026921E+00	2.032366E+00	1.096641E+02	4.096732E+00
309	7.379873E-01	4.897000E+01	1.993559E+00	2.094818E+00	1.216189E+02	4.106564E+00
310	7.243918E-01	4.952537E+01	2.011340E+00	2.101137E+00	1.058471E+02	4.405942E+00

311	7.524191E-01	4.835785E+01	2.026139E+00	2.089043E+00	1.193620E+02	4.543889E+00
312	7.411260E-01	5.045013E+01	1.990524E+00	2.040945E+00	1.262503E+02	4.575421E+00
313	7.376025E-01	4.922135E+01	2.027259E+00	1.874573E+00	1.152984E+02	4.139336E+00
314	7.337850E-01	5.034001E+01	1.984823E+00	2.118166E+00	5.959250E+01	3.909735E+00
315	7.407929E-01	4.879830E+01	2.010993E+00	2.140878E+00	1.155546E+02	4.059222E+00
316	7.410740E-01	5.044755E+01	2.019164E+00	2.077792E+00	1.032767E+02	4.226989E+00
317	7.421602E-01	4.938444E+01	1.918865E+00	2.120350E+00	8.005369E+01	4.040206E+00
318	7.464920E-01	4.955108E+01	2.037987E+00	2.121057E+00	1.230078E+02	4.071053E+00
319	7.427047E-01	4.873975E+01	2.023158E+00	2.067426E+00	5.695649E+01	4.012569E+00
320	7.288890E-01	5.072484E+01	1.969830E+00	2.126616E+00	1.198247E+02	3.949849E+00
321	7.339901E-01	4.939700E+01	2.027408E+00	2.132083E+00	1.067165E+02	4.379496E+00
322	7.290679E-01	5.054397E+01	2.015154E+00	2.136035E+00	1.211874E+02	3.933596E+00
323	7.291075E-01	4.934222E+01	1.985876E+00	2.133542E+00	1.184751E+02	4.239884E+00
324	7.432097E-01	5.031127E+01	1.995086E+00	1.984898E+00	1.113208E+02	4.476165E+00
325	7.439519E-01	4.686171E+01	2.017411E+00	2.064607E+00	5.697768E+01	4.213590E+00
326	7.325287E-01	5.003125E+01	2.035848E+00	2.088185E+00	1.043560E+02	3.837834E+00
327	7.320229E-01	4.869903E+01	2.028228E+00	2.109294E+00	1.013525E+02	4.637086E+00
328	7.391762E-01	5.073936E+01	1.984616E+00	2.124610E+00	1.184054E+02	4.144163E+00
329	7.261529E-01	4.939305E+01	2.039009E+00	2.076339E+00	1.200680E+02	4.290298E+00
330	7.475739E-01	4.943611E+01	2.033274E+00	2.078614E+00	1.107500E+02	4.290960E+00
331	7.340964E-01	4.887697E+01	2.013811E+00	1.983351E+00	1.261237E+02	4.301859E+00
332	7.387644E-01	5.026622E+01	2.050278E+00	2.041877E+00	1.246855E+02	4.273524E+00
333	7.337074E-01	4.946631E+01	2.014844E+00	2.028115E+00	1.273153E+02	4.150862E+00
334	7.308558E-01	4.921383E+01	2.024386E+00	2.107799E+00	1.233940E+02	4.239096E+00
335	7.480700E-01	4.866865E+01	2.015033E+00	2.101771E+00	1.230483E+02	4.076692E+00
336	7.379826E-01	5.095365E+01	2.037780E+00	2.142452E+00	1.283604E+02	3.955075E+00
337	7.383208E-01	4.954554E+01	2.025981E+00	2.139882E+00	1.297192E+02	4.229975E+00
338	7.304153E-01	4.636062E+01	2.030144E+00	2.121267E+00	1.284894E+02	4.626395E+00
339	7.447788E-01	4.950094E+01	2.027604E+00	2.126295E+00	1.290190E+02	4.293403E+00
340	7.424035E-01	4.940154E+01	2.026864E+00	1.899753E+00	1.209042E+02	4.682657E+00
341	7.457426E-01	4.993598E+01	1.965640E+00	2.096587E+00	1.095237E+02	4.326642E+00
342	7.448265E-01	5.015822E+01	2.017790E+00	2.140505E+00	1.082447E+02	4.267563E+00
343	7.433046E-01	4.635861E+01	2.013901E+00	2.107787E+00	3.985760E+01	4.117933E+00
344	7.491684E-01	4.976391E+01	2.018776E+00	2.094545E+00	5.963674E+01	4.392760E+00
345	7.469440E-01	4.956355E+01	2.028828E+00	2.121113E+00	1.173252E+02	4.192530E+00
346	7.459142E-01	4.993113E+01	2.021954E+00	2.013553E+00	1.146012E+02	4.637147E+00
347	7.434707E-01	4.867271E+01	2.011121E+00	2.093703E+00	7.508401E+01	4.117866E+00
348	7.473488E-01	5.023176E+01	2.035660E+00	2.139514E+00	9.858648E+01	4.107579E+00
349	7.535519E-01	4.883423E+01	1.979360E+00	2.112285E+00	1.139986E+02	4.507091E+00

350	7.514098E-01	4.900021E+01	2.026034E+00	2.131126E+00	1.080065E+02	4.658044E+00
351	7.490397E-01	4.858736E+01	2.034944E+00	1.963652E+00	1.143971E+02	3.832656E+00
352	7.340549E-01	5.053349E+01	2.046760E+00	2.118682E+00	1.233522E+02	3.817948E+00
353	7.435182E-01	5.029846E+01	1.979250E+00	2.120361E+00	1.074205E+02	4.120164E+00
354	7.416387E-01	4.602205E+01	2.020449E+00	2.138076E+00	6.221941E+01	4.157228E+00
355	7.464940E-01	4.932924E+01	1.959008E+00	2.073452E+00	8.815994E+01	4.146927E+00
356	7.416398E-01	5.063242E+01	2.041355E+00	2.117131E+00	1.119424E+02	4.505736E+00
357	7.431439E-01	4.997718E+01	2.019502E+00	1.952885E+00	1.168276E+02	4.750638E+00
358	7.427754E-01	5.190023E+01	2.030118E+00	2.023490E+00	1.011809E+02	4.429699E+00
359	7.424421E-01	4.666664E+01	2.001178E+00	2.094629E+00	1.145254E+02	4.097619E+00
360	7.474583E-01	4.852205E+01	2.000168E+00	2.101623E+00	9.915857E+01	4.493907E+00
361	7.471153E-01	4.907965E+01	2.012830E+00	2.024435E+00	7.214798E+01	4.109562E+00
362	7.465433E-01	5.079630E+01	2.031644E+00	2.086286E+00	1.168345E+02	4.570587E+00
363	7.512505E-01	4.908798E+01	2.037977E+00	1.982309E+00	1.178400E+02	4.192301E+00
364	7.466243E-01	5.036981E+01	2.040173E+00	2.065410E+00	9.762798E+01	4.321179E+00
365	7.458492E-01	4.981850E+01	1.992828E+00	2.055945E+00	1.140061E+02	4.332826E+00
366	7.454605E-01	5.038910E+01	2.042368E+00	2.071397E+00	1.178441E+02	4.565622E+00
367	7.469949E-01	4.865143E+01	2.020722E+00	1.972815E+00	1.191198E+02	4.176633E+00
368	7.456851E-01	5.016258E+01	2.039163E+00	2.074251E+00	9.306655E+01	4.319463E+00
369	7.461495E-01	5.052413E+01	2.003443E+00	2.103071E+00	1.179273E+02	4.090653E+00
370	7.468851E-01	5.045217E+01	2.004671E+00	1.996261E+00	1.268004E+02	4.399865E+00
371	7.534632E-01	4.991990E+01	1.992811E+00	2.058110E+00	1.285988E+02	4.578579E+00
372	7.452012E-01	5.089403E+01	2.028008E+00	2.111429E+00	1.163351E+02	4.528385E+00
373	7.492153E-01	5.274143E+01	2.028734E+00	2.116139E+00	1.329245E+02	4.234418E+00
374	7.465322E-01	4.960869E+01	2.041584E+00	2.042145E+00	1.393138E+02	4.422883E+00
375	7.503740E-01	4.893993E+01	2.022679E+00	2.010499E+00	1.417846E+02	4.187782E+00
376	7.460851E-01	4.951876E+01	2.043726E+00	1.905764E+00	1.375012E+02	4.422414E+00
377	7.460831E-01	4.982085E+01	2.030830E+00	1.825581E+00	1.466026E+02	4.464301E+00
378	7.519110E-01	5.073572E+01	2.032360E+00	1.667133E+00	1.411873E+02	4.417092E+00
379	7.446161E-01	4.969263E+01	2.030471E+00	1.678947E+00	1.310027E+02	4.281358E+00
380	7.480291E-01	5.043275E+01	1.991544E+00	1.765224E+00	1.306556E+02	4.246268E+00
381	7.448356E-01	5.016687E+01	2.039732E+00	1.867914E+00	1.519133E+02	4.553061E+00
382	7.499141E-01	5.044292E+01	2.010421E+00	1.863194E+00	1.480703E+02	4.625182E+00
383	7.461419E-01	4.928242E+01	2.024389E+00	1.951333E+00	1.389000E+02	4.321165E+00
384	7.477069E-01	4.940597E+01	1.976025E+00	1.860309E+00	1.480178E+02	4.177454E+00
385	7.479381E-01	4.975673E+01	2.006983E+00	1.943454E+00	1.396876E+02	4.586439E+00
386	7.497587E-01	5.076278E+01	2.034295E+00	1.920571E+00	1.198334E+02	4.665179E+00
387	7.454354E-01	5.226365E+01	1.998096E+00	1.953108E+00	1.326265E+02	4.643562E+00
388	7.557921E-01	4.815603E+01	2.036896E+00	2.047604E+00	1.366390E+02	4.120417E+00

389	7.465915E-01	4.858663E+01	2.014129E+00	1.920367E+00	1.101217E+02	4.329974E+00
390	7.425360E-01	4.876557E+01	2.022196E+00	2.050537E+00	1.315368E+02	4.181369E+00
391	7.521425E-01	4.755253E+01	2.021354E+00	1.948670E+00	1.240271E+02	4.334766E+00
392	7.460760E-01	5.066158E+01	1.990093E+00	2.005639E+00	1.386279E+02	4.309693E+00
393	6.905602E-01	5.020465E+01	2.018736E+00	1.987081E+00	1.238569E+02	4.694896E+00
394	6.743365E-01	4.940513E+01	2.039652E+00	1.969976E+00	1.425597E+02	4.164852E+00
395	6.735213E-01	4.894801E+01	2.031343E+00	2.087983E+00	1.381954E+02	4.388030E+00
396	6.818680E-01	4.870281E+01	1.967092E+00	2.036073E+00	1.237058E+02	4.677387E+00
397	7.398431E-01	4.966238E+01	2.004253E+00	2.088790E+00	6.906338E+01	4.300088E+00
398	7.457749E-01	5.031472E+01	2.011380E+00	2.002279E+00	1.382635E+02	4.325825E+00
399	7.470837E-01	4.914271E+01	2.019138E+00	2.107052E+00	6.170153E+01	4.235289E+00
400	7.467732E-01	5.037730E+01	1.957183E+00	2.006177E+00	1.389777E+02	4.281814E+00
401	7.469066E-01	5.019558E+01	2.013054E+00	2.072411E+00	6.675398E+01	3.967226E+00
402	7.515598E-01	5.079358E+01	2.031266E+00	2.088698E+00	1.317931E+02	4.110394E+00
403	7.469503E-01	4.977258E+01	2.016414E+00	2.094227E+00	1.366454E+02	4.509320E+00
404	7.478313E-01	4.969353E+01	1.966841E+00	1.979801E+00	1.115649E+02	4.500648E+00
405	7.445779E-01	4.998262E+01	2.034547E+00	2.124062E+00	1.186156E+02	4.410592E+00
406	7.431768E-01	5.053054E+01	2.023261E+00	2.071359E+00	1.248653E+02	4.190698E+00
407	7.507869E-01	4.966653E+01	2.027645E+00	1.892392E+00	1.220179E+02	4.349068E+00
408	7.478934E-01	5.123947E+01	2.041157E+00	1.908918E+00	1.233720E+02	4.514121E+00
409	7.451387E-01	4.961369E+01	2.013299E+00	1.895445E+00	1.183607E+02	4.258692E+00
410	7.429474E-01	5.028714E+01	2.011444E+00	1.946618E+00	1.275146E+02	4.451392E+00
411	7.462249E-01	4.925507E+01	1.970976E+00	1.888204E+00	1.244161E+02	4.566455E+00
412	7.534711E-01	4.908001E+01	2.030765E+00	1.902569E+00	1.268165E+02	4.734932E+00
413	7.521114E-01	4.966262E+01	1.991204E+00	2.115781E+00	1.018679E+02	4.232334E+00
414	7.420556E-01	4.945072E+01	1.998423E+00	2.028615E+00	1.183612E+02	4.304806E+00
415	7.410940E-01	4.908811E+01	2.024741E+00	1.989627E+00	1.338607E+02	4.730833E+00
416	7.426072E-01	5.100133E+01	2.014419E+00	1.854779E+00	1.366305E+02	4.115096E+00
417	7.469889E-01	4.992386E+01	1.979087E+00	1.914094E+00	1.328106E+02	4.547593E+00
418	7.434306E-01	4.973284E+01	1.965755E+00	1.961664E+00	1.340317E+02	4.095697E+00
419	7.418020E-01	5.000539E+01	2.003294E+00	1.950964E+00	1.274931E+02	4.372172E+00
420	7.535851E-01	4.982325E+01	2.021478E+00	1.922116E+00	1.225587E+02	4.073001E+00
421	7.461915E-01	5.024846E+01	1.987783E+00	1.902898E+00	1.334922E+02	4.577261E+00
422	7.466615E-01	5.060737E+01	2.020228E+00	2.032250E+00	1.301437E+02	4.510769E+00
423	7.471751E-01	4.916053E+01	1.996096E+00	1.988855E+00	7.194428E+01	4.540995E+00
424	7.462942E-01	5.120700E+01	2.004288E+00	2.025346E+00	1.367162E+02	4.275468E+00
425	7.458555E-01	5.053812E+01	2.001525E+00	2.083416E+00	1.381881E+02	4.230212E+00
426	7.494358E-01	5.091168E+01	2.035943E+00	2.145739E+00	7.272771E+01	4.359253E+00
427	7.561546E-01	4.990378E+01	2.020276E+00	2.029896E+00	1.427209E+02	4.552900E+00

428	7.516860E-01	5.051770E+01	2.011672E+00	2.089736E+00	1.344694E+02	4.651733E+00
429	7.506664E-01	4.960757E+01	1.995164E+00	2.085138E+00	1.252242E+02	4.300998E+00
430	7.417389E-01	5.078452E+01	2.015871E+00	2.048174E+00	1.263887E+02	4.739306E+00
431	7.453649E-01	4.968317E+01	2.018377E+00	2.021457E+00	1.481290E+02	4.356821E+00
432	7.362432E-01	5.143378E+01	2.014101E+00	1.955435E+00	1.454102E+02	4.463337E+00
433	7.438336E-01	4.928785E+01	2.030048E+00	1.902369E+00	1.231929E+02	4.465728E+00
434	7.452466E-01	5.075791E+01	1.973101E+00	1.981877E+00	1.331274E+02	4.599098E+00
435	7.515370E-01	5.017370E+01	2.029386E+00	1.929014E+00	1.420178E+02	4.563687E+00
436	7.456755E-01	5.084937E+01	2.000626E+00	1.943575E+00	1.186456E+02	4.695188E+00
437	7.467472E-01	4.922016E+01	2.006628E+00	2.008361E+00	1.347043E+02	4.439234E+00
438	7.456070E-01	4.989560E+01	2.020551E+00	1.909698E+00	1.310908E+02	4.077817E+00
439	7.362837E-01	4.971031E+01	2.012551E+00	1.901052E+00	1.137909E+02	4.457303E+00
440	7.415721E-01	5.019847E+01	2.014687E+00	1.960415E+00	1.333163E+02	4.422396E+00
441	7.410496E-01	4.990693E+01	1.999067E+00	2.108161E+00	1.306443E+02	3.861412E+00
442	7.413397E-01	4.992857E+01	1.975159E+00	1.983618E+00	1.130229E+02	4.399816E+00
443	7.451321E-01	4.975042E+01	2.000766E+00	2.065361E+00	1.183722E+02	4.669437E+00
444	7.428111E-01	5.015995E+01	2.022915E+00	1.904093E+00	1.191757E+02	4.388928E+00
445	7.475336E-01	4.833989E+01	1.978782E+00	1.960774E+00	1.291203E+02	4.280011E+00
446	7.443601E-01	5.062297E+01	2.027804E+00	2.034112E+00	1.353352E+02	4.494147E+00
447	7.422938E-01	4.979896E+01	2.013316E+00	1.922397E+00	1.369949E+02	4.606111E+00
448	7.412829E-01	5.030110E+01	1.980493E+00	1.950356E+00	1.412746E+02	4.039876E+00
449	7.415449E-01	5.010737E+01	2.024306E+00	1.971510E+00	1.387152E+02	4.557868E+00
450	7.447193E-01	4.884733E+01	2.004358E+00	1.959739E+00	1.328488E+02	4.507916E+00
451	7.476665E-01	4.927762E+01	2.027361E+00	1.948367E+00	9.345632E+01	4.857371E+00
452	7.448323E-01	5.061414E+01	2.031825E+00	2.015264E+00	1.052370E+02	4.224884E+00
453	7.448751E-01	5.027739E+01	1.971159E+00	1.995916E+00	1.305545E+02	4.768500E+00
454	7.471220E-01	5.074523E+01	2.022774E+00	1.982092E+00	1.237745E+02	4.386283E+00
455	7.436388E-01	4.979999E+01	2.023878E+00	1.984291E+00	1.260250E+02	4.486631E+00
456	7.490857E-01	5.119708E+01	2.010469E+00	2.024851E+00	1.316884E+02	4.530736E+00
457	7.487886E-01	5.048822E+01	2.010850E+00	2.046354E+00	1.316413E+02	4.319414E+00
458	7.488620E-01	5.070846E+01	2.007897E+00	2.128140E+00	1.135564E+02	4.273750E+00
459	7.486082E-01	4.965416E+01	2.025251E+00	2.093744E+00	1.305860E+02	4.422203E+00
460	7.451845E-01	5.020065E+01	1.998173E+00	1.992891E+00	1.324434E+02	4.438490E+00
461	7.425845E-01	4.987258E+01	2.023155E+00	1.998984E+00	1.241653E+02	4.367014E+00
462	7.437381E-01	5.125217E+01	2.043291E+00	1.995330E+00	1.334210E+02	4.506091E+00
463	7.399204E-01	4.883245E+01	1.999532E+00	1.950415E+00	1.392995E+02	4.670825E+00
464	7.403367E-01	4.968868E+01	2.032875E+00	2.012294E+00	1.347266E+02	4.465283E+00
465	7.440727E-01	4.938112E+01	1.961637E+00	1.971698E+00	1.411125E+02	4.418568E+00
466	7.388308E-01	5.086480E+01	2.027260E+00	2.015812E+00	1.374931E+02	4.454487E+00

467	7.467131E-01	4.915195E+01	2.019466E+00	1.971709E+00	1.205190E+02	4.496864E+00
468	7.407613E-01	5.003546E+01	1.994631E+00	2.115478E+00	1.372262E+02	4.534621E+00
469	7.441672E-01	5.045672E+01	2.028307E+00	2.058809E+00	1.337325E+02	4.533888E+00
470	7.444162E-01	5.075648E+01	2.008511E+00	2.023462E+00	1.347355E+02	4.541300E+00
471	7.474019E-01	4.910097E+01	2.027929E+00	2.051625E+00	1.386650E+02	4.649554E+00
472	7.441663E-01	5.141918E+01	2.017963E+00	1.981944E+00	1.514068E+02	4.359259E+00
473	7.473540E-01	5.063107E+01	2.013771E+00	1.974476E+00	1.442734E+02	4.475902E+00
474	7.455282E-01	5.118936E+01	2.030744E+00	1.957060E+00	1.489424E+02	4.528484E+00
475	7.439908E-01	5.036260E+01	1.956443E+00	1.833610E+00	1.486480E+02	4.783385E+00
476	7.435200E-01	5.067000E+01	2.020161E+00	1.969546E+00	1.531854E+02	4.542301E+00
477	7.433779E-01	4.988640E+01	2.014615E+00	2.033814E+00	1.441233E+02	4.802057E+00
478	7.434701E-01	5.104835E+01	2.021966E+00	2.056842E+00	9.647902E+01	4.720090E+00
479	7.453449E-01	4.987702E+01	2.018609E+00	1.798225E+00	1.487219E+02	4.658761E+00
480	7.455510E-01	5.097604E+01	2.006933E+00	1.893419E+00	1.585563E+02	4.447969E+00
481	7.461029E-01	5.043618E+01	1.992707E+00	2.039039E+00	1.438624E+02	4.396174E+00
482	7.388507E-01	5.082005E+01	2.016568E+00	2.079734E+00	1.342707E+02	4.441261E+00
483	7.462133E-01	4.909705E+01	2.019072E+00	2.033835E+00	1.285484E+02	4.498589E+00
484	7.455599E-01	5.120045E+01	2.033320E+00	2.054632E+00	1.412804E+02	4.539465E+00
485	7.463183E-01	5.056840E+01	2.017313E+00	2.033529E+00	1.420735E+02	4.576091E+00
486	7.492218E-01	4.894225E+01	2.022186E+00	2.070605E+00	6.079927E+01	4.278131E+00
487	7.429648E-01	4.970987E+01	2.032079E+00	2.030758E+00	1.438384E+02	4.201718E+00
488	7.415835E-01	5.154801E+01	2.022682E+00	2.063059E+00	1.562051E+02	4.529356E+00
489	7.445076E-01	4.961966E+01	2.016681E+00	2.058720E+00	1.271066E+02	4.753530E+00
490	7.455032E-01	5.106387E+01	1.988774E+00	2.108425E+00	1.274585E+02	4.490329E+00
491	7.465927E-01	5.033793E+01	2.016711E+00	2.094927E+00	9.451418E+01	4.704261E+00
492	7.433406E-01	5.122259E+01	2.004384E+00	2.089966E+00	1.327106E+02	4.276479E+00
493	7.466436E-01	5.052780E+01	1.998369E+00	2.010625E+00	1.445426E+02	4.242945E+00
494	7.534658E-01	5.091011E+01	1.994105E+00	2.079391E+00	1.237189E+02	4.654585E+00
495	7.480437E-01	5.008774E+01	2.016698E+00	2.017590E+00	1.430384E+02	4.661497E+00
496	7.466343E-01	5.106565E+01	1.953635E+00	2.071324E+00	1.301476E+02	4.594531E+00
497	7.473321E-01	4.933244E+01	2.009238E+00	1.988958E+00	8.889207E+01	4.731952E+00
498	7.447746E-01	5.129943E+01	1.982520E+00	2.085438E+00	1.310452E+02	4.809813E+00
499	7.485890E-01	4.915105E+01	2.016446E+00	2.111324E+00	1.421767E+02	4.565971E+00
500	7.473685E-01	5.035179E+01	2.029831E+00	2.010762E+00	1.316480E+02	4.697227E+00
501	7.472754E-01	4.980078E+01	1.990287E+00	2.024104E+00	1.363070E+02	4.609825E+00
502	7.462841E-01	5.065438E+01	2.017543E+00	2.067361E+00	1.390291E+02	4.439593E+00
503	7.458623E-01	4.930783E+01	2.006997E+00	2.077417E+00	1.088240E+02	4.695127E+00
504	7.408307E-01	5.101386E+01	2.017383E+00	2.105693E+00	1.432880E+02	4.539126E+00
505	7.443013E-01	5.094544E+01	1.999217E+00	2.014539E+00	1.471063E+02	4.608112E+00

506	7.412163E-01	5.094597E+01	2.011136E+00	2.131563E+00	1.360175E+02	4.535335E+00
507	7.467559E-01	5.061979E+01	2.018068E+00	2.074049E+00	1.387003E+02	4.454459E+00
508	7.444707E-01	5.028658E+01	2.029894E+00	1.978873E+00	1.410436E+02	4.457097E+00
509	7.430868E-01	5.173625E+01	1.967478E+00	2.058272E+00	1.331998E+02	4.324686E+00
510	7.393800E-01	4.866853E+01	2.048681E+00	2.105756E+00	1.463384E+02	4.510788E+00
511	7.394695E-01	4.798781E+01	2.007385E+00	2.140989E+00	1.454979E+02	4.920545E+00
512	7.315494E-01	5.001554E+01	1.978401E+00	2.034576E+00	1.465443E+02	4.138060E+00
513	7.392348E-01	5.035839E+01	2.032498E+00	2.139483E+00	1.420431E+02	4.408849E+00
514	7.293487E-01	5.164320E+01	2.023597E+00	2.072142E+00	1.345872E+02	4.432887E+00
515	7.291963E-01	4.895776E+01	2.010979E+00	2.055901E+00	1.330632E+02	4.772666E+00
516	7.400958E-01	5.047275E+01	2.006209E+00	2.084877E+00	7.530185E+01	4.320101E+00
517	7.394184E-01	5.026705E+01	1.992551E+00	2.049922E+00	1.316086E+02	4.732158E+00
518	7.337954E-01	5.052424E+01	1.999321E+00	2.094606E+00	7.839360E+01	4.571736E+00
519	7.294215E-01	4.960927E+01	2.024129E+00	2.078911E+00	1.333993E+02	4.552195E+00
520	7.467431E-01	5.080790E+01	2.020445E+00	2.032260E+00	9.001796E+01	4.752448E+00
521	7.494061E-01	5.049903E+01	1.993104E+00	2.081722E+00	1.294971E+02	4.379645E+00
522	7.484583E-01	5.091608E+01	2.011765E+00	2.116900E+00	1.320752E+02	4.540971E+00
523	7.482657E-01	5.021289E+01	2.009562E+00	2.078391E+00	1.436999E+02	4.233924E+00
524	7.497755E-01	4.985479E+01	2.012125E+00	2.034168E+00	1.026305E+02	4.316308E+00
525	7.487486E-01	5.042613E+01	1.984339E+00	2.109267E+00	1.369115E+02	4.714285E+00
526	7.446962E-01	5.089242E+01	2.009645E+00	2.038600E+00	1.257268E+02	4.585037E+00
527	7.432526E-01	4.979048E+01	2.021508E+00	2.054452E+00	1.437685E+02	4.329569E+00
528	7.485257E-01	5.108332E+01	2.024103E+00	2.100365E+00	1.562625E+02	4.492614E+00
529	7.511784E-01	5.054192E+01	2.011193E+00	2.080835E+00	1.471519E+02	4.417070E+00
530	7.474195E-01	5.080221E+01	1.998161E+00	2.042965E+00	1.357763E+02	4.856056E+00
531	7.514846E-01	4.982360E+01	2.010896E+00	2.087799E+00	1.305293E+02	4.423679E+00
532	7.480638E-01	4.975037E+01	1.956341E+00	2.086324E+00	1.276594E+02	4.532125E+00
533	7.442807E-01	5.045675E+01	2.025447E+00	2.132128E+00	1.207987E+02	4.425716E+00
534	7.436038E-01	5.074128E+01	2.025721E+00	2.010395E+00	1.371148E+02	4.594097E+00
535	7.469173E-01	4.996113E+01	2.026860E+00	2.084017E+00	1.201076E+02	4.351828E+00
536	7.471013E-01	5.047149E+01	1.988065E+00	2.028542E+00	1.401809E+02	4.765965E+00
537	7.461270E-01	5.004858E+01	2.015689E+00	2.087546E+00	1.405856E+02	4.827188E+00
538	7.457557E-01	4.994958E+01	1.994938E+00	2.116261E+00	1.296043E+02	4.581241E+00
539	7.496746E-01	4.599527E+01	1.967764E+00	2.062386E+00	1.305485E+02	4.488965E+00
540	7.420337E-01	4.753675E+01	2.033145E+00	2.014509E+00	1.261729E+02	4.556789E+00
541	7.419752E-01	4.869865E+01	1.985797E+00	2.078569E+00	1.332787E+02	4.704188E+00
542	7.464592E-01	5.043558E+01	2.020982E+00	2.036842E+00	1.297111E+02	4.505826E+00
543	7.466688E-01	4.672423E+01	2.011824E+00	2.098407E+00	1.352237E+02	4.385899E+00
544	7.476431E-01	4.865175E+01	1.999694E+00	2.097005E+00	1.190265E+02	4.520646E+00

545	7.473154E-01	4.915073E+01	2.004864E+00	1.998538E+00	1.381280E+02	4.586259E+00
546	7.477859E-01	4.983121E+01	1.989455E+00	2.074392E+00	1.098315E+02	4.426199E+00
547	7.494424E-01	4.936328E+01	2.002832E+00	2.129476E+00	1.233882E+02	4.633853E+00
548	7.488333E-01	4.635766E+01	2.010244E+00	2.080525E+00	1.308640E+02	4.432942E+00
549	7.481180E-01	4.752802E+01	2.027250E+00	2.106559E+00	1.293139E+02	4.700828E+00
550	7.491063E-01	4.946499E+01	1.981575E+00	2.070320E+00	1.338501E+02	4.745494E+00
551	7.484366E-01	4.994950E+01	2.014987E+00	2.074960E+00	1.392282E+02	4.883288E+00
552	7.479478E-01	4.761365E+01	2.036155E+00	2.113701E+00	1.074016E+02	4.631089E+00
553	7.489147E-01	4.761740E+01	1.988725E+00	2.037093E+00	1.320627E+02	4.598495E+00
554	7.459925E-01	4.807791E+01	1.999898E+00	2.076821E+00	1.087140E+02	4.755661E+00
555	7.373851E-01	4.784523E+01	2.017119E+00	2.114691E+00	1.291253E+02	4.559376E+00
556	7.464685E-01	4.910700E+01	1.991905E+00	2.059735E+00	1.095533E+02	4.015179E+00
557	7.467656E-01	4.850026E+01	1.968702E+00	2.077427E+00	1.338650E+02	4.267982E+00
558	7.464646E-01	5.054960E+01	2.032037E+00	2.024861E+00	1.256636E+02	4.573887E+00
559	7.475526E-01	4.996406E+01	1.987664E+00	2.054794E+00	1.342584E+02	4.448446E+00
560	7.485955E-01	5.132831E+01	2.009565E+00	2.043948E+00	1.510018E+02	4.280603E+00
561	7.489382E-01	5.074277E+01	2.020201E+00	2.081946E+00	1.456179E+02	4.756365E+00
562	7.492480E-01	5.119878E+01	2.005914E+00	2.080844E+00	1.222407E+02	4.872540E+00
563	7.467943E-01	5.055988E+01	2.018408E+00	2.109642E+00	1.364859E+02	4.692306E+00
564	7.482429E-01	5.051414E+01	2.000848E+00	2.106350E+00	1.393876E+02	4.645120E+00
565	7.460272E-01	5.050024E+01	2.005359E+00	2.081802E+00	1.392661E+02	4.437446E+00
566	7.470860E-01	5.075361E+01	2.036197E+00	2.043449E+00	1.366485E+02	4.282603E+00
567	7.470515E-01	5.022866E+01	2.020720E+00	2.042699E+00	1.312880E+02	4.786865E+00
568	7.472930E-01	5.088940E+01	2.011507E+00	2.074118E+00	1.377804E+02	4.505785E+00
569	7.447866E-01	5.105893E+01	1.978891E+00	2.110257E+00	1.423629E+02	4.123274E+00
570	7.442909E-01	5.082150E+01	2.014533E+00	2.069610E+00	1.010348E+02	4.688600E+00
571	7.405851E-01	4.925728E+01	2.018840E+00	2.091814E+00	1.479305E+02	4.517037E+00
572	7.473728E-01	4.944479E+01	2.008631E+00	2.032187E+00	1.503756E+02	4.536507E+00
573	7.442200E-01	5.040949E+01	2.002167E+00	2.103542E+00	1.509777E+02	4.431543E+00
574	7.463961E-01	5.119553E+01	2.017659E+00	2.051897E+00	1.470021E+02	4.687196E+00
575	7.368696E-01	4.998912E+01	2.022310E+00	2.093267E+00	1.440218E+02	4.726328E+00
576	7.362490E-01	5.061051E+01	1.963998E+00	2.116182E+00	1.676344E+02	4.420507E+00
577	7.412853E-01	4.970242E+01	2.021319E+00	2.107261E+00	1.466957E+02	4.866009E+00
578	7.386659E-01	5.029949E+01	2.010042E+00	2.066308E+00	1.411015E+02	4.717697E+00
579	7.342112E-01	4.992387E+01	2.002143E+00	2.046222E+00	1.334973E+02	4.739575E+00
580	7.401737E-01	5.012459E+01	2.003246E+00	2.106984E+00	1.450091E+02	4.654501E+00
581	7.346709E-01	5.034575E+01	1.998339E+00	2.050465E+00	8.818602E+01	4.658059E+00
582	7.339154E-01	5.090055E+01	2.028527E+00	2.071153E+00	1.526406E+02	4.782503E+00
583	7.456808E-01	4.995633E+01	2.025278E+00	2.072994E+00	1.426577E+02	4.778343E+00

584	7.418292E-01	5.129449E+01	2.024131E+00	2.045910E+00	1.506596E+02	4.743885E+00
585	7.445847E-01	5.093606E+01	2.011430E+00	2.079660E+00	1.388289E+02	4.496986E+00
586	7.364886E-01	5.102131E+01	2.005310E+00	2.074633E+00	1.479569E+02	4.650568E+00
587	7.372262E-01	5.021447E+01	2.010028E+00	2.093764E+00	1.103471E+02	4.552165E+00
588	7.359905E-01	5.029589E+01	2.019555E+00	2.102514E+00	1.454732E+02	4.698024E+00
589	7.368496E-01	5.047850E+01	2.013940E+00	2.087025E+00	1.468430E+02	4.610890E+00
590	7.362996E-01	4.966829E+01	2.000467E+00	2.099552E+00	1.463386E+02	4.589991E+00
591	7.444190E-01	4.996881E+01	2.011282E+00	2.095709E+00	1.478752E+02	4.521269E+00
592	7.382141E-01	5.144465E+01	2.016823E+00	2.058772E+00	1.359600E+02	4.626892E+00
593	7.381295E-01	5.122280E+01	1.991034E+00	2.089300E+00	1.356330E+02	4.692934E+00
594	7.467761E-01	5.037457E+01	1.995330E+00	2.085763E+00	9.265470E+01	4.552576E+00
595	7.491647E-01	5.040556E+01	2.010805E+00	2.099488E+00	1.482273E+02	4.731565E+00
596	7.433461E-01	5.097129E+01	2.012670E+00	2.071596E+00	1.320697E+02	4.580510E+00
597	7.384550E-01	4.914632E+01	2.014669E+00	2.073729E+00	1.471472E+02	4.620743E+00
598	7.455043E-01	4.962874E+01	2.022723E+00	2.069947E+00	1.476809E+02	4.402733E+00
599	7.429195E-01	4.920430E+01	1.947074E+00	2.072664E+00	1.489873E+02	4.598295E+00
600	7.498659E-01	5.130647E+01	1.947568E+00	2.114992E+00	1.721885E+02	4.800106E+00
601	7.456474E-01	5.082798E+01	1.952876E+00	2.082070E+00	1.303051E+02	4.770137E+00
602	7.458160E-01	5.142373E+01	1.916959E+00	2.037223E+00	1.409845E+02	4.563831E+00
603	7.474791E-01	5.064306E+01	1.985288E+00	2.103371E+00	1.493023E+02	4.763588E+00
604	7.463672E-01	5.124394E+01	1.924167E+00	2.096692E+00	1.158158E+02	4.503301E+00
605	7.463277E-01	5.035692E+01	1.999071E+00	2.032054E+00	1.020220E+02	4.699602E+00
606	7.399521E-01	5.100106E+01	1.983555E+00	2.060326E+00	1.441800E+02	4.527326E+00
607	7.519683E-01	5.022487E+01	1.994699E+00	2.092402E+00	1.515673E+02	4.901876E+00
608	7.488065E-01	5.166861E+01	1.969633E+00	2.072408E+00	1.515585E+02	4.576017E+00
609	7.427146E-01	5.099189E+01	1.941319E+00	2.087423E+00	1.567427E+02	4.667683E+00
610	7.471666E-01	5.116226E+01	1.981613E+00	2.107481E+00	1.504587E+02	4.932976E+00
611	7.480413E-01	5.067223E+01	1.626318E+00	2.084040E+00	1.463653E+02	4.897928E+00
612	7.480564E-01	5.134843E+01	1.832755E+00	2.098344E+00	1.520516E+02	4.691902E+00
613	7.482788E-01	5.078147E+01	1.780785E+00	2.096946E+00	1.476154E+02	4.677084E+00
614	7.460743E-01	5.028246E+01	1.756536E+00	2.072066E+00	1.493430E+02	4.539543E+00
615	7.493271E-01	5.014160E+01	1.560993E+00	2.104225E+00	1.553304E+02	4.805705E+00
616	7.505189E-01	5.159442E+01	1.778806E+00	2.083584E+00	1.304327E+02	4.514849E+00
617	7.331648E-01	5.086898E+01	1.900711E+00	2.093815E+00	1.610560E+02	4.665140E+00
618	7.472761E-01	5.132741E+01	1.938931E+00	2.050386E+00	1.488240E+02	4.522283E+00
619	7.490338E-01	4.950564E+01	1.997807E+00	2.060310E+00	1.414361E+02	4.721855E+00
620	7.502599E-01	5.086996E+01	1.951941E+00	2.082822E+00	1.624474E+02	4.723712E+00
621	7.513418E-01	5.065763E+01	1.982722E+00	2.069218E+00	1.731687E+02	4.625864E+00
622	7.486708E-01	5.129857E+01	1.968224E+00	2.065827E+00	1.495629E+02	4.684621E+00

623	7.482498E-01	4.937808E+01	1.988325E+00	2.087770E+00	1.633832E+02	4.636040E+00
624	7.492017E-01	5.092662E+01	1.866959E+00	2.067157E+00	1.198651E+02	4.495673E+00
625	7.460028E-01	5.071441E+01	1.717107E+00	2.098356E+00	5.036396E+01	4.646499E+00
626	7.491075E-01	5.088011E+01	1.691066E+00	2.107920E+00	1.207869E+02	4.656466E+00
627	7.496884E-01	5.019722E+01	1.900726E+00	2.056997E+00	1.543999E+02	4.374644E+00
628	7.475482E-01	5.049417E+01	1.884291E+00	2.073004E+00	9.936549E+01	4.707813E+00
629	7.359054E-01	5.025334E+01	1.509000E+00	2.116034E+00	1.551984E+02	4.771466E+00
630	7.403372E-01	5.078067E+01	1.877237E+00	2.078658E+00	9.455221E+01	4.660313E+00
631	7.343804E-01	4.989939E+01	1.703388E+00	2.128869E+00	1.026071E+02	4.597252E+00
632	7.349589E-01	5.128321E+01	1.847534E+00	2.072400E+00	5.817225E+01	4.445974E+00
633	7.474793E-01	5.072728E+01	1.915689E+00	2.065072E+00	1.642215E+02	4.589071E+00
634	7.404548E-01	5.047944E+01	1.945337E+00	2.088178E+00	1.233130E+02	4.608479E+00
635	7.514818E-01	4.975642E+01	1.901871E+00	2.048424E+00	1.011245E+02	4.669346E+00
636	7.492457E-01	5.022105E+01	1.991388E+00	2.116822E+00	1.277632E+02	4.806655E+00
637	7.494502E-01	5.025715E+01	1.925391E+00	2.061278E+00	1.511182E+02	4.798922E+00
638	7.509418E-01	5.065271E+01	1.944661E+00	2.089379E+00	1.466392E+02	4.714888E+00
639	7.472902E-01	4.983564E+01	1.962690E+00	2.093887E+00	1.550752E+02	4.714208E+00
640	7.504968E-01	5.124973E+01	1.974689E+00	2.087532E+00	1.368488E+02	4.419117E+00
641	7.506695E-01	5.063826E+01	1.437815E+00	2.097257E+00	8.887515E+01	4.660588E+00
642	7.504614E-01	5.110168E+01	1.676430E+00	2.092384E+00	1.455925E+02	4.536534E+00
643	7.473898E-01	5.055637E+01	1.845736E+00	2.072862E+00	1.234756E+02	4.761858E+00
644	7.453629E-01	5.096245E+01	1.858152E+00	2.098914E+00	1.454312E+02	4.726542E+00
645	7.487172E-01	5.026386E+01	1.921249E+00	2.095778E+00	1.252137E+02	4.776526E+00
646	7.487204E-01	5.064503E+01	1.921388E+00	2.096389E+00	1.165998E+02	4.511491E+00
647	7.489259E-01	5.008644E+01	1.960145E+00	2.096074E+00	1.416882E+02	4.657176E+00
648	7.506219E-01	5.051056E+01	1.369859E+00	2.078273E+00	1.513709E+02	4.422772E+00
649	7.498842E-01	5.052339E+01	1.659006E+00	2.091543E+00	1.373281E+02	4.429315E+00
650	7.495336E-01	5.094137E+01	1.883929E+00	2.075924E+00	1.445064E+02	4.677256E+00
651	7.489823E-01	4.963904E+01	1.922985E+00	2.111182E+00	1.080018E+02	4.700317E+00
652	7.459179E-01	4.977846E+01	1.996058E+00	2.107203E+00	1.282292E+02	4.622701E+00
653	7.477636E-01	4.911303E+01	1.944978E+00	2.076671E+00	1.371318E+02	4.606699E+00
654	7.465060E-01	5.059214E+01	1.977234E+00	2.086146E+00	1.402830E+02	4.925460E+00
655	7.491948E-01	5.006359E+01	2.002154E+00	2.086644E+00	1.192721E+02	4.815217E+00
656	7.453566E-01	5.131772E+01	2.016281E+00	2.086470E+00	1.646577E+02	4.473825E+00
657	7.485549E-01	5.012651E+01	1.999447E+00	2.071173E+00	1.436306E+02	4.790589E+00
658	7.441400E-01	5.081832E+01	2.001450E+00	2.104920E+00	1.491502E+02	4.509681E+00
659	7.349448E-01	5.040406E+01	2.012887E+00	2.056126E+00	1.299667E+02	4.756891E+00
660	7.424634E-01	4.927551E+01	2.018280E+00	2.087564E+00	1.433568E+02	4.789283E+00
661	7.349369E-01	5.007069E+01	2.011525E+00	2.111534E+00	1.567463E+02	4.816183E+00

662	7.148665E-01	5.102701E+01	2.017402E+00	2.060918E+00	1.186352E+02	4.501825E+00
663	7.407657E-01	5.017811E+01	1.987601E+00	2.049165E+00	1.353595E+02	4.778788E+00
664	7.495400E-01	5.130265E+01	2.011446E+00	2.076144E+00	1.481991E+02	4.532614E+00
665	7.488619E-01	5.066790E+01	1.988913E+00	2.088590E+00	1.506147E+02	4.676871E+00
666	7.494771E-01	4.868305E+01	2.002272E+00	2.047415E+00	1.301368E+02	4.786190E+00
667	7.419991E-01	4.954409E+01	1.984259E+00	2.092244E+00	1.086958E+02	4.561636E+00
668	7.307389E-01	5.100994E+01	1.870619E+00	2.045326E+00	1.559763E+02	4.748691E+00
669	7.353453E-01	5.059429E+01	1.839280E+00	1.999661E+00	1.552638E+02	4.647403E+00
670	7.458982E-01	5.057801E+01	1.998937E+00	2.071600E+00	1.580519E+02	4.856541E+00
671	7.477652E-01	5.020994E+01	2.000555E+00	2.077519E+00	1.222172E+02	4.553166E+00
672	7.337813E-01	5.125630E+01	1.962628E+00	2.044633E+00	1.710093E+02	4.358584E+00
673	7.451774E-01	5.096418E+01	2.007332E+00	2.037276E+00	1.533633E+02	4.722909E+00
674	7.478087E-01	5.138526E+01	2.006994E+00	2.033716E+00	1.534680E+02	4.798645E+00
675	7.498839E-01	5.017972E+01	2.002167E+00	2.037051E+00	1.479634E+02	4.837732E+00
676	7.461067E-01	4.961370E+01	2.002943E+00	2.027165E+00	1.554700E+02	4.765490E+00
677	7.471048E-01	5.022849E+01	2.009453E+00	1.987826E+00	1.422967E+02	4.966799E+00
678	7.449596E-01	4.948689E+01	2.011408E+00	1.963577E+00	1.593880E+02	4.686530E+00
679	7.469172E-01	4.993966E+01	2.007655E+00	2.024582E+00	1.069883E+02	4.881173E+00
680	7.481035E-01	5.147431E+01	2.013286E+00	1.933068E+00	1.245995E+02	4.640656E+00
681	7.458921E-01	4.977923E+01	2.002346E+00	2.015356E+00	1.562364E+02	4.903751E+00
682	7.428904E-01	5.010429E+01	2.014252E+00	2.061649E+00	1.519176E+02	4.657485E+00
683	7.495528E-01	4.963989E+01	1.987580E+00	2.102148E+00	1.484675E+02	4.417682E+00
684	7.492480E-01	5.109185E+01	1.998704E+00	2.061512E+00	1.500709E+02	4.658432E+00
685	7.474638E-01	5.097091E+01	2.015723E+00	2.044513E+00	1.523999E+02	4.763599E+00
686	7.481653E-01	5.106029E+01	2.013283E+00	2.078067E+00	1.591026E+02	4.810909E+00
687	7.461385E-01	5.050121E+01	2.009442E+00	2.108944E+00	1.575136E+02	4.802705E+00
688	7.411452E-01	5.160256E+01	2.020898E+00	2.065234E+00	1.575455E+02	4.632082E+00
689	7.496352E-01	4.927746E+01	2.014181E+00	2.061702E+00	1.597909E+02	4.834997E+00
690	7.500590E-01	5.018911E+01	2.004203E+00	2.068984E+00	1.257178E+02	4.863742E+00
691	7.495530E-01	5.031417E+01	1.987791E+00	2.063127E+00	1.505184E+02	4.733707E+00
692	7.483720E-01	5.044123E+01	2.009124E+00	2.085042E+00	1.479386E+02	4.792865E+00
693	7.391596E-01	5.049072E+01	2.003580E+00	2.075725E+00	1.576595E+02	4.690873E+00
694	7.500492E-01	5.016616E+01	2.011974E+00	2.103479E+00	1.517939E+02	4.835725E+00
695	7.467595E-01	4.905457E+01	2.003781E+00	2.091876E+00	1.486056E+02	4.597967E+00
696	7.461559E-01	4.936034E+01	2.011488E+00	2.073949E+00	1.652690E+02	4.679897E+00
697	7.476981E-01	5.062572E+01	1.998553E+00	2.084920E+00	1.501934E+02	4.635241E+00
698	7.455302E-01	4.997286E+01	1.981895E+00	2.081636E+00	1.493873E+02	4.701104E+00
699	7.451834E-01	5.047443E+01	2.006816E+00	2.066885E+00	1.400557E+02	4.756454E+00
700	7.496491E-01	5.096612E+01	1.997379E+00	2.102629E+00	1.585023E+02	4.683718E+00

701	7.479483E-01	5.067590E+01	2.020744E+00	2.079236E+00	1.090966E+02	4.902991E+00
702	7.484997E-01	5.090558E+01	2.004388E+00	2.087988E+00	1.384885E+02	4.624735E+00
703	7.501710E-01	5.030109E+01	1.997620E+00	2.107508E+00	1.573844E+02	4.802160E+00
704	7.506329E-01	4.973492E+01	1.951304E+00	2.063431E+00	1.712439E+02	4.651965E+00
705	7.472339E-01	4.821123E+01	2.004168E+00	2.074383E+00	1.492986E+02	4.643711E+00
706	7.450700E-01	5.089247E+01	2.011219E+00	2.066340E+00	1.104883E+02	4.735514E+00
707	7.433440E-01	5.045919E+01	2.006458E+00	2.077176E+00	1.399328E+02	4.711660E+00
708	7.440152E-01	5.080418E+01	2.008602E+00	2.069128E+00	1.174574E+02	4.703929E+00
709	7.377189E-01	4.978364E+01	2.011807E+00	2.049069E+00	1.344414E+02	4.517347E+00
710	7.407980E-01	4.998377E+01	2.010047E+00	2.081652E+00	1.544352E+02	4.842228E+00
711	7.474327E-01	4.941213E+01	2.006130E+00	2.082269E+00	1.528170E+02	4.895070E+00
712	7.485920E-01	5.072318E+01	2.013512E+00	2.107112E+00	1.585162E+02	4.674897E+00
713	7.478467E-01	4.993340E+01	2.000641E+00	2.099098E+00	1.340236E+02	4.583979E+00
714	7.447622E-01	5.060754E+01	2.014178E+00	2.107717E+00	1.472514E+02	4.799375E+00
715	7.388398E-01	4.770003E+01	2.023398E+00	2.095202E+00	1.430356E+02	4.446816E+00
716	7.436880E-01	5.040659E+01	2.013200E+00	2.095933E+00	1.604302E+02	4.614895E+00
717	7.464490E-01	4.740600E+01	2.007745E+00	2.088070E+00	1.275232E+02	4.663489E+00
718	7.453916E-01	5.012125E+01	2.016080E+00	2.084246E+00	1.576788E+02	4.657508E+00
719	7.502752E-01	4.908773E+01	2.003741E+00	2.098254E+00	1.642870E+02	4.578115E+00
720	7.484382E-01	4.990248E+01	2.015492E+00	2.087802E+00	1.769344E+02	4.531055E+00
721	7.488006E-01	4.970273E+01	1.987999E+00	2.071291E+00	1.555174E+02	4.753906E+00
722	7.457043E-01	5.005225E+01	2.012007E+00	2.093458E+00	1.396804E+02	4.923917E+00
723	7.465933E-01	4.992178E+01	2.003791E+00	2.089714E+00	1.589298E+02	4.657445E+00
724	7.489359E-01	5.109797E+01	2.007689E+00	2.086055E+00	1.600314E+02	4.707921E+00
725	7.481091E-01	5.100137E+01	1.994735E+00	2.070064E+00	1.197810E+02	4.774815E+00
726	7.498217E-01	5.145983E+01	2.015799E+00	2.085052E+00	1.516063E+02	4.820145E+00
727	7.460996E-01	5.070863E+01	2.000253E+00	2.097303E+00	1.479842E+02	4.815260E+00
728	7.422924E-01	5.127634E+01	1.997909E+00	2.097953E+00	1.646017E+02	4.818881E+00
729	7.416761E-01	4.935935E+01	2.007792E+00	2.099231E+00	1.074815E+02	4.645608E+00
730	7.465698E-01	5.136888E+01	1.997869E+00	2.090534E+00	1.322732E+02	4.738474E+00
731	7.428554E-01	5.036954E+01	2.012494E+00	2.090727E+00	1.419916E+02	4.803619E+00
732	7.437342E-01	4.838397E+01	2.000439E+00	2.076264E+00	1.269566E+02	4.498689E+00
733	7.467815E-01	5.042060E+01	2.012004E+00	2.044537E+00	1.528858E+02	4.859225E+00
734	7.485705E-01	5.087103E+01	1.998215E+00	2.106690E+00	1.534840E+02	4.773219E+00
735	7.481671E-01	5.045941E+01	1.996216E+00	2.085181E+00	1.563254E+02	4.656296E+00
736	7.480157E-01	5.157988E+01	1.975219E+00	2.087630E+00	1.312780E+02	4.686892E+00
737	7.450323E-01	5.125290E+01	2.001848E+00	2.075184E+00	1.344258E+02	4.797073E+00
738	7.428968E-01	5.050218E+01	2.014981E+00	2.072005E+00	1.560936E+02	4.745741E+00
739	7.452218E-01	5.088381E+01	2.004796E+00	2.093987E+00	1.557269E+02	4.845175E+00

740	7.486127E-01	5.135618E+01	2.006358E+00	2.087083E+00	1.287893E+02	4.813296E+00
741	7.431417E-01	5.010739E+01	2.012151E+00	2.097344E+00	1.152439E+02	4.792587E+00
742	7.475596E-01	4.979803E+01	1.999303E+00	2.089245E+00	1.509648E+02	4.908103E+00
743	7.418953E-01	4.834111E+01	2.006312E+00	2.059951E+00	1.365875E+02	4.912124E+00
744	7.410715E-01	5.058107E+01	2.006992E+00	2.109280E+00	1.324447E+02	4.726815E+00
745	7.484949E-01	5.036790E+01	1.995596E+00	2.077274E+00	1.362386E+02	4.740678E+00
746	7.377851E-01	5.148914E+01	2.004814E+00	2.074301E+00	1.469895E+02	4.867757E+00
747	7.389531E-01	5.083591E+01	2.008949E+00	2.070576E+00	1.278855E+02	4.901809E+00
748	7.408543E-01	5.026787E+01	2.017430E+00	2.104017E+00	1.336038E+02	4.908186E+00
749	7.353333E-01	5.016020E+01	2.009107E+00	2.066841E+00	1.240430E+02	4.745892E+00
750	7.382554E-01	5.139854E+01	2.000687E+00	2.082701E+00	1.498093E+02	4.752129E+00
751	7.503374E-01	4.983126E+01	2.000447E+00	2.086644E+00	1.564079E+02	4.492438E+00
752	7.412548E-01	5.087466E+01	2.015723E+00	2.052245E+00	1.683895E+02	4.673300E+00
753	7.454151E-01	5.013552E+01	1.988551E+00	2.076304E+00	1.599992E+02	4.785153E+00
754	7.461002E-01	5.132191E+01	1.997154E+00	2.063836E+00	1.274092E+02	4.969753E+00
755	7.456936E-01	4.970188E+01	2.013214E+00	2.048932E+00	1.553106E+02	4.807915E+00
756	7.403779E-01	5.027408E+01	2.004222E+00	2.061240E+00	1.665699E+02	4.821419E+00
757	7.450900E-01	4.941892E+01	2.009184E+00	2.106297E+00	1.280784E+02	4.668838E+00
758	7.484280E-01	5.069453E+01	2.002278E+00	2.084758E+00	1.460018E+02	4.630204E+00
759	7.486157E-01	5.011999E+01	2.003003E+00	2.065831E+00	1.625762E+02	4.839838E+00
760	7.391226E-01	5.137488E+01	2.004534E+00	2.063128E+00	1.418107E+02	4.822423E+00
761	7.388302E-01	4.926117E+01	2.001563E+00	2.078933E+00	1.671241E+02	4.813389E+00
762	7.453993E-01	4.981406E+01	1.995668E+00	2.084917E+00	1.665266E+02	4.485832E+00
763	7.468650E-01	5.047926E+01	1.983607E+00	2.063883E+00	1.685748E+02	4.722790E+00
764	7.369960E-01	4.938738E+01	2.007964E+00	2.093307E+00	1.721434E+02	4.912278E+00
765	7.447179E-01	4.971678E+01	2.010094E+00	2.045036E+00	1.725264E+02	4.884431E+00
766	7.470381E-01	5.101346E+01	2.003549E+00	2.084038E+00	1.702168E+02	4.661359E+00
767	7.390796E-01	5.065899E+01	1.985678E+00	2.044776E+00	1.744843E+02	4.777746E+00
768	7.437980E-01	5.132381E+01	1.955230E+00	2.053441E+00	1.826178E+02	4.332048E+00
769	7.470446E-01	5.084739E+01	2.000693E+00	2.037330E+00	1.724816E+02	4.754360E+00
770	7.425330E-01	5.121258E+01	2.008809E+00	2.063449E+00	1.721435E+02	4.807811E+00
771	7.477521E-01	5.076876E+01	1.996250E+00	2.071906E+00	1.636564E+02	4.786070E+00
772	7.487187E-01	5.045487E+01	1.995254E+00	2.040883E+00	1.621815E+02	4.771059E+00
773	7.492550E-01	5.076534E+01	2.001420E+00	2.052219E+00	1.697828E+02	4.749756E+00
774	7.430989E-01	5.021197E+01	2.002846E+00	2.083677E+00	1.595631E+02	4.851959E+00
775	7.481272E-01	5.010864E+01	2.001925E+00	2.071836E+00	1.650994E+02	4.616157E+00
776	7.510040E-01	5.116162E+01	1.990490E+00	1.994267E+00	1.697441E+02	4.741280E+00
777	7.479202E-01	5.038895E+01	2.003752E+00	2.052862E+00	1.548693E+02	4.869744E+00
778	7.503057E-01	5.157302E+01	2.009482E+00	2.080244E+00	1.503268E+02	4.723608E+00

779	7.485364E-01	5.066746E+01	2.005890E+00	2.067344E+00	1.279041E+02	4.920903E+00
780	7.468672E-01	4.962330E+01	2.000683E+00	2.069581E+00	1.623768E+02	4.820820E+00
781	7.396670E-01	5.066256E+01	2.000737E+00	2.064045E+00	1.591969E+02	4.791129E+00
782	7.413870E-01	5.104768E+01	2.004072E+00	2.074249E+00	1.622197E+02	4.738290E+00
783	7.478541E-01	5.067565E+01	2.008341E+00	2.038968E+00	1.640636E+02	4.592670E+00
784	7.497607E-01	4.943790E+01	2.009911E+00	2.073056E+00	1.743461E+02	4.583732E+00
785	7.500526E-01	4.986454E+01	2.006577E+00	2.075102E+00	1.666890E+02	4.625009E+00
786	7.500171E-01	5.088130E+01	2.001083E+00	2.048945E+00	1.409141E+02	4.795027E+00
787	7.511060E-01	5.044190E+01	2.010951E+00	1.987416E+00	1.634869E+02	4.809174E+00
788	7.496836E-01	5.101707E+01	1.989452E+00	2.059815E+00	1.570529E+02	4.770319E+00
789	7.499715E-01	4.880915E+01	2.001785E+00	2.080079E+00	1.577603E+02	4.693578E+00
790	7.363199E-01	5.078164E+01	1.997610E+00	2.052153E+00	1.570917E+02	4.738230E+00
791	7.475310E-01	5.009516E+01	2.015946E+00	2.075266E+00	1.265087E+02	4.875468E+00
792	7.461793E-01	5.073474E+01	2.010283E+00	2.047217E+00	1.580897E+02	4.834568E+00
793	7.500462E-01	5.031523E+01	2.009191E+00	2.073851E+00	1.439805E+02	4.853428E+00
794	7.489268E-01	5.045241E+01	2.008032E+00	2.078893E+00	1.550210E+02	4.787248E+00
795	7.445218E-01	5.014561E+01	2.004568E+00	2.094350E+00	1.474786E+02	4.580977E+00
796	7.457028E-01	5.089884E+01	2.008348E+00	2.075682E+00	1.420945E+02	4.748557E+00
797	7.472048E-01	5.080669E+01	2.005644E+00	2.072384E+00	1.413725E+02	4.844982E+00
798	7.426003E-01	5.084974E+01	2.003883E+00	2.076064E+00	1.429091E+02	4.783066E+00
799	7.449215E-01	4.904612E+01	2.009967E+00	2.067664E+00	1.290725E+02	4.688363E+00
800	7.402535E-01	5.060762E+01	1.951971E+00	2.066891E+00	1.428181E+02	4.739400E+00
801	7.391019E-01	5.065260E+01	2.014726E+00	2.084654E+00	1.587880E+02	4.710193E+00
802	7.435150E-01	4.981191E+01	1.999898E+00	2.069699E+00	1.587228E+02	4.600317E+00
803	7.407839E-01	5.006821E+01	2.004412E+00	2.084269E+00	1.214005E+02	4.526873E+00
804	7.436124E-01	5.039958E+01	1.992915E+00	2.088536E+00	1.410728E+02	4.793877E+00
805	7.417896E-01	5.009217E+01	1.999169E+00	2.078464E+00	1.620082E+02	4.714143E+00
806	7.478256E-01	5.110630E+01	2.003844E+00	2.065749E+00	1.328272E+02	4.822513E+00
807	7.446199E-01	4.863323E+01	1.989631E+00	2.065182E+00	1.393659E+02	4.842155E+00
808	7.452126E-01	4.993015E+01	1.989594E+00	2.085069E+00	1.336003E+02	4.739656E+00
809	7.504703E-01	4.826575E+01	1.983915E+00	2.081361E+00	1.610077E+02	4.666435E+00
810	7.511640E-01	5.046183E+01	1.992184E+00	2.064558E+00	1.280276E+02	4.758949E+00
811	7.483068E-01	4.943361E+01	2.005650E+00	2.017553E+00	1.389104E+02	4.771915E+00
812	7.503224E-01	5.007364E+01	1.995372E+00	2.045310E+00	1.168354E+02	4.721309E+00
813	7.491237E-01	4.727453E+01	2.004648E+00	2.030036E+00	1.499740E+02	4.720769E+00
814	7.492004E-01	4.853124E+01	1.986202E+00	2.066424E+00	1.653905E+02	4.723568E+00
815	7.490273E-01	4.771836E+01	1.987909E+00	2.052588E+00	1.670265E+02	4.653957E+00
816	7.494954E-01	4.882857E+01	1.989326E+00	2.046003E+00	1.803947E+02	4.523224E+00
817	7.493940E-01	5.052943E+01	1.998939E+00	2.050060E+00	1.348216E+02	4.855095E+00

818	7.488095E-01	5.110071E+01	2.000225E+00	2.054677E+00	1.674611E+02	4.884313E+00
819	7.429481E-01	5.029093E+01	1.990075E+00	2.069813E+00	1.479535E+02	4.562280E+00
820	7.449665E-01	5.044785E+01	1.995252E+00	2.041926E+00	1.552918E+02	4.879969E+00
821	7.438465E-01	5.037221E+01	2.009801E+00	2.059304E+00	1.511166E+02	4.803214E+00
822	7.434725E-01	5.122068E+01	2.005081E+00	2.061652E+00	1.351375E+02	4.849644E+00
823	7.415610E-01	5.082175E+01	1.844655E+00	2.063349E+00	1.270834E+02	4.923808E+00
824	7.461001E-01	5.129994E+01	1.964998E+00	2.059537E+00	1.712481E+02	4.853173E+00
825	7.471554E-01	5.090768E+01	1.937837E+00	2.051198E+00	1.293657E+02	4.829765E+00
826	7.452009E-01	4.923180E+01	1.998840E+00	2.057701E+00	1.308936E+02	4.891293E+00
827	7.469836E-01	5.046506E+01	1.717905E+00	2.064776E+00	1.613231E+02	4.715120E+00
828	7.453026E-01	4.969690E+01	1.772628E+00	2.053471E+00	1.620082E+02	4.793766E+00
829	7.452330E-01	5.043831E+01	1.903985E+00	2.062457E+00	1.588559E+02	4.815388E+00
830	7.442479E-01	5.081842E+01	1.966367E+00	2.069151E+00	1.096016E+02	4.690070E+00
831	7.436742E-01	5.067162E+01	1.990883E+00	2.073600E+00	1.461490E+02	4.934190E+00
832	7.473573E-01	5.126217E+01	1.962076E+00	2.033021E+00	1.559123E+02	4.539513E+00
833	7.404753E-01	5.027942E+01	2.001969E+00	2.055543E+00	1.590362E+02	4.725133E+00
834	7.452156E-01	5.082065E+01	2.002855E+00	2.058461E+00	1.575019E+02	4.893696E+00
835	7.466774E-01	5.025111E+01	2.007225E+00	2.086531E+00	1.628444E+02	4.887937E+00
836	7.495532E-01	4.951479E+01	1.999005E+00	2.065090E+00	1.547509E+02	4.744797E+00
837	7.428319E-01	4.984527E+01	1.994854E+00	2.055063E+00	1.438774E+02	4.659694E+00
838	7.491518E-01	5.102359E+01	2.006678E+00	2.049552E+00	1.584456E+02	4.335829E+00
839	7.504574E-01	4.893014E+01	2.005422E+00	2.077968E+00	1.582719E+02	4.736141E+00
840	7.498031E-01	5.037857E+01	2.014821E+00	2.068797E+00	1.640208E+02	4.731862E+00
841	7.488516E-01	4.881803E+01	1.991220E+00	2.072992E+00	1.565752E+02	4.785481E+00
842	7.484632E-01	4.928944E+01	1.982915E+00	2.063072E+00	1.578975E+02	4.364864E+00
843	7.442414E-01	4.892589E+01	2.006676E+00	2.066656E+00	1.493928E+02	4.689855E+00
844	7.476942E-01	4.973402E+01	1.995627E+00	2.065477E+00	1.404709E+02	4.722921E+00
845	7.428379E-01	4.929750E+01	2.002005E+00	2.059961E+00	1.604666E+02	4.545739E+00
846	7.478307E-01	4.991123E+01	1.989772E+00	2.072363E+00	1.617652E+02	4.501894E+00
847	7.546168E-01	4.909889E+01	1.995679E+00	2.056880E+00	1.589429E+02	4.832883E+00
848	7.392615E-01	4.982201E+01	1.999630E+00	2.087645E+00	1.763983E+02	4.822577E+00
849	7.498747E-01	5.045202E+01	2.005476E+00	2.094574E+00	1.680523E+02	4.855593E+00
850	7.418415E-01	5.125616E+01	1.974517E+00	2.059899E+00	1.628569E+02	4.841443E+00
851	7.452212E-01	5.038995E+01	2.003488E+00	2.100841E+00	1.552790E+02	4.354118E+00
852	7.433027E-01	5.021297E+01	1.990497E+00	2.068621E+00	1.564756E+02	4.649226E+00
853	7.442205E-01	5.020630E+01	1.994535E+00	2.084675E+00	1.602066E+02	4.599576E+00
854	7.463095E-01	5.002083E+01	2.000911E+00	2.059656E+00	1.636050E+02	4.792078E+00
855	7.484243E-01	4.990626E+01	1.992694E+00	2.078315E+00	1.615051E+02	4.778746E+00
856	7.432570E-01	5.085117E+01	2.001867E+00	2.059007E+00	1.646077E+02	4.887626E+00

857	7.441249E-01	4.844686E+01	1.996864E+00	2.075149E+00	1.668030E+02	4.804700E+00
858	7.488717E-01	4.999043E+01	2.007755E+00	2.071973E+00	1.551715E+02	4.710468E+00
859	7.495904E-01	4.832393E+01	2.011456E+00	2.068290E+00	1.501605E+02	4.808170E+00
860	7.449253E-01	5.043076E+01	2.001589E+00	2.048886E+00	1.168146E+02	4.875281E+00
861	7.431050E-01	5.090325E+01	1.986299E+00	2.076077E+00	1.513571E+02	4.665175E+00
862	7.484385E-01	5.089406E+01	1.984312E+00	2.078476E+00	1.676266E+02	4.874796E+00
863	7.496771E-01	5.031972E+01	2.001618E+00	2.065532E+00	1.656983E+02	4.896085E+00
864	7.439529E-01	5.102824E+01	1.949992E+00	2.072254E+00	1.695260E+02	4.634425E+00
865	7.431642E-01	5.130142E+01	1.999183E+00	2.063480E+00	1.632556E+02	4.975973E+00
866	7.437888E-01	5.108662E+01	1.989917E+00	2.104089E+00	1.581905E+02	4.821277E+00
867	7.420509E-01	5.041104E+01	2.002798E+00	2.093454E+00	1.638094E+02	4.718243E+00
868	7.428044E-01	4.981128E+01	2.001880E+00	2.099304E+00	1.321684E+02	4.867910E+00
869	7.432346E-01	4.798802E+01	1.993923E+00	2.092605E+00	1.687221E+02	4.937624E+00
870	7.492443E-01	4.955258E+01	2.001715E+00	2.080910E+00	1.617547E+02	4.797205E+00
871	7.510521E-01	4.942790E+01	1.994652E+00	2.085705E+00	1.509324E+02	4.732880E+00
872	7.500680E-01	4.963552E+01	2.004422E+00	2.069530E+00	1.519037E+02	4.901386E+00
873	7.471610E-01	4.978960E+01	1.991805E+00	2.090921E+00	1.701865E+02	4.896766E+00
874	7.479115E-01	5.053204E+01	2.000337E+00	2.095179E+00	1.286133E+02	4.768700E+00
875	7.493919E-01	4.862983E+01	2.009343E+00	2.077135E+00	1.653294E+02	4.628916E+00
876	7.502579E-01	4.868889E+01	1.992673E+00	2.076757E+00	1.620030E+02	4.707893E+00
877	7.433720E-01	4.847827E+01	2.004884E+00	2.094795E+00	1.425309E+02	4.906323E+00
878	7.325801E-01	4.916705E+01	2.003547E+00	2.078221E+00	1.549890E+02	4.628237E+00
879	7.323417E-01	4.862530E+01	1.982695E+00	2.070370E+00	1.655663E+02	4.909042E+00
880	7.313399E-01	4.978230E+01	1.992355E+00	2.087434E+00	1.554988E+02	4.607888E+00
881	7.320302E-01	4.816498E+01	1.996449E+00	2.092293E+00	1.713551E+02	4.769180E+00
882	7.330661E-01	4.978649E+01	2.012743E+00	2.083804E+00	1.543778E+02	4.829090E+00
883	7.298114E-01	4.834072E+01	1.982037E+00	2.093673E+00	1.339316E+02	4.874971E+00
884	7.317697E-01	4.908570E+01	1.997708E+00	2.092265E+00	1.691500E+02	4.824545E+00
885	7.309023E-01	4.790093E+01	1.991705E+00	2.041871E+00	1.574108E+02	4.242356E+00
886	7.361949E-01	4.861821E+01	1.987976E+00	2.069963E+00	1.680201E+02	4.910975E+00
887	7.325423E-01	4.642212E+01	2.007742E+00	2.073863E+00	1.511674E+02	4.842528E+00
888	7.423271E-01	4.989832E+01	1.997105E+00	2.080492E+00	1.128582E+02	4.884672E+00
889	7.454731E-01	5.039932E+01	2.002598E+00	2.079451E+00	1.675040E+02	4.812300E+00
890	7.482444E-01	5.106256E+01	1.996375E+00	2.095346E+00	1.571457E+02	4.808284E+00
891	7.496190E-01	4.963831E+01	1.976862E+00	2.075591E+00	1.631338E+02	4.831994E+00
892	7.482645E-01	5.077840E+01	1.991099E+00	2.074058E+00	1.618724E+02	4.827224E+00
893	7.481381E-01	4.805303E+01	2.002773E+00	2.096283E+00	1.658397E+02	4.886232E+00
894	7.480475E-01	4.811865E+01	1.990539E+00	2.073356E+00	1.612538E+02	4.873874E+00
895	7.437713E-01	4.936093E+01	2.002512E+00	2.093672E+00	1.467136E+02	4.786167E+00

896	7.468370E-01	4.949611E+01	1.968195E+00	2.065305E+00	1.730164E+02	4.687136E+00
897	7.480554E-01	4.970278E+01	1.992401E+00	2.083799E+00	1.447542E+02	4.924599E+00
898	7.505526E-01	5.056745E+01	2.009699E+00	2.080773E+00	1.556836E+02	4.850842E+00
899	7.497300E-01	4.948914E+01	1.989909E+00	2.092320E+00	1.578140E+02	4.913256E+00
900	7.473857E-01	5.030184E+01	1.995252E+00	2.071821E+00	1.476589E+02	4.774944E+00
901	7.476389E-01	5.014795E+01	1.996214E+00	2.077223E+00	1.458902E+02	4.795968E+00
902	7.470776E-01	5.084999E+01	2.001109E+00	2.091673E+00	1.582640E+02	4.828447E+00
903	7.448839E-01	5.047769E+01	1.998825E+00	2.094546E+00	1.660614E+02	4.843453E+00
904	7.459384E-01	4.980707E+01	1.997008E+00	2.079971E+00	1.413497E+02	4.947533E+00
905	7.503813E-01	4.907292E+01	1.985654E+00	2.079408E+00	1.187370E+02	4.669836E+00
906	7.479482E-01	4.924199E+01	1.995796E+00	2.070216E+00	1.515835E+02	4.806011E+00
907	7.489786E-01	5.019285E+01	2.002573E+00	2.069787E+00	1.596709E+02	4.673131E+00
908	7.444762E-01	5.011631E+01	1.997042E+00	2.071328E+00	1.415682E+02	4.744047E+00
909	7.482487E-01	5.032424E+01	1.987149E+00	2.077367E+00	1.670758E+02	4.926373E+00
910	7.502967E-01	5.089990E+01	2.002998E+00	2.071177E+00	1.682077E+02	4.716261E+00
911	7.430236E-01	5.037869E+01	1.997757E+00	2.055089E+00	1.467372E+02	4.645661E+00
912	7.486763E-01	5.047261E+01	2.000946E+00	2.070800E+00	1.782504E+02	4.732969E+00
913	7.489565E-01	5.032546E+01	1.984148E+00	2.055435E+00	1.672817E+02	4.767117E+00
914	7.481142E-01	5.076996E+01	1.997627E+00	2.063917E+00	1.653622E+02	5.012963E+00
915	7.500293E-01	5.060546E+01	2.000770E+00	2.087485E+00	1.619584E+02	4.748305E+00
916	7.507206E-01	5.079956E+01	1.994802E+00	2.078045E+00	1.553149E+02	4.844837E+00
917	7.454989E-01	5.066472E+01	1.984579E+00	2.089309E+00	1.425169E+02	4.795291E+00
918	7.457339E-01	5.091440E+01	1.989463E+00	2.072319E+00	1.408639E+02	4.772786E+00
919	7.492143E-01	4.976292E+01	2.006026E+00	2.081098E+00	1.617317E+02	4.870810E+00
920	7.453179E-01	5.117362E+01	1.999869E+00	2.063192E+00	1.508222E+02	4.827142E+00
921	7.457964E-01	5.039706E+01	2.003087E+00	2.092041E+00	1.658845E+02	4.669120E+00
922	7.455757E-01	5.100858E+01	1.988632E+00	2.085649E+00	1.562713E+02	4.857350E+00
923	7.500044E-01	5.072960E+01	1.991131E+00	2.078779E+00	1.349582E+02	4.725301E+00
924	7.501569E-01	4.941518E+01	2.000003E+00	2.083153E+00	1.552025E+02	4.722826E+00
925	7.495069E-01	4.965217E+01	1.984017E+00	2.110739E+00	1.465799E+02	4.677340E+00
926	7.500711E-01	5.080118E+01	2.009418E+00	2.071317E+00	1.595083E+02	4.773206E+00
927	7.504159E-01	5.001234E+01	1.989315E+00	2.082419E+00	1.645007E+02	4.884033E+00
928	7.530159E-01	5.129341E+01	1.892262E+00	2.084392E+00	1.117501E+02	4.701039E+00
929	7.498433E-01	5.021385E+01	1.990129E+00	2.081777E+00	1.660501E+02	4.869097E+00
930	7.494389E-01	5.082661E+01	1.973386E+00	2.096301E+00	1.504747E+02	4.369642E+00
931	7.501445E-01	4.961902E+01	1.970965E+00	2.096021E+00	1.588312E+02	4.535084E+00
932	7.532257E-01	5.096672E+01	1.967754E+00	2.092772E+00	1.508823E+02	4.563833E+00
933	7.458501E-01	4.940030E+01	1.998023E+00	2.081221E+00	1.622709E+02	3.760509E+00
934	7.452552E-01	5.056054E+01	1.990792E+00	2.084027E+00	1.441196E+02	4.434397E+00

935	7.493060E-01	5.008401E+01	1.993917E+00	2.081732E+00	1.573430E+02	4.379710E+00
936	7.473539E-01	5.065632E+01	2.002222E+00	2.065356E+00	1.585360E+02	4.659064E+00
937	7.440574E-01	4.924499E+01	2.002882E+00	2.077968E+00	1.573583E+02	4.132096E+00
938	7.503349E-01	4.878799E+01	1.994357E+00	2.079391E+00	1.442696E+02	4.339778E+00
939	7.490918E-01	4.859217E+01	2.008123E+00	2.089378E+00	1.621316E+02	4.305363E+00
940	7.498150E-01	5.017567E+01	1.994946E+00	2.090361E+00	1.544853E+02	4.228806E+00
941	7.503347E-01	4.920629E+01	1.976377E+00	2.083516E+00	1.531956E+02	4.186620E+00
942	7.483122E-01	5.099088E+01	1.963460E+00	2.072249E+00	1.583741E+02	4.293390E+00
943	7.473623E-01	5.041256E+01	1.953396E+00	2.087948E+00	1.709611E+02	4.411287E+00
944	7.479379E-01	5.097753E+01	1.975269E+00	2.082419E+00	1.713640E+02	4.217720E+00
945	7.507897E-01	4.935833E+01	1.959527E+00	2.087875E+00	1.663038E+02	4.341934E+00
946	7.483032E-01	5.028155E+01	1.723987E+00	2.091181E+00	1.563394E+02	4.326627E+00
947	7.469820E-01	4.820921E+01	1.674019E+00	2.067920E+00	1.641913E+02	4.375523E+00
948	7.483316E-01	4.911792E+01	1.965395E+00	2.099957E+00	1.558373E+02	4.300171E+00
949	7.493461E-01	4.969877E+01	1.775654E+00	2.082345E+00	1.601549E+02	4.333676E+00
950	7.497817E-01	4.906292E+01	1.958000E+00	2.084119E+00	1.407142E+02	4.295187E+00
951	7.488598E-01	4.708647E+01	1.947668E+00	2.079344E+00	1.709210E+02	4.360904E+00
952	7.474381E-01	4.934382E+01	1.915981E+00	2.068795E+00	1.458156E+02	4.363555E+00
953	7.447097E-01	4.966574E+01	1.862037E+00	2.025661E+00	1.672510E+02	4.165076E+00
954	7.474198E-01	5.039344E+01	1.946724E+00	2.064727E+00	1.666380E+02	4.361906E+00
955	7.456240E-01	4.914437E+01	1.759116E+00	2.073061E+00	1.621362E+02	4.334009E+00
956	7.381501E-01	4.872828E+01	1.928318E+00	2.109975E+00	1.481508E+02	4.302422E+00
957	7.393527E-01	5.061610E+01	1.957854E+00	2.109827E+00	1.639355E+02	4.341053E+00
958	7.365883E-01	4.985948E+01	1.955073E+00	2.091954E+00	1.627588E+02	4.343671E+00
959	7.432186E-01	4.818605E+01	1.803018E+00	2.096626E+00	1.598646E+02	4.383351E+00
960	7.467368E-01	4.831744E+01	1.846202E+00	2.082047E+00	1.816507E+02	4.211856E+00
961	7.489160E-01	4.841437E+01	1.978844E+00	2.091723E+00	1.788784E+02	4.241598E+00
962	7.481767E-01	4.935979E+01	1.980843E+00	2.091608E+00	1.755939E+02	4.168813E+00
963	7.447116E-01	4.753580E+01	1.982233E+00	2.092182E+00	1.678993E+02	4.404609E+00
964	7.419882E-01	4.812099E+01	1.983780E+00	2.074861E+00	1.401190E+02	4.286354E+00
965	7.422476E-01	4.824247E+01	1.974187E+00	2.109359E+00	1.574212E+02	4.245551E+00
966	7.476989E-01	4.808243E+01	1.981441E+00	2.101842E+00	1.773431E+02	4.340196E+00
967	7.479128E-01	4.830040E+01	1.982834E+00	2.096058E+00	1.509080E+02	4.332578E+00
968	7.496532E-01	4.987020E+01	1.993296E+00	2.073865E+00	1.631948E+02	4.320232E+00
969	7.452117E-01	4.977469E+01	1.983275E+00	2.112237E+00	1.636134E+02	4.884515E+00
970	7.432787E-01	5.085830E+01	1.999362E+00	2.102938E+00	1.713646E+02	4.708904E+00
971	7.432902E-01	5.043912E+01	1.981967E+00	2.101384E+00	1.524578E+02	4.710578E+00
972	7.453421E-01	5.043974E+01	1.985711E+00	2.097695E+00	1.680228E+02	4.807054E+00
973	7.497329E-01	4.954898E+01	1.979368E+00	2.091394E+00	1.700702E+02	4.757016E+00

974	7.496835E-01	4.868575E+01	1.987966E+00	2.096277E+00	1.704676E+02	4.790309E+00
975	7.492146E-01	4.771703E+01	1.987277E+00	2.117103E+00	1.466550E+02	4.806303E+00
976	7.508212E-01	4.965623E+01	1.960353E+00	2.088830E+00	1.926870E+02	4.734094E+00
977	7.501020E-01	4.981695E+01	1.969521E+00	2.098555E+00	1.414495E+02	4.822823E+00
978	7.482741E-01	5.064901E+01	1.997722E+00	2.086446E+00	1.715802E+02	4.818620E+00
979	7.499526E-01	5.014523E+01	1.981162E+00	2.088462E+00	1.438125E+02	4.798663E+00
980	7.521716E-01	5.046623E+01	1.995099E+00	2.080706E+00	1.723486E+02	4.669319E+00
981	7.462775E-01	4.887153E+01	1.987480E+00	2.096945E+00	1.600381E+02	4.660412E+00
982	7.322047E-01	5.019321E+01	1.977617E+00	2.094066E+00	1.506006E+02	4.708979E+00
983	7.484407E-01	4.867572E+01	1.968634E+00	2.102316E+00	1.572874E+02	4.668797E+00
984	7.461632E-01	5.027118E+01	1.989594E+00	2.098608E+00	1.575191E+02	4.774479E+00
985	7.509593E-01	4.876104E+01	1.982649E+00	2.089030E+00	1.656560E+02	4.674721E+00
986	7.470214E-01	4.960455E+01	1.984803E+00	2.091196E+00	1.410810E+02	4.823495E+00
987	7.443739E-01	5.006385E+01	1.980746E+00	2.098061E+00	1.693832E+02	4.771831E+00
988	7.431588E-01	5.073674E+01	1.974231E+00	2.079988E+00	1.687961E+02	4.816251E+00
989	7.441038E-01	5.036256E+01	1.935526E+00	2.084842E+00	1.728359E+02	4.741761E+00
990	7.446482E-01	5.083158E+01	1.940128E+00	2.089424E+00	1.637487E+02	4.811080E+00
991	7.430981E-01	5.056985E+01	1.968114E+00	2.101384E+00	1.555965E+02	4.632987E+00
992	7.490907E-01	5.049726E+01	1.923286E+00	2.079135E+00	1.826898E+02	4.607057E+00
993	7.480672E-01	5.030702E+01	1.977569E+00	2.101523E+00	1.736690E+02	4.682370E+00
994	7.439884E-01	5.132905E+01	1.979505E+00	2.090038E+00	1.607265E+02	4.865425E+00
995	7.433329E-01	4.982699E+01	1.989622E+00	2.093619E+00	1.463379E+02	4.876403E+00
996	7.427402E-01	5.092373E+01	1.986981E+00	2.115519E+00	1.545757E+02	4.695564E+00
997	7.475494E-01	5.044929E+01	1.978501E+00	2.094710E+00	1.599949E+02	4.826085E+00
998	7.488794E-01	5.082889E+01	1.978025E+00	2.077307E+00	1.698140E+02	4.810939E+00
999	7.455295E-01	5.008934E+01	1.963679E+00	2.105005E+00	1.627767E+02	4.780460E+00
1000	7.523871E-01	5.071648E+01	1.992764E+00	2.092545E+00	1.549429E+02	4.849531E+00
1100	7.465309E-01	4.980812E+01	1.984502E+00	1.948507E+00	1.448939E+02	4.771661E+00
1200	7.516845E-01	5.086538E+01	1.956610E+00	2.066515E+00	1.634513E+02	4.618696E+00
1300	7.524872E-01	5.081832E+01	1.988692E+00	1.987441E+00	1.529353E+02	4.662723E+00
1400	7.508400E-01	5.166194E+01	2.005216E+00	2.000421E+00	1.687784E+02	4.759935E+00
1500	7.370907E-01	5.050241E+01	1.983858E+00	1.967240E+00	1.701794E+02	4.733629E+00
1600	7.321220E-01	5.109718E+01	1.885362E+00	1.986690E+00	1.898402E+02	4.801434E+00
1700	7.486486E-01	5.122507E+01	1.953156E+00	2.048915E+00	1.639910E+02	4.701581E+00
1800	7.502124E-01	5.101175E+01	1.988382E+00	1.999387E+00	1.905722E+02	4.594454E+00
1900	7.502081E-01	5.098647E+01	1.929633E+00	1.935262E+00	1.905517E+02	4.573024E+00
2000	7.480437E-01	5.143470E+01	1.938225E+00	2.053214E+00	1.878374E+02	4.624766E+00
2100	7.501736E-01	5.101817E+01	1.948896E+00	2.042571E+00	1.787151E+02	4.476880E+00
2200	7.499727E-01	5.108914E+01	1.944593E+00	2.014136E+00	1.835957E+02	4.387619E+00

2300	7.496143E-01	5.107313E+01	1.956234E+00	1.992302E+00	1.891458E+02	4.367597E+00
2400	7.471540E-01	5.080141E+01	1.935376E+00	1.984354E+00	1.991228E+02	4.260719E+00
2500	7.475036E-01	5.086055E+01	1.885888E+00	1.927978E+00	1.986018E+02	4.123653E+00
2600	7.440488E-01	5.114409E+01	1.844356E+00	1.930056E+00	1.989158E+02	4.185072E+00
2700	7.474971E-01	5.123333E+01	1.810184E+00	1.878411E+00	1.966354E+02	4.169596E+00
2800	7.490997E-01	5.091742E+01	1.841413E+00	1.855803E+00	2.085384E+02	4.188590E+00
2900	7.442835E-01	4.953212E+01	1.602215E+00	1.617135E+00	2.141124E+02	3.696762E+00
3000	7.440841E-01	5.035002E+01	1.363071E+00	1.401248E+00	2.229138E+02	3.196750E+00
3100	7.439168E-01	5.046112E+01	1.221136E+00	1.243959E+00	2.362453E+02	2.757672E+00
3200	7.437983E-01	5.049887E+01	1.197887E+00	1.202122E+00	2.372216E+02	1.612788E+00
4000					2.466491E+02	
5000					2.626056E+02	
6000					2.863307E+02	
7000					3.112185E+02	
8000					3.171770E+02	
9000					3.292000E+02	
10000					3.385055E+02	
20000					3.663787E+02	
30000					3.830595E+02	