ADI for Reaction-Diffusion Systems

Generated by Doxygen 1.8.6

Thu Apr 23 2015 14:33:37

Contents

1 Module Index **1**

1.1 Modules 1

2 Namespace Index **3**

2.1 Namespace List 3

3 Class Index **5**

3.1 Class List 5

4 Module Documentation **7**

4.1 Diagonals of the matrix. 7

4.1.1 Detailed Description 7

5 Namespace Documentation **9**

5.1 TriDiagMatrixSolver Namespace Reference 9

5.1.1 Detailed Description 9

5.1.2 Function Documentation 9

5.1.2.1 solve 9

6 Class Documentation **11**

6.1 GrayScott Class Reference 11

6.1.1 Member Function Documentation 11

6.1.1.1 print_fields 11

6.1.1.2 run 11

6.2 TriDiagMatrix Class Reference 11

6.2.1 Constructor & Destructor Documentation 12

6.2.1.1 TriDiagMatrix 12

6.2.1.2 TriDiagMatrix 12

Index **13**

Chapter 1

Module Index

1.1 Modules

Here is a list of all modules:

Diagonals of the matrix. 7

Chapter 2

Namespace Index

2.1 Namespace List

Here is a list of all documented namespaces with brief descriptions:

TriDiagMatrixSolver 9

Chapter 3

Class Index

3.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

GrayScott 11
TriDiagMatrix 11

Chapter 4

Module Documentation

4.1 Diagonals of the matrix.

4.1.1 Detailed Description

They all have the same length (n_), but have 0 values where they are out of the matrix. The indices determine the row.

| m0 u0 0 | | l1 m1 u1 | | 0 l2 m2 |

i.e.: l_[0] and u_[2] are 0.

Chapter 5

Namespace Documentation

5.1 TriDiagMatrixSolver Namespace Reference

Functions

- void solve (const TriDiagMatrix &mat, const std::vector< double > &rhs, double *result, unsigned int inc)

5.1.1 Detailed Description

Solver for a tridiagonal matrix system.

5.1.2 Function Documentation

5.1.2.1 void TriDiagMatrixSolver::solve (const TriDiagMatrix & *mat*, const std::vector< double > & *rhs*, double * *result*, unsigned int *inc*)

Solve a tridiagonal matrix system.

Parameters

mat	tridiagonal matrix
rhs	right-hand side of the system
result	vector for the result, pointer to the first element to store
inc	increment for the elements of the result

Chapter 6

Class Documentation

6.1 GrayScott Class Reference

Public Member Functions

- **GrayScott** (int N, double L, double dt, double Du, double Dv, double F, double k, int nSteps)
- void run ()
- void print_fields (std::string uName, std::string vName)

6.1.1 Member Function Documentation

6.1.1.1 void GrayScott::print_fields (std::string *uName,* std::string *vName*)

Print the fields to the specified file.

Parameters

uName	filename of the file to print u to
vName	filename of the file to print v to

6.1.1.2 void GrayScott::run ( )

Run the simulation.

The documentation for this class was generated from the following files:

- grayscott.hpp
- grayscott.cpp

6.2 TriDiagMatrix Class Reference

Public Member Functions

- TriDiagMatrix ()
- TriDiagMatrix (int N, double l, double m, double u)
- int **size** () const
- std::vector< double > **getL** () const
- std::vector< double > **getM** () const
- std::vector< double > **getU** () const

Friends

- std::ostream & **operator**<< (std::ostream &os, const TriDiagMatrix &matrix)

6.2.1 Constructor & Destructor Documentation

6.2.1.1 TriDiagMatrix::TriDiagMatrix ( )

Default constructor

6.2.1.2 TriDiagMatrix::TriDiagMatrix (int *N*, double *l*, double *m*, double *u*)

Construct an object of the type TriDiagMatrix

Parameters

n	size of the matrix
l	value on the lower diagonal
m	value on the middle diagonal
u	value on the upper diagonal

The documentation for this class was generated from the following files:

- tridiagmatrix.hpp
- tridiagmatrix.cpp

Index

Diagonals of the matrix., 7

GrayScott, 11
    print_fields, 11
    run, 11

print_fields
    GrayScott, 11

run
    GrayScott, 11

solve
    TriDiagMatrixSolver, 9

TriDiagMatrix, 11
    TriDiagMatrix, 12
    TriDiagMatrix, 12
TriDiagMatrixSolver, 9
    solve, 9