Discrete Fourier Transform

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1.1   Class List

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

    DiscreteFourierAnalysis   **1**

2   File Index

2.1   File List

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

    DiscreteFourierAnalysis.cpp   **3**

    DiscreteFourierAnalysis.hpp   **3**

3   Class Documentation

3.1   DiscreteFourierAnalysis Class Reference

Public Member Functions

- std::vector< double > ∗ GetImInv ()
- std::vector< double > ∗ GetImTrans ()

- std::vector< double > ∗ GetModInv ()
- std::vector< double > ∗ GetModTrans ()
- std::vector< double > ∗ GetReInv ()
- std::vector< double > ∗ GetReTrans ()
- void SetImSig (std::vector< double > &temp)
- void SetReSig (std::vector< double > &temp)
- void DoInverseTransform (void)
- void DoTransform (void)
- void SignalSizeCheck (void)

3.1.1 Member Function Documentation

3.1.1.1 void DiscreteFourierAnalysis::DoInverseTransform (void)

Performs the DFT

3.1.1.2 void DiscreteFourierAnalysis::DoTransform (void)

Performs the inverse DFT

3.1.1.3 std::vector<double>∗ DiscreteFourierAnalysis::GetImInv ( ) `[inline]`

Get the imaginary part of the inverse DFT

3.1.1.4 std::vector<double>∗ DiscreteFourierAnalysis::GetImTrans ( ) `[inline]`

Get the imaginary part of the DFT

3.1.1.5 std::vector<double>∗ DiscreteFourierAnalysis::GetModInv ( ) `[inline]`

Get the modulus of the inverse DFT

3.1.1.6 std::vector<double>∗ DiscreteFourierAnalysis::GetModTrans ( ) `[inline]`

Get the Modulus of the DFT

3.1.1.7 std::vector<double>∗ DiscreteFourierAnalysis::GetReInv ( ) `[inline]`

Get the real part of the inverse DFT

3.1.1.8 std::vector<double>∗ DiscreteFourierAnalysis::GetReTrans ( ) `[inline]`

Get the real part of the DFT

3.1.1.9 void DiscreteFourierAnalysis::SetImSig (std::vector< double > & *temp*) `[inline]`

Set the imaginary part of the input signal. This part can be of zero size.

3.1.1.10 void DiscreteFourierAnalysis::SetReSig (std::vector< double > & *temp*) `[inline]`

Set the real part of the input signal.

3.1.1.11 void DiscreteFourierAnalysis::SignalSizeCheck (void)

Check that the number of points in the real signal match the number of points in the imaginary signal.

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

- DiscreteFourierAnalysis.hpp
- DiscreteFourierAnalysis.cpp

4   File Documentation

4.1   DiscreteFourierAnalysis.cpp File Reference

```
#include <cmath>
#include <cstdlib>
#include "DiscreteFourierAnalysis.hpp"
```

4.1.1   Detailed Description

A class for performing Discrete Fourier Transforms (DFT). This class also performs an inverse transform.

Author

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Date

15 January 2012

4.2   DiscreteFourierAnalysis.hpp File Reference

```
#include <vector>
#include <iostream>
```

Classes

- class DiscreteFourierAnalysis

4.2.1   Detailed Description

A class for performing a Discrete Fourier Transform (DFT) The class also performs the inverse DFT.

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Date

15 January 2012

5   Example Documentation

5.1   main.cpp

Example file for using the discrete Fourier transform. The example reads a data file from stdin and then performs the DFT as well as the inverse DFT. These two are stored in output datafiles for plotting.

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15 January 2012

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