

My Project

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Chapter 1

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document

Member [PRPSEvolution::Solve::Process::findSolutionCMA_ES_MklII](#) ()

document

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document

Member [PRPSEvolution::Solve::Ueber9000< T >::evaluate](#) (const ChromosomeT< double > &)

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document

Member [PRPSEvolution::Solve::Ueber9000< T >::WholeTomatoMkl](#) (const NRmatrix< T > &A, const ChromosomeT< double > &x, const NRvector< T > &b)

documentation

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document

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document

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documentation

Chapter 2

Namespace Index

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Chapter 3

Class Index

3.1 Class List

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Chapter 5

Namespace Documentation

5.1 PRPSError Namespace Reference

Namespaces

- namespace [FileIO](#)

Variables

- const int [okay](#) = 0
- const int [general](#) = -1
- const int [critical](#) = 10

5.1.1 Variable Documentation

5.1.1.1 const int PRPSError::critical = 10

this is devastating

5.1.1.2 const int PRPSError::general = -1

if no other error fits

5.1.1.3 const int PRPSError::okay = 0

this ist no error

5.2 PRPSError::FileIO Namespace Reference

Variables

- const int [okay](#) = 0
- const int [generalError](#) = -1
- const int [fnf](#) = -2
- const int [inputmalformed](#) = -3

5.2.1 Variable Documentation

5.2.1.1 const int PRPSError::FileIO::fnf = -2

file not found error

5.2.1.2 const int PRPSError::FileIO::generalError = -1

if no other error fits

5.2.1.3 const int PRPSError::FileIO::inputmalformed = -3

malformed input

5.2.1.4 const int PRPSError::FileIO::okay = 0

this ist no error

5.3 PRPSEvolution Namespace Reference

Namespaces

- namespace [Calibration](#)
- namespace [Exceptions](#)
- namespace [Permutate](#)
- namespace [Positioning](#)
- namespace [Solve](#)

Classes

- struct [Normalizer](#)
- struct [Constants](#)
- struct [System](#)
- struct [WholeTomatoMkl_A](#)
- struct [WholeTomatoMkl_B](#)
- struct [WholeTomatoMklI](#)

Enumerations

- enum [NormalizatioMethodes](#) { [Native](#), [B](#), [CMPLX](#), [RND](#) }

Functions

- [ANNOUNCE_SINGLE_OBJECTIVE_FUNCTION](#) ([WholeTomatoMkI_A](#), [shark-
::soo::RealValuedObjectiveFunctionFactory](#))
- [ANNOUNCE_SINGLE_OBJECTIVE_FUNCTION](#) ([WholeTomatoMkI_B](#), [shark-
::soo::RealValuedObjectiveFunctionFactory](#))
- [ANNOUNCE_SINGLE_OBJECTIVE_FUNCTION](#) ([WholeTomatoMkII](#), [soo::Real-
ValuedObjectiveFunctionFactory](#))

Variables

- const int [ANTENNA_AMOUNT](#) = 8
- const int [EXPECTED_LINES_CALIBRATION_FILE](#) = 4
- const int [EXPECTED_VALUES_CALIBRATION_FILE](#) = [ANTENNA_AMOUNT](#)
- const int [EXPECTED_LINES_COORD_FILE](#) = [ANTENNA_AMOUNT](#)
- const int [EXPECTED_VALUES_COORD_FILE](#) = 3
- const int [EXPECTED_LINES_SYSTEM_INI_FILE](#) = 2
- const int [MAT_ROWS](#) = 3
- const int [MAT_COLS](#) = 10
- const int [CALIBRATION_POINTS_AVAILABLE](#) = 4
- const int [EXPECTED_LINES_MEASUREMENT_FILE](#) = [ANTENNA_AMOUNT](#)
- const int [EXPECTED_VALUES_MEASUREMENT_FILE](#) = 2
- const int [DATA_NV](#) = 65535
- const int [DEFAULT_MIN_GROUP_SIZE](#) = 4

5.3.1 Detailed Description

This file contains structures and classes belonging to the system itself

5.3.2 Enumeration Type Documentation

5.3.2.1 enum PRPSEvolution::NormalizatioMethodes

Enumerator:

Native

B

CMPLX

RND

5.3.3 Function Documentation

5.3.3.1 PRPSEvolution::ANNOUNCE_SINGLE_OBJECTIVE_FUNCTION (WholeTomatoMkl_A , shark::soo::RealValuedObjectiveFunctionFactory)

5.3.3.2 PRPSEvolution::ANNOUNCE_SINGLE_OBJECTIVE_FUNCTION (WholeTomatoMkl_B , shark::soo::RealValuedObjectiveFunctionFactory)

5.3.3.3 PRPSEvolution::ANNOUNCE_SINGLE_OBJECTIVE_FUNCTION (WholeTomatoMkl , soo::RealValuedObjectiveFunctionFactory)

5.3.4 Variable Documentation

5.3.4.1 const int PRPSEvolution::ANTENNA_AMOUNT = 8

5.3.4.2 const int PRPSEvolution::CALIBRATION_POINTS_AVAILABLE = 4

5.3.4.3 const int PRPSEvolution::DATA_NV = 65535

5.3.4.4 const int PRPSEvolution::DEFAULT_MIN_GROUP_SIZE = 4

5.3.4.5 const int PRPSEvolution::EXPECTED_LINES_CALIBRATION_FILE = 4

5.3.4.6 const int PRPSEvolution::EXPECTED_LINES_COORD_FILE = ANTENNA_AMOUNT

5.3.4.7 const int PRPSEvolution::EXPECTED_LINES_MEASUREMENT_FILE = ANTENNA_AMOUNT

5.3.4.8 const int PRPSEvolution::EXPECTED_LINES_SYSTEM_INI_FILE = 2

5.3.4.9 const int PRPSEvolution::EXPECTED_VALUES_CALIBRATION_FILE = ANTENNA_AMOUNT

5.3.4.10 const int PRPSEvolution::EXPECTED_VALUES_COORD_FILE = 3

5.3.4.11 const int PRPSEvolution::EXPECTED_VALUES_MEASUREMENT_FILE = 2

5.3.4.12 const int PRPSEvolution::MAT_COLS = 10

5.3.4.13 const int PRPSEvolution::MAT_ROWS = 3

5.4 PRPSEvolution::Calibration Namespace Reference

Classes

- struct [performCalibration](#)

5.5 PRPSEvolution::Exceptions Namespace Reference

Namespaces

- namespace [Calibration](#)
- namespace [FileIO](#)
- namespace [General](#)
- namespace [Permutation](#)
- namespace [Solve](#)

5.6 PRPSEvolution::Exceptions::Calibration Namespace Reference

5.7 PRPSEvolution::Exceptions::FileIO Namespace Reference

Classes

- struct [FileNotFound](#)
- struct [MalformedInput](#)
- struct [OutputFailure](#)

5.8 PRPSEvolution::Exceptions::General Namespace Reference

Classes

- struct [NotImplemented](#)

5.9 PRPSEvolution::Exceptions::Permutation Namespace Reference

5.10 PRPSEvolution::Exceptions::Solve Namespace Reference

5.11 PRPSEvolution::Permutate Namespace Reference

Classes

- struct [AntennaPermutations](#)
- struct [permuteAntennas](#)

Functions

- int [Factorial](#) (int x)
- template<typename Iterator >
bool [next_combination](#) (const Iterator first, Iterator k, const Iterator last)

Variables

- const int [MAX_PERMUTATION_AMOUNT](#) = 35

5.11.1 Function Documentation

5.11.1.1 int [PRPSEvolution::Permutate::Factorial](#) (int x) [\[inline\]](#)

5.11.1.2 template<typename Iterator > bool [PRPSEvolution::Permutate::next_combination](#) (const Iterator *first*, Iterator *k*, const Iterator *last*)
[\[inline\]](#)

5.11.2 Variable Documentation

5.11.2.1 const int [PRPSEvolution::Permutate::MAX_PERMUTATION_AMOUNT](#) = 35

The maximum amount of Permutations for one reference antenna, we need this const-expression for the template

5.12 PRPSEvolution::Positioning Namespace Reference

Classes

- struct [CoordContainer](#)

5.13 PRPSEvolution::Solve Namespace Reference

Classes

- class [PostProcessing](#)
- class [PreProcessing](#)
- class [Process](#)
- class [Process_Mkl](#)
- struct [ProblemDimensions](#)
- struct [solverresult_t](#)
- struct [Ueber9000](#)

Enumerations

- enum `SelectBy` { `ConditionNumber`, `Random`, `AllPossible`, `Best10ByCN`, `AllFrom4Ant` }
- enum `ESStrategy` { `OnePlusOne`, `MuPlusLambda`, `MuCommaLambda`, `MuCommaLambda_MkII`, `MuPlusLambda_MkII`, `CMA_ES_MkI`, `CMA_ES_MkII` }
- enum `Models` { `WholeTomatoMkI`, `WholeTomatoMkII`, `TestSphere` }

Functions

- double `meanFromVector` (std::vector< double > &res)

Variables

- const int `nConfigsForProcessing` = 1
- std::mutex `wMutex`
- int `_i_` = 0

5.13.1 Enumeration Type Documentation

5.13.1.1 enum PRPSEvolution::Solve::ESStrategy

Represents the ES-strategy to find a solution

Enumerator:

OnePlusOne

$$[1 + 1] - ES$$

MuPlusLambda

$$[\mu + \lambda] - ES$$

MuCommaLambda

$$[\mu, \lambda] - ES$$

MuCommaLambda_MkII

MuPlusLambda_MkII

CMA_ES_MkI

CMA_ES_MkII

5.13.1.2 enum PRPSEvolution::Solve::Models

Models are defined here

Enumerator:

WholeTomatoMkI
WholeTomatoMkII
TestSphere

5.13.1.3 enum PRPSEvolution::Solve::SelectBy

Represents the selection method for the Matrix A that will be used for the solution

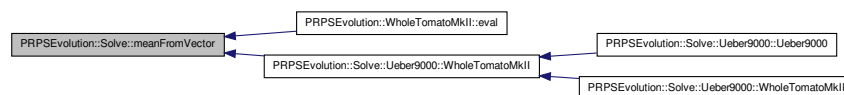
Enumerator:

ConditionNumber
Random
AllPossible
Best10ByCN
AllFrom4Ant

5.13.2 Function Documentation

5.13.2.1 double PRPSEvolution::Solve::meanFromVector (std::vector< double > & res) [inline]

Here is the caller graph for this function:



5.13.3 Variable Documentation

5.13.3.1 int PRPSEvolution::Solve::_i_ = 0

5.13.3.2 const int PRPSEvolution::Solve::nConfigsForProcessing = 1

5.13.3.3 std::mutex PRPSEvolution::Solve::wMutex

Chapter 6

Class Documentation

6.1 PRPSEvolution::Permutate::AntennaPermutations< N_MAT, T > Struct Template Reference

```
#include <permutate.h>
```

Public Member Functions

- [AntennaPermutations](#) (void)

Static Public Member Functions

- static void [dump_matrix](#) (NRmatrix< T > [mat](#))
- static void [dump_matrix_2_file](#) (std::ofstream &f, NRmatrix< T > [mat](#))

Public Attributes

- std::array< NRmatrix< T >, N_MAT > [mat](#)
- std::array< std::string, N_MAT > [names](#)

```
template<std::size_t N_MAT, typename T> struct PRPSEvolution::Permutate::Antenna-  
Permutations< N_MAT, T >
```

6.1.1 Constructor & Destructor Documentation

```
6.1.1.1 template<std::size_t N_MAT, typename T > PRPSEvolution::Permutate::-  
AntennaPermutations< N_MAT, T >::AntennaPermutations ( void )  
[inline]
```

6.1.2 Member Function Documentation

6.1.2.1 `template<std::size_t N_MAT, typename T > static void PRPSEvolution::Permutate::AntennaPermutations< N_MAT, T >::dump_matrix (NRmatrix< T > mat)`
`[inline, static]`

6.1.2.2 `template<std::size_t N_MAT, typename T > static void PRPSEvolution::Permutate::AntennaPermutations< N_MAT, T >::dump_matrix_2_file (std::ofstream & f, NRmatrix< T > mat)` `[inline, static]`

6.1.3 Member Data Documentation

6.1.3.1 `template<std::size_t N_MAT, typename T > std::array< NRmatrix< T >, N_MAT > PRPSEvolution::Permutate::AntennaPermutations< N_MAT, T >::mat`

6.1.3.2 `template<std::size_t N_MAT, typename T > std::array< std::string, N_MAT > PRPSEvolution::Permutate::AntennaPermutations< N_MAT, T >::names`

The documentation for this struct was generated from the following file:

- `trunk/libPermutate/permutate.h`

6.2 PRPSEvolution::Constants Struct Reference

```
#include <prpsevolutionssystem.h>
```

Public Member Functions

- [Constants](#) ()
- [Constants](#) (const [PRPSEvolution::Constants](#) &c)

Public Attributes

- double [a_1](#)
- double [a_2](#)
- double [lambda](#)
- double [f_mess](#)
- double [c_0](#)

6.2.1 Constructor & Destructor Documentation

6.2.1.1 `PRPSEvolution::Constants::Constants ()` `[inline]`

6.3 PRPSEvolution::Positioning::CoordContainer< N, T > Struct Template Reference

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6.2.1.2 PRPSEvolution::Constants::Constants (const PRPSEvolution::Constants & c) [inline]

6.2.2 Member Data Documentation

6.2.2.1 double PRPSEvolution::Constants::a_1

6.2.2.2 double PRPSEvolution::Constants::a_2

6.2.2.3 double PRPSEvolution::Constants::c_0

6.2.2.4 double PRPSEvolution::Constants::f_mess

6.2.2.5 double PRPSEvolution::Constants::lambda

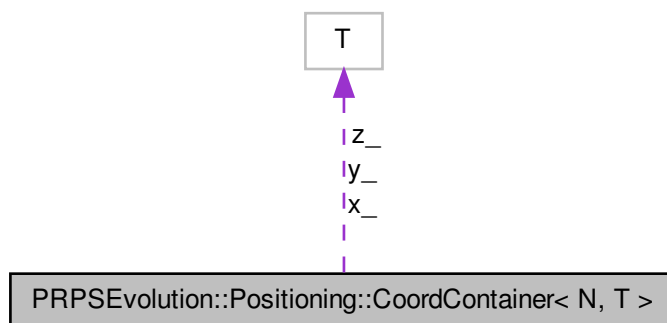
The documentation for this struct was generated from the following file:

- trunk/libPRPSSystem/[prpsevolutionsystem.h](#)

6.3 PRPSEvolution::Positioning::CoordContainer< N, T > Struct Template Reference

```
#include <coords.h>
```

Collaboration diagram for PRPSEvolution::Positioning::CoordContainer< N, T >:



Public Types

- typedef T [value_type](#)

Public Member Functions

- [CoordContainer](#) ()
- template<typename T1 >
[CoordContainer](#) (T1 init)
- T & [operator\[\]](#) (std::size_t i)

Public Attributes

- T [x_](#) [N]
- T [y_](#) [N]
- T [z_](#) [N]

```
template<std::size_t N, typename T> struct PRPSEvolution::Positioning::CoordContainer< N, T
>
```

6.3.1 Member Typedef Documentation

- 6.3.1.1 template<std::size_t N, typename T> typedef T PRPSEvolution::Positioning::CoordContainer< N, T >::value_type

6.3.2 Constructor & Destructor Documentation

- 6.3.2.1 template<std::size_t N, typename T > PRPSEvolution::Positioning::CoordContainer< N, T >::CoordContainer ()
- 6.3.2.2 template<std::size_t N, typename T > template<typename T1 > PRPSEvolution::Positioning::CoordContainer< N, T >::CoordContainer (T1 init)

6.3.3 Member Function Documentation

- 6.3.3.1 template<std::size_t N, typename T > T & PRPSEvolution::Positioning::CoordContainer< N, T >::operator[] (std::size_t i)

6.3.4 Member Data Documentation

- 6.3.4.1 template<std::size_t N, typename T> T PRPSEvolution::Positioning::CoordContainer< N, T >::x_[N]

6.3.4.2 `template<std::size_t N, typename T> T PRPSEvolution::Positioning::Coord-
Container< N, T >::y_[N]`

6.3.4.3 `template<std::size_t N, typename T> T PRPSEvolution::Positioning::Coord-
Container< N, T >::z_[N]`

The documentation for this struct was generated from the following file:

- `trunk/include/coords.h`

6.4 PRPSEvolution::Exceptions::FileIO::FileNotFound Struct - Reference

```
#include <PRPSEvolutionFIOExceptions.h>
```

Public Member Functions

- `const char * what () const noexcept`

6.4.1 Member Function Documentation

6.4.1.1 `const char* PRPSEvolution::Exceptions::FileIO::FileNotFound::what ()
const [inline]`

The documentation for this struct was generated from the following file:

- `trunk/include/PRPSEvolutionFIOExceptions.h`

6.5 PRPSEvolution::Exceptions::FileIO::MalformedInput Struct - Reference

```
#include <PRPSEvolutionFIOExceptions.h>
```

Public Member Functions

- `const char * what () const noexcept`

6.5.1 Member Function Documentation

```
6.5.1.1  const char* PRPSEvolution::Exceptions::FileIO::MalformedInput::what ( )
        const [inline]
```

The documentation for this struct was generated from the following file:

- trunk/include/[PRPSEvolutionFIOExceptions.h](#)

6.6 PRPSEvolution::Normalizer< N, T > Struct Template - Reference

```
#include <normalizer.h>
```

Public Member Functions

- [Normalizer](#) ([NormalizatioMethodes](#) method)
- `std::array< T, N >` [complexNorm](#) (const `std::array< T, N >` &p, const `std::array< T, N >` &a)
- `std::array< T, N >` [randNorm](#) ()
- `std::array< T, N >` [normalize](#) (`std::array< T, N >` phase, `std::array< T, N >` amp)

Public Attributes

- [NormalizatioMethodes Method](#)

```
template<std::size_t N, typename T> struct PRPSEvolution::Normalizer< N, T >
```

6.6.1 Constructor & Destructor Documentation

```
6.6.1.1  template<std::size_t N, typename T > PRPSEvolution::Normalizer< N, T
        >::Normalizer ( NormalizatioMethodes method ) [inline]
```

Constructor

Parameters

<i>in</i>	<i>method</i>	Selects the Normalization function
-----------	---------------	------------------------------------

6.6.2 Member Function Documentation

```
6.6.2.1 template<std::size_t N, typename T > std::array<T, N> PRPSEvolution::-
Normalizer< N, T >::complexNorm ( const std::array< T, N > & p, const
std::array< T, N > & a ) [inline]
```

Here is the caller graph for this function:



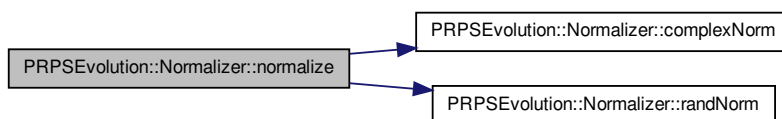
```
6.6.2.2 template<std::size_t N, typename T > std::array<T, N> PRPSEvolution::-
Normalizer< N, T >::normalize ( std::array< T, N > phase, std::array< T, N >
amp ) [inline]
```

Calculates the normalizations

Parameters

in	<i>phase</i>	The measured phase data
in	<i>amp</i>	The measured amplitude data

Here is the call graph for this function:



6.6.2.3 `template<std::size_t N, typename T > std::array<T, N>`
`PRPSEvolution::Normalizer< N, T >::randNorm () [inline]`

Here is the caller graph for this function:



6.6.3 Member Data Documentation

6.6.3.1 `template<std::size_t N, typename T > NormalizationMethodes`
`PRPSEvolution::Normalizer< N, T >::Method`

The documentation for this struct was generated from the following file:

- `trunk/libNormalizer/normalizer.h`

6.7 PRPSEvolution::Exceptions::General::NotImplemented Struct - Reference

```
#include <PRPSEvolutionGeneralExceptions.h>
```

Public Member Functions

- `const char * what () const noexcept`

6.7.1 Detailed Description

Throw this if a Method is not implemented

6.7.2 Member Function Documentation

6.7.2.1 `const char* PRPSEvolution::Exceptions::General::NotImplemented::what () const [inline]`

The documentation for this struct was generated from the following file:

- `trunk/include/PRPSEvolutionGeneralExceptions.h`

6.8 PRPSEvolution::Exceptions::FileIO::OutputFailure Struct - Reference

```
#include <PRPSEvolutionFIOExceptions.h>
```

Public Member Functions

- `const char * what () const noexcept`

6.8.1 Member Function Documentation

6.8.1.1 `const char* PRPSEvolution::Exceptions::FileIO::OutputFailure::what ()`
`const [inline]`

The documentation for this struct was generated from the following file:

- `trunk/include/PRPSEvolutionFIOExceptions.h`

6.9 PRPSEvolution::Calibration::performCalibration< N_ANTA, N_CALPOS, T > Struct Template Reference

```
#include <calib.h>
```

Public Member Functions

- `performCalibration ()`

6.9.1 Detailed Description

```
template<std::size_t N_ANTA, std::size_t N_CALPOS, typename T>struct PRPSEvolution::-  
Calibration::performCalibration< N_ANTA, N_CALPOS, T >
```

This will perform the calibration stuff

6.9.2 Constructor & Destructor Documentation

6.9.2.1 `template<std::size_t N_ANTA, std::size_t N_CALPOS, typename T >`
`PRPSEvolution::Calibration::performCalibration< N_ANTA, N_CALPOS, T`
`>::performCalibration ()`

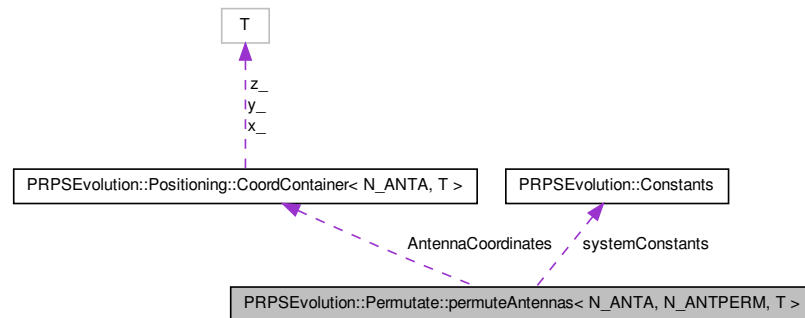
The documentation for this struct was generated from the following file:

- `trunk/libCalibration/calib.h`

6.10 PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ - ANTPERM, T > Struct Template Reference

```
#include <permutate.h>
```

Collaboration diagram for PRPSEvolution::Permutate::permuteAntennas< N_ANTA, -
N_ANTPERM, T >:



Public Member Functions

- `permuteAntennas` (const `PRPSEvolution::Constants` c)
- `int rCoordFile` ()
- `int computePermutations` (const `PRPSEvolution::Constants` &co)
- `template<std::size_t NN, std::size_t MM>`
`const NRmatrix< T > computeMatrix` (const int `ref`, const int a1, const int a2,
const int a3, const `PRPSEvolution::Constants` &co)
- `NRmatrix< T > compute_d_k0_Mat` ()
- `void dumpConfigurationsToFile` ()
- `void dump_matrices_2_file` ()

Public Attributes

- `int ref`
- `PRPSEvolution::Constants systemConstants`
- `Positioning::CoordContainer < N_ANTA, T > AntennaCoordinates`
- `std::array < AntennaPermutations < N_ANTPERM, Doub >, N_ANTA > configurations`
- `NRmatrix< T > d_k0_mat`

6.10.1 Detailed Description

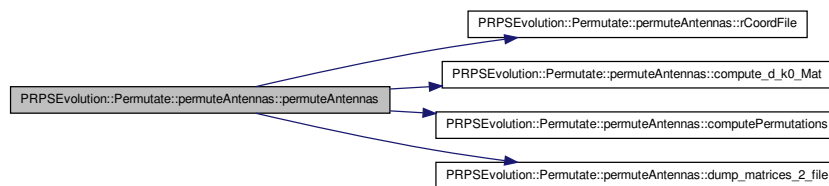
```
template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T>struct PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T >
```

This will collect some stuff for calculating the permutation of the antennas

6.10.2 Constructor & Destructor Documentation

6.10.2.1 `template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T >
PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T
>::permuteAntennas (const PRPSEvolution::Constants c)`

Here is the call graph for this function:



6.10.3 Member Function Documentation

6.10.3.1 `template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T > NRmatrix< T >
PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T
>::compute_d_k0_Mat ()`

Here is the caller graph for this function:



```

6.10.3.2  template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T
> template<std::size_t NN, std::size_t MM> const NRmatrix< T >
PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T
>::computeMatrix ( const int ref, const int a1, const int a2, const int a3, const
PRPSEvolution::Constants & co )

```

This method will compute all the possible permutations based on the given reference antenna

See also

[ref](#)

Parameters

in	<i>ref</i>	The reference antenna
in	<i>a1</i>	First antenna
in	<i>a2</i>	Second antenna
in	<i>a3</i>	Third antenna

```

6.10.3.3  template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T > int
PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T
>::computePermutations ( const PRPSEvolution::Constants & co )

```

This method handles the computation of the antenna permutations

Parameters

in	<i>co</i>	Constant structure with the system constants we need
----	-----------	--

See also

[PRPSEvolution::Constants](#)

Here is the caller graph for this function:



```

6.10.3.4  template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T > void
PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T
>::dump_matrices_2_file ( )

```

This method will dump all the Antennas to an output file

6.10 PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T > > Struct Template Reference 29

Here is the caller graph for this function:



6.10.3.5 `template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T> void
PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T
>::dumpConfigurationsToFile ()`

6.10.3.6 `template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T > int
PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T
>::rCoordFile ()`

Load the csv-file containing the coordinates and store it into the container.

Here is the caller graph for this function:



6.10.4 Member Data Documentation

6.10.4.1 `template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T>
Positioning::CoordContainer< N_ANTA, T > PRPSEvolution-
::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T
>::AntennaCoordinates`

6.10.4.2 `template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T>
std::array< AntennaPermutations< N_ANTPERM, Doub >, N_ANTA>
PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T
>::configurations`

6.10.4.3 `template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T> NRmatrix<T>
PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T
>::d_k0_mat`

6.10.4.4 `template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T> int
PRPSEvolution::Permutate::permuteAntennas< N_ANTA, N_ANTPERM, T
>::ref`

6.10.4.5 `template<std::size_t N_ANTA, std::size_t N_ANTPERM, typename T> PRPSEvolution::Constants PRPSEvolution::Permutate::permuteAntennas<N_ANTA, N_ANTPERM, T >::systemConstants`

The documentation for this struct was generated from the following file:

- [trunk/libPermutate/permute.h](#)

6.11 PRPSEvolution::Solve::PostProcessing Class Reference

```
#include <postprocessing.h>
```

Public Member Functions

- [PostProcessing](#) ()

6.11.1 Constructor & Destructor Documentation

6.11.1.1 `PRPSEvolution::Solve::PostProcessing::PostProcessing ()`
`[inline]`

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

- [trunk/libSolve/postprocessing.h](#)

6.12 PRPSEvolution::Solve::PreProcessing< N_ANTA, N_Configs, T, T_Measure > Class Template Reference

```
#include <preprocessing.h>
```

Public Member Functions

- [PreProcessing](#) (const std::array< [AntennaPermutations](#)< [Permutate::MAX_PERMUTATION_AMOUNT](#), Doub >, N_ANTA > &, const NRmatrix< T > &, const int, const int)

Public Attributes

- std::vector< NRmatrix< T > > [matrices](#)
- std::vector< NRvector< T > > [vectors](#)
- std::vector< std::string > [names](#)
- int [antennas](#)

6.12 PRPSEvolution::Solve::PreProcessing< N_ANTA, N_Configs, T, T_Measure > Class Template Reference 31

```
template<std::size_t N_ANTA, std::size_t N_Configs, typename T, typename T_Measure> class P-
RPSEvolution::Solve::PreProcessing< N_ANTA, N_Configs, T, T_Measure >
```

6.12.1 Constructor & Destructor Documentation

```
6.12.1.1 template<std::size_t N_ANTA, std::size_t N_Configs, typename T , typename
T_Measure > PRPSEvolution::Solve::PreProcessing< N_ANTA, N_Configs, T,
T_Measure >::PreProcessing ( const std::array< AntennaPermutations<
Permutate::MAX_PERMUTATION_AMOUNT, Doub >, N_ANTA > &
precalculatedMatrices, const NRmatrix< T > & d_k0s, const int finalAntAmount,
const int offset )
```

Construct the object an perform neccessary [PreProcessing](#) steps.

1. Read out the measurements from the given interface (e.g. a file)
2. Normalize everything
3. Select the matrices for further processing
4. Fill the matrices with the information
5. Precalculate the

C_{k0}

-Vector

6. Store matrices to make them available in the next steps

Parameters

in	<i>precalculatedMatrices</i>	Array containing the precalculated matrixes from prior processing steps, This Array contains the static array for all possible permutations of the Antennas
in	<i>d_k0s</i>	This Array contains the d_{k0} , wich denotes the euklidean distances between the - Antennas
in	<i>finalAntAmount</i>	This field determines the Amount of Matrices we want to use for a calculation

6.12.2 Member Data Documentation

```
6.12.2.1 template<std::size_t N_ANTA, std::size_t N_Configs, typename T, typename
T_Measure> int PRPSEvolution::Solve::PreProcessing< N_ANTA, N_Configs,
T, T_Measure >::antennas
```

Amount of antennas for the solution

```
6.12.2.2  template<std::size_t N_ANTA, std::size_t N_Configs, typename
          T, typename T_Measure> std::vector<NRmatrix<T> >
          PRPSEvolution::Solve::PreProcessing< N_ANTA, N_Configs, T, T_Measure
          >::matrices
```

The precalculated matrices for a solution

```
6.12.2.3  template<std::size_t N_ANTA, std::size_t N_Configs, typename T, typename T_-
          Measure> std::vector< std::string > PRPSEvolution::Solve::PreProcessing<
          N_ANTA, N_Configs, T, T_Measure >::names
```

The "Names" of the matrices for a solution

```
6.12.2.4  template<std::size_t N_ANTA, std::size_t N_Configs, typename
          T, typename T_Measure> std::vector< NRvector< T > >
          PRPSEvolution::Solve::PreProcessing< N_ANTA, N_Configs, T, T_Measure
          >::vectors
```

The b-vectors for the solution

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

- [trunk/libSolve/preprocessing.h](#)

6.13 PRPSEvolution::Solve::ProblemDimensions Struct Reference

```
#include <solve.h>
```

Static Public Attributes

- static const int [WholeTomato](#) = 7
- static const int [WholeTomatoMkl](#) = 10
- static const int [WholeTomatoMkl_A](#) = 10
- static const int [WholeTomatoMkl_B](#) = 7
- static const int [WholeTomatoMklI](#) = 3
- static const int [Sphere](#) = 10
- static const int [Rosenbrock](#) = 15

6.13.1 Detailed Description

This gathers the problemdimensions of the defined fitness functions

6.13.2 Member Data Documentation

- 6.13.2.1 `const int PRPSEvolution::Solve::ProblemDimensions::Rosenbrock = 15`
[static]
- 6.13.2.2 `const int PRPSEvolution::Solve::ProblemDimensions::Sphere = 10`
[static]
- 6.13.2.3 `const int PRPSEvolution::Solve::ProblemDimensions::WholeTomato = 7`
[static]
- 6.13.2.4 `const int PRPSEvolution::Solve::ProblemDimensions::WholeTomatoMkl = 10` [static]
- 6.13.2.5 `const int PRPSEvolution::Solve::ProblemDimensions::WholeTomatoMkl_A = 10` [static]
- 6.13.2.6 `const int PRPSEvolution::Solve::ProblemDimensions::WholeTomatoMkl_B = 7` [static]
- 6.13.2.7 `const int PRPSEvolution::Solve::ProblemDimensions::WholeTomatoMklI = 3` [static]

The minimal dimension for this problem, depending on the amount of antennas used this number will increase

The documentation for this struct was generated from the following file:

- trunk/libSolve/[solve.h](#)

6.14 PRPSEvolution::Solve::Process Class Reference

```
#include <process.h>
```

Public Member Functions

- [Process](#) ()
- [Process](#) (const [Process](#) &p)
- double [getLastSolutionFitness](#) ()
- template<typename T >
T [findSolutionSphere](#) ([Solve::ESStrategy](#) strategy)
- template<typename T >
T [findSolutionCMA_ES_Mkl](#) ()
- template<typename T >
T [findSolutionCMA_ES_MklI](#) ()

- template<typename T >
T [findSolutionSolveSingle](#) (const NRmatrix< Doub > &A_selected, const NRvector< Doub > &b_selected, const std::vector< std::string > &names_selected, const int ants, const [PRPSEvolution::Solve::ESStrategy](#) strategy, const int seed)
- template<typename T >
T [findSolution](#) (const std::vector< NRmatrix< Doub >> &A_selected, const std::vector< NRvector< Doub >> &b_selected, const std::vector< std::string > &names_selected, const int ants, const [PRPSEvolution::Solve::ESStrategy](#) strategy, const int seed)
- int [sq](#) (int i)
- void [setMinSolutionFitness](#) (double value)
- void [setSeed](#) (unsigned int value)
- void [incrementFileCounter](#) ()
- void [resetFileCounter](#) ()

Public Attributes

- int [f_count](#) = 0

6.14.1 Detailed Description

Find solutions for the possible matrices

6.14.2 Constructor & Destructor Documentation

6.14.2.1 [PRPSEvolution::Solve::Process::Process](#) () [\[inline\]](#)

Constructor

6.14.2.2 [PRPSEvolution::Solve::Process::Process](#) (const [Process](#) & p) [\[inline\]](#)

6.14.3 Member Function Documentation

6.14.3.1 template<typename T > T [PRPSEvolution::Solve::Process::findSolution](#) (const std::vector< NRmatrix< Doub >> &A_selected, const std::vector< NRvector< Doub >> &b_selected, const std::vector< std::string > &names_selected, const int ants, const [PRPSEvolution::Solve::ESStrategy](#) strategy, const int seed) [\[inline\]](#)

Find a Solution for a given pair of matrices

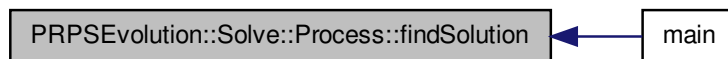
Parameters

in	<i>A_selected</i>	The matrix A to use in this solution
in	<i>b_selected</i>	The c_k0' vector for this solution

Returns

The solution

Here is the caller graph for this function:



6.14.3.2 `template<typename T> T PRPSEvolution::Solve::Process::findSolutionCMA_ES_Mkl() [inline]`

Todo document

Returns

The solution

6.14.3.3 `template<typename T> T PRPSEvolution::Solve::Process::findSolutionCMA_ES_MklII() [inline]`

Todo document

Returns

The solution

Here is the caller graph for this function:



6.14.3.4 `template<typename T > T PRPSEvolution::Solve::Process::findSolution-SolveSingle (const NRmatrix< Doub > & A_selected, const NRvector< Doub > & b_selected, const std::vector< std::string > & names_selected, const int ants, const PRPSEvolution::Solve::ESStrategy strategy, const int seed) [inline]`

Find a Solution for a given pair of matrices

Parameters

in	<i>A_selected</i>	The matrix A to use in this solution
in	<i>b_selected</i>	The c_k0' vector for this solution

Returns

The solution

6.14.3.5 `template<typename T > T PRPSEvolution::Solve::Process::findSolutionSphere (Solve::ESStrategy strategy) [inline]`

Set the ES-Strategy

Parameters

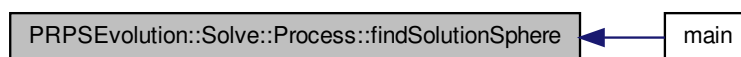
in	<i>Strategy</i>	The selected strategy
----	-----------------	-----------------------

Todo document

Returns

The solution

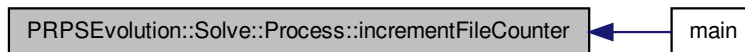
Here is the caller graph for this function:



6.14.3.6 `double PRPSEvolution::Solve::Process::getLastSolutionFitness () [inline]`

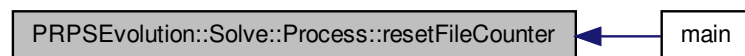
6.14.3.7 void PRPSEvolution::Solve::Process::incrementFileCounter ()
[inline]

Here is the caller graph for this function:



6.14.3.8 void PRPSEvolution::Solve::Process::resetFileCounter () [inline]

Here is the caller graph for this function:



6.14.3.9 void PRPSEvolution::Solve::Process::setMinSolutionFitness (double *value*) [inline]

Sets the min. solution fitness we want to achieve.

Parameters

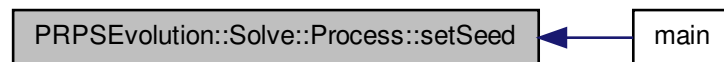
in	<i>value</i>	The new value for the solution fitness
----	--------------	--

Here is the caller graph for this function:



6.14.3.10 void **PRPSEvolution::Solve::Process::setSeed** (unsigned int *value*)
[inline]

Here is the caller graph for this function:



6.14.3.11 int **PRPSEvolution::Solve::Process::sq** (int *i*) [inline]

6.14.4 Member Data Documentation

6.14.4.1 int **PRPSEvolution::Solve::Process::f_count** = 0

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

- [trunk/libSolve/process.h](#)

6.15 PRPSEvolution::Solve::Process_MkII Class Reference

```
#include <processMkII.h>
```

Public Member Functions

- [Process_MkII](#) ()

- [Process_MkII](#) (NRmatrix< Doub > Mat, NRvector< Doub > Vect, std::string - Name)
- [Process_MkII](#) (std::vector< NRmatrix< Doub >> Mats, std::vector< NRvector< Doub >> Vects, std::vector< std::string > Names)
- [Process_MkII](#) (std::vector< NRmatrix< Doub >> Mats, std::vector< NRvector< Doub >> Vects, std::vector< std::string > Names, std::vector< std::vector< int >> IDs, double Epsilon)
- int [WholeTomatoMkII](#) (int dimension)
- int [WholeTomatoMkI_A](#) ()
- int [WholeTomatoMkI_B](#) ()
- int [Process_MkII_test](#) ()
- void [setEpsilon](#) (double Value)
- void [setOutputFilePath](#) (std::string file)
- void [setOutputFilePathBase](#) (std::string file)
- void [setPrintLastOnly](#) (void)
- void [incrementFileCounter](#) (void)
- void [resetFileCounter](#) ()
- void [toggleVariant](#) ()

6.15.1 Constructor & Destructor Documentation

6.15.1.1 PRPSEvolution::Solve::Process_MkII::Process_MkII () [inline]

Here is the caller graph for this function:



6.15.1.2 PRPSEvolution::Solve::Process_MkII::Process_MkII (NRmatrix< Doub > Mat, NRvector< Doub > Vect, std::string Name) [inline]

Here is the call graph for this function:



6.15.1.3 **PRPSEvolution::Solve::Process_MkII::Process_MkII** (`std::vector< NRmatrix< Doub >> Mats`, `std::vector< NRvector< Doub >> Vects`, `std::vector< std::string > Names`) `[inline]`

Here is the call graph for this function:



6.15.1.4 **PRPSEvolution::Solve::Process_MkII::Process_MkII** (`std::vector< NRmatrix< Doub >> Mats`, `std::vector< NRvector< Doub >> Vects`, `std::vector< std::string > Names`, `std::vector< std::vector< int >> IDs`, `double Epsilon`) `[inline]`

Here is the call graph for this function:



6.15.2 Member Function Documentation

6.15.2.1 **void PRPSEvolution::Solve::Process_MkII::incrementFileCounter** (`void`) `[inline]`

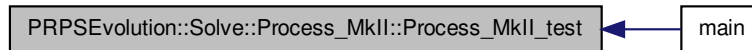
increment the File counter

Here is the caller graph for this function:



6.15.2.2 `int PRPSEvolution::Solve::Process_MkII::Process_MkII_test ()`
[inline]

Here is the caller graph for this function:



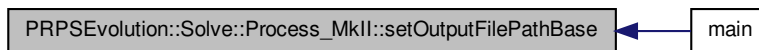
6.15.2.3 `void PRPSEvolution::Solve::Process_MkII::resetFileCounter ()`
[inline]

6.15.2.4 `void PRPSEvolution::Solve::Process_MkII::setEpsilon (double Value)`
[inline]

6.15.2.5 `void PRPSEvolution::Solve::Process_MkII::setOutputFilePath (std::string file)` [inline]

6.15.2.6 `void PRPSEvolution::Solve::Process_MkII::setOutputFilePathBase (std::string file)` [inline]

Here is the caller graph for this function:

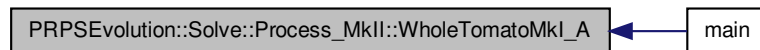


6.15.2.7 `void PRPSEvolution::Solve::Process_MkII::setPrintLastOnly (void)`
[inline]

6.15.2.8 `void PRPSEvolution::Solve::Process_MkII::toggleVariant ()` [inline]

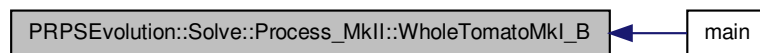
6.15.2.9 `int PRPSEvolution::Solve::Process_MkII::WholeTomatoMkI_A ()` `[inline]`

Here is the caller graph for this function:



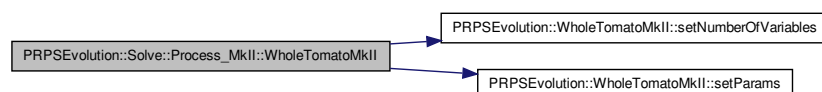
6.15.2.10 `int PRPSEvolution::Solve::Process_MkII::WholeTomatoMkI_B ()` `[inline]`

Here is the caller graph for this function:

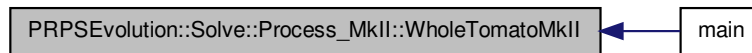


6.15.2.11 `int PRPSEvolution::Solve::Process_MkII::WholeTomatoMkII (int dimension)` `[inline]`

Here is the call graph for this function:



Here is the caller graph for this function:



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

- trunk/libSolve/[processMkII.h](#)

6.16 PRPSEvolution::Solve::solveresult_t< T_Store1, T_Store2, T_Return > Struct Template Reference

```
#include <solveresult.h>
```

Public Attributes

- T_Store1 [valCont](#)
- T_Store2 [valDis](#)
- T_Return [fitness](#)
- int [iterations](#)
- int [duration](#)
- bool [converged](#)

6.16.1 Detailed Description

```
template<typename T_Store1, typename T_Store2, typename T_Return>struct PRPSEvolution::Solve::solveresult_t< T_Store1, T_Store2, T_Return >
```

Stores the final state of a solution

6.16.2 Member Data Documentation

6.16.2.1 `template<typename T_Store1, typename T_Store2, typename T_Return> bool PRPSEvolution::Solve::solveresult_t< T_Store1, T_Store2, T_Return >::converged`

Indicates whether the build in convergence criterium was applied, or not

```
6.16.2.2  template<typename T_Store1, typename T_Store2, typename T_Return> int
          PRPSEvolution::Solve::solveresult_t< T_Store1, T_Store2, T_Return
          >::duration
```

The processing time for this solution

```
6.16.2.3  template<typename T_Store1, typename T_Store2, typename T_Return> T_Return
          PRPSEvolution::Solve::solveresult_t< T_Store1, T_Store2, T_Return
          >::fitness
```

Whrere the result is stored The fitness value

```
6.16.2.4  template<typename T_Store1, typename T_Store2, typename T_Return> int
          PRPSEvolution::Solve::solveresult_t< T_Store1, T_Store2, T_Return
          >::iterations
```

The amount of iterations needed for this result

```
6.16.2.5  template<typename T_Store1, typename T_Store2, typename T_Return> T_Store1
          PRPSEvolution::Solve::solveresult_t< T_Store1, T_Store2, T_Return
          >::valCont
```

```
6.16.2.6  template<typename T_Store1, typename T_Store2, typename T_Return> T_Store2
          PRPSEvolution::Solve::solveresult_t< T_Store1, T_Store2, T_Return >::valDis
```

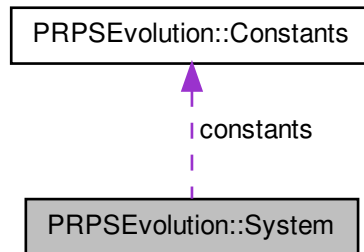
The documentation for this struct was generated from the following file:

- [trunk/libSolve/solveresult.h](#)

6.17 PRPSEvolution::System Struct Reference

```
#include <prpsevolutionssystem.h>
```

Collaboration diagram for PRPSEvolution::System:



Public Member Functions

- [System](#) ()
- [System](#) (const [PRPSEvolution::System](#) &s)
- int [rPRPSIniFile](#) ()

Public Attributes

- [PRPSEvolution::Constants](#) constants
- std::string [fn](#)

6.17.1 Constructor & Destructor Documentation

6.17.1.1 PRPSEvolution::System::System () [inline]

Here is the call graph for this function:



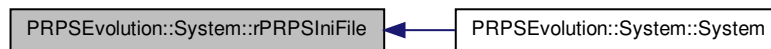
6.17.1.2 PRPSEvolution::System::System (const PRPSEvolution::System & s) [inline]

copy constructor

6.17.2 Member Function Documentation

6.17.2.1 int PRPSEvolution::System::rPRPSIniFile () [inline]

Here is the caller graph for this function:



6.17.3 Member Data Documentation

6.17.3.1 PRPSEvolution::Constants PRPSEvolution::System::constants

6.17.3.2 std::string PRPSEvolution::System::fn

The documentation for this struct was generated from the following file:

- [trunk/libPRPSSystem/prpsevolutionsystem.h](#)

6.18 PRPSEvolution::Solve::Ueber9000< T > Struct Template - Reference

```
#include <ueber9000.h>
```

Public Member Functions

- [Ueber9000](#) ()
- [Ueber9000](#) (int i)
- [Ueber9000](#) (const [Ueber9000](#) &me)
- [Ueber9000](#) (const NRmatrix< T > A_selected, const NRvector< T > b_selected)
- [Ueber9000](#) (const std::vector< NRmatrix< T >> As, const std::vector< NRvector< T >> bs, const std::vector< std::string > namess, const int numO-Ants, const int select)

- `std::vector< std::vector< int > > parseldxFromNames` (const `std::vector< std::string > &names`)
- `double WholeTomato` (const `ChromosomeT< double > &x`)
- `double WholeTomatoMkII` (const `ChromosomeT< double > &x`)
- `double WholeTomatoMkII` (const `ChromosomeT< double > &x1`, const `ChromosomeT< double > &x2`)
- `double WholeTomatoMkII` (const `ChromosomeT< double > &x`, const `ChromosomeT< int > &n`)
- `double WholeTomato` (const `NRmatrix< T > &A`, const `ChromosomeT< double > &x`, const `NRvector< T > &b`)
- `double WholeTomatoMkI` (const `NRmatrix< T > &A`, const `ChromosomeT< double > &x`, const `NRvector< T > &b`)
- `double WholeTomatoMkII` (const `NRmatrix< T > &A`, const `ChromosomeT< double > &x`, const `NRvector< T > &b`)
- `double SuWi_WavenumberVariation` (const `ChromosomeT< double > &n`)
- `double SuWi_PositionVariation` (const `ChromosomeT< double > &pos`)
- `double fitnessSphere` (const `ChromosomeT< double > &c`)
- `double fitnessSphereMkII` (const `ChromosomeT< double > &c1`, const `ChromosomeT< double > &c2`)
- `double fitnessRosenbrock` (const `ChromosomeT< double > &c`)
- `double fitnessAckley` (const `std::vector< double > &x`)

Public Attributes

- `double(Ueber9000< double >::* evaluate)`(const `ChromosomeT< double > &`)
- `double(Ueber9000< double >::* evaluateMkI)`(const `ChromosomeT< double > &`)
- `double(Ueber9000< double >::* evaluateMkII)`(const `ChromosomeT< double > &`, const `ChromosomeT< double > &`)
- `double(Ueber9000< double >::* evaluateMkIII)`(const `ChromosomeT< double > &`, const `ChromosomeT< int > &`)
- `int Dimension`
- `std::vector< NRmatrix< T > > A`
- `std::vector< NRvector< T > > b`
- `std::vector< std::string > names`
- `std::vector< std::vector< int > > idxs`
- `int evaluations = 0`

6.18.1 Detailed Description

`template<typename T>struct PRPSEvolution::Solve::Ueber9000< T >`

Collect the fitness functions. Make sure they are static so we can function-pointer to them.

6.18.2 Constructor & Destructor Documentation

6.18.2.1 `template<typename T> PRPSEvolution::Solve::Ueber9000< T
>::Ueber9000 () [inline]`

Default constructor

6.18.2.2 `template<typename T> PRPSEvolution::Solve::Ueber9000< T
>::Ueber9000 (int i) [inline]`

6.18.2.3 `template<typename T> PRPSEvolution::Solve::Ueber9000< T
>::Ueber9000 (const Ueber9000< T> & me) [inline]`

Here is the call graph for this function:



6.18.2.4 `template<typename T> PRPSEvolution::Solve::Ueber9000< T
>::Ueber9000 (const NRmatrix< T> A_selected, const NRvector< T> b_selected
) [inline]`

Construct [Ueber9000](#) to use the WholeTomato as fitness function

Parameters

in	<i>A_selected</i>	The matrix A for this Solution
in	<i>c_k0_selected</i>	The vector b for this Solution

Here is the call graph for this function:



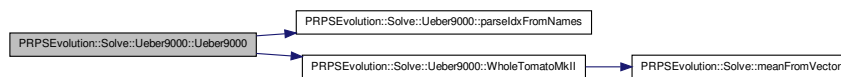
6.18.2.5 `template<typename T> PRPSEvolution::Solve::Ueber9000< T
>::Ueber9000 (const std::vector< NRmatrix< T >> As, const std::vector<
NRvector< T >> bs, const std::vector< std::string > nameess, const int numOAnts,
const int select) [inline]`

Construct [Ueber9000](#) to use the WholeTomato as fitness function

Parameters

in	<i>As</i>	The matrices A to get a solution from
in	<i>bs</i>	The vectors b
in	<i>nameess</i>	The Names of the matrices in As
in	<i>numOAnts</i>	The number of antennas used in the matrices in As
in	<i>select</i>	Selects the WholeTomato-Version

Here is the call graph for this function:



6.18.3 Member Function Documentation

6.18.3.1 `template<typename T> double PRPSEvolution::Solve::Ueber9000< T
>::fitnessAckley (const std::vector< double > & x) [inline]`

The infamous Ackley-function

6.18.3.2 `template<typename T> double PRPSEvolution::Solve::Ueber9000< T
>::fitnessRosenbrock (const ChromosomeT< double > & c) [inline]`

The Rosenbrock implementation

6.18.3.3 `template<typename T> double PRPSEvolution::Solve::Ueber9000< T
>::fitnessSphere (const ChromosomeT< double > & c) [inline]`

This ist the fitness function used in the EA algorithm

6.18.3.4 `template<typename T> double PRPSEvolution::Solve::Ueber9000<
T >::fitnessSphereMkII (const ChromosomeT< double > & c1, const
ChromosomeT< double > & c2) [inline]`

This ist the fitness function used in the EA algorithm. This implementation uses two input vectors of the same datatype for test purpose of multi chromosome optimization

6.18.3.5 `template<typename T> std::vector<std::vector<int> >
PRPSEvolution::Solve::Ueber9000< T >::parseldxFromNames (const
std::vector< std::string > & names) [inline]`

This function will parse the indeces used for a solution

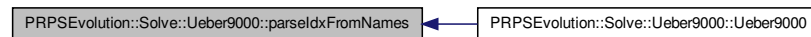
Parameters

<i>in</i>	<i>names</i>	Contains the "Name" of each matrix we want to use in this solution
-----------	--------------	--

Returns

A two dimensional vector with the indeces of each antenna for each matrix

Here is the caller graph for this function:



6.18.3.6 `template<typename T> double PRPSEvolution::Solve::Ueber9000< T
>::SuWi_PositionVariation (const ChromosomeT< double > & pos)
[inline]`

Approach 3 based on the thoughts of by S. Winter

6.18.3.7 `template<typename T> double PRPSEvolution::Solve::Ueber9000< T
>::SuWi_WavenumberVariation (const ChromosomeT< double > & n)
[inline]`

Approach 2 based on the thoughts of S. Winter. Here we want to optimize the wavenumbers

6.18.3.8 `template<typename T> double PRPSEvolution::Solve::Ueber9000< T
>::WholeTomato (const ChromosomeT< double > & x) [inline]`

This method basically wraps around the real WholeTomato-function. Maps the function so that it can be used with the evaluate-method

Parameters

<i>in</i>	<i>x</i>	The vector x
-----------	----------	--------------

Here is the caller graph for this function:



```

6.18.3.9  template<typename T> double PRPSEvolution::Solve::Ueber9000< T
>::WholeTomato ( const NRmatrix< T > & A, const ChromosomeT< double > &
x, const NRvector< T > & b )  [inline]
  
```

This approach will solve the scene defined by the 10x3 matrix The approach is described in the Master-Thesis of C.Gnip Basically solves the linear equation

$$r = \mathbf{Ax} - \mathbf{b}$$

Parameters

in	<i>A</i>	The 10x3 Matrix that ist used in this solution
in	<i>x</i>	The vector containing the variables
in	<i>b</i>	Representing the vector b

Returns

The residuum of the equation system representing the "Fitness" of the given - Solution in

See also

[x](#)

```

6.18.3.10 template<typename T> double PRPSEvolution::Solve::Ueber9000< T
>::WholeTomatoMkl ( const NRmatrix< T > & A, const ChromosomeT< double
> & x, const NRvector< T > & b )  [inline]
  
```

[Todo](#) documentation

Parameters

in	<i>A</i>	The 10x3 Matrix that ist used in this solution
in	<i>x</i>	The vector containing the variables
in	<i>b</i>	Representing the vector b

Returns

The residuum of the equation system representing the "Fitness" of the given -
Solution in

See also

x

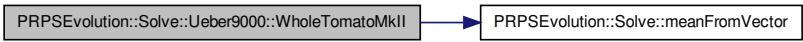
```
6.18.3.11  template<typename T> double PRPSEvolution::Solve::Ueber9000< T
           >::WholeTomatoMkII ( const ChromosomeT< double > & x )  [inline]
```

Todo document

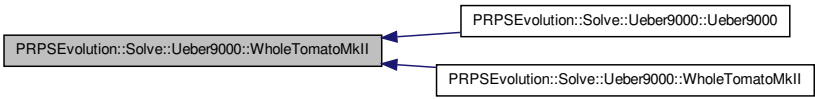
Parameters

in	x	The vector x containing the
----	---	-----------------------------

Here is the call graph for this function:



Here is the caller graph for this function:



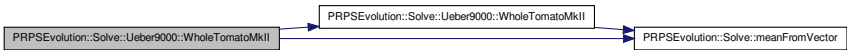
```
6.18.3.12  template<typename T> double PRPSEvolution::Solve::Ueber9000<
           T >::WholeTomatoMkII ( const ChromosomeT< double > & x1, const
           ChromosomeT< double > & x2 )  [inline]
```

Todo document

Parameters

in	x	The vector x containing the
----	---	-----------------------------

Here is the call graph for this function:



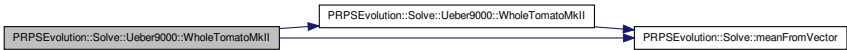
6.18.3.13 `template<typename T> double PRPSEvolution::Solve::Ueber9000< T >::WholeTomatoMkII (const ChromosomeT< double > & x, const ChromosomeT< int > & n) [inline]`

Todo document

Parameters

in	x	The vector x containing the
----	---	-----------------------------

Here is the call graph for this function:



6.18.3.14 `template<typename T> double PRPSEvolution::Solve::Ueber9000< T >::WholeTomatoMkII (const NRmatrix< T > & A, const ChromosomeT< double > & x, const NRvector< T > & b) [inline]`

This function contains the implementation of the whole model. This approach will solve calculate the 10x3 matrix described in the Master-Thesis of C.Gnip Basically solves the linear equation

$$r = \mathbf{Ax} - \mathbf{b}$$

Parameters

in	A	The 10x3 Matrix that ist used in this solution
in	x	The vector containing the variables
in	b	Representing the vector b

Returns

The residuum of the equation system representing the "Fitness" of the given - Solution in

See also

x

6.18.4 Member Data Documentation

6.18.4.1 `template<typename T> std::vector<NRmatrix< T > >
PRPSEvolution::Solve::Ueber9000< T >::A`

The Matrices we need to solve the Problem

6.18.4.2 `template<typename T> std::vector<NRvector< T > >
PRPSEvolution::Solve::Ueber9000< T >::b`

The b-vector needed to find a Solution

6.18.4.3 `template<typename T> int PRPSEvolution::Solve::Ueber9000< T
>::Dimension`

The Dimension of the Problem

6.18.4.4 `template<typename T> double(Ueber9000<double>::*
PRPSEvolution::Solve::Ueber9000< T >::evaluate)(const ChromosomeT<
double > &)`

Todo document

6.18.4.5 `template<typename T> double(Ueber9000<double>::*
PRPSEvolution::Solve::Ueber9000< T >::evaluateMkl)(const
ChromosomeT< double > &)`

Todo document

6.18.4.6 `template<typename T> double(Ueber9000<double>::*
PRPSEvolution::Solve::Ueber9000< T >::evaluateMklI)(const
ChromosomeT< double > &, const ChromosomeT< double > &)`

Todo document

```
6.18.4.7  template<typename T> double(Ueber9000<double>::*
      PRPSEvolution::Solve::Ueber9000< T >::evaluateMkIII)(const
      ChromosomeT< double > &, const ChromosomeT< int > &)
```

Todo document

```
6.18.4.8  template<typename T> int PRPSEvolution::Solve::Ueber9000< T
      >::evaluations = 0
```

```
6.18.4.9  template<typename T> std::vector<std::vector<int> >
      PRPSEvolution::Solve::Ueber9000< T >::idxs
```

```
6.18.4.10 template<typename T> std::vector<std::string>
      PRPSEvolution::Solve::Ueber9000< T >::names
```

The names for the Solution (contains the contributing antennas)

The documentation for this struct was generated from the following file:

- trunk/libSolve/[ueber9000.h](#)

6.19 PRPSEvolution::WholeTomatoMkl_A Struct Reference

```
#include <WholeTomatoMkI_A.h>
```

Public Member Functions

- [WholeTomatoMkl_A](#) (unsigned int [numberOfVariables](#)=7)
- std::string [name](#) () const
From INameable: return the class name.
- std::size_t [numberOfVariables](#) () const
- bool [hasScalableDimensionality](#) () const
- void [setNumberOfVariables](#) (std::size_t [numberOfVariables](#))
- void [configure](#) (const PropertyTree &node)
- void [proposeStartingPoint](#) (SearchPointType &x) const
- double [eval](#) (const SearchPointType &x) const
- void [setParams](#) (const NRmatrix< Doub > &M, const NRvector< Doub > &v)
- void [setMat](#) (const NRmatrix< Doub > &M)
- void [setVec](#) (const NRvector< Doub > &v)
- double [mkl](#) (const NRmatrix< Doub > &A, const SearchPointType &x, const NRvector< Doub > &b) const

6.19.1 Constructor & Destructor Documentation

6.19.1.1 **PRPSEvolution::WholeTomatoMkl_A::WholeTomatoMkl_A** (unsigned int *numberOfVariables* = 7) [inline]

6.19.2 Member Function Documentation

6.19.2.1 **void PRPSEvolution::WholeTomatoMkl_A::configure** (const PropertyTree & *node*) [inline]

6.19.2.2 **double PRPSEvolution::WholeTomatoMkl_A::eval** (const SearchPointType & *x*) const [inline]

6.19.2.3 **bool PRPSEvolution::WholeTomatoMkl_A::hasScalableDimensionality** () const [inline]

6.19.2.4 **double PRPSEvolution::WholeTomatoMkl_A::mkl** (const NRmatrix< Doub > & *A*, const SearchPointType & *x*, const NRvector< Doub > & *b*) const [inline]

Todo documentation

Parameters

in	<i>A</i>	The 10x3 Matrix that ist used in this solution
in	<i>x</i>	The vector containing the variables
in	<i>b</i>	Representing the vector b

Returns

The residuum of the equation system representing the "Fitness" of the given - Solution in

See also

x

6.19.2.5 **std::string PRPSEvolution::WholeTomatoMkl_A::name** () const [inline]

From INameable: return the class name.

6.19.2.6 **std::size_t PRPSEvolution::WholeTomatoMkl_A::numberOfVariables** () const [inline]

6.19.2.7 **void PRPSEvolution::WholeTomatoMkl_A::proposeStartingPoint** (SearchPointType & *x*) const [inline]

6.19.2.8 void PRPSEvolution::WholeTomatoMkl_A::setMat (const NRmatrix< Doub > & M) [inline]

6.19.2.9 void PRPSEvolution::WholeTomatoMkl_A::setNumberOfVariables (std::size_t numberOfVariables) [inline]

6.19.2.10 void PRPSEvolution::WholeTomatoMkl_A::setParams (const NRmatrix< Doub > & M, const NRvector< Doub > & v) [inline]

6.19.2.11 void PRPSEvolution::WholeTomatoMkl_A::setVec (const NRvector< Doub > & v) [inline]

The documentation for this struct was generated from the following file:

- trunk/libSolve/Objectivefunctions/[WholeTomatoMkl_A.h](#)

6.20 PRPSEvolution::WholeTomatoMkl_B Struct Reference

```
#include <WholeTomatoMkl_B.h>
```

Public Member Functions

- [WholeTomatoMkl_B](#) (unsigned int [numberOfVariables](#)=7)
- std::string [name](#) () const
From INameable: return the class name.
- std::size_t [numberOfVariables](#) () const
- bool [hasScalableDimensionality](#) () const
- void [setNumberOfVariables](#) (std::size_t [numberOfVariables](#))
- void [configure](#) (const PropertyTree &node)
- void [proposeStartingPoint](#) (SearchPointType &x) const
- double [eval](#) (const SearchPointType &x) const
- void [setParams](#) (const NRmatrix< Doub > &M, const NRvector< Doub > &v)
- void [setMat](#) (const NRmatrix< Doub > &M)
- void [setVec](#) (const NRvector< Doub > &v)
- double [mkl](#) (const NRmatrix< Doub > &A, const SearchPointType &x, const NRvector< Doub > &b) const

6.20.1 Constructor & Destructor Documentation

6.20.1.1 PRPSEvolution::WholeTomatoMkl_B::WholeTomatoMkl_B (unsigned int [numberOfVariables](#) = 7) [inline]

6.20.2 Member Function Documentation

- 6.20.2.1 `void PRPSEvolution::WholeTomatoMkl_B::configure (const PropertyTree & node) [inline]`
- 6.20.2.2 `double PRPSEvolution::WholeTomatoMkl_B::eval (const SearchPointType & x) const [inline]`
- 6.20.2.3 `bool PRPSEvolution::WholeTomatoMkl_B::hasScalableDimensionality () const [inline]`
- 6.20.2.4 `double PRPSEvolution::WholeTomatoMkl_B::mkl (const NRmatrix< Doub > & A, const SearchPointType & x, const NRvector< Doub > & b) const [inline]`

[Todo](#) documentation

Parameters

<code>in</code>	<code>A</code>	The 10x3 Matrix that ist used in this solution
<code>in</code>	<code>x</code>	The vector containing the variables
<code>in</code>	<code>b</code>	Representing the vector b

Returns

The residuum of the equation system representing the "Fitness" of the given - Solution in

See also

`x`

- 6.20.2.5 `std::string PRPSEvolution::WholeTomatoMkl_B::name () const [inline]`

From INameable: return the class name.

- 6.20.2.6 `std::size_t PRPSEvolution::WholeTomatoMkl_B::numberOfVariables () const [inline]`
- 6.20.2.7 `void PRPSEvolution::WholeTomatoMkl_B::proposeStartingPoint (SearchPointType & x) const [inline]`
- 6.20.2.8 `void PRPSEvolution::WholeTomatoMkl_B::setMat (const NRmatrix< Doub > & M) [inline]`
- 6.20.2.9 `void PRPSEvolution::WholeTomatoMkl_B::setNumberOfVariables (std::size_t numberOfVariables) [inline]`

6.20.2.10 void PRPSEvolution::WholeTomatoMkI_B::setParams (const NRmatrix< Doub > & *M*, const NRvector< Doub > & *v*) [inline]

6.20.2.11 void PRPSEvolution::WholeTomatoMkI_B::setVec (const NRvector< Doub > & *v*) [inline]

The documentation for this struct was generated from the following file:

- trunk/libSolve/Objectivefunctions/[WholeTomatoMkI_B.h](#)

6.21 PRPSEvolution::WholeTomatoMkII Struct Reference

```
#include <WholeTomatoMkII.h>
```

Public Types

- typedef AbstractOptimizer < shark::VectorSpace< double > , double, SingleObjectiveResultSet < typename shark::VectorSpace < double >::PointType > > [base_type](#)
- typedef base_type::ObjectiveFunctionType [ObjectiveFunctionType](#)

Public Member Functions

- [WholeTomatoMkII](#) (unsigned int [numberOfVariables](#)=5)
- std::string [name](#) () const
From INameable: return the class name.
- std::size_t [numberOfVariables](#) () const
- bool [hasScalableDimensionality](#) () const
- void [setNumberOfVariables](#) (std::size_t [numberOfVariables](#))
- void [configure](#) (const PropertyTree &node)
- void [proposeStartingPoint](#) (SearchPointType &x) const
- double [eval](#) (const SearchPointType &p) const
- void [setParams](#) (const std::vector< NRmatrix< Doub >> &M, const std::vector< NRvector< Doub >> &v, const std::vector< std::string > &n)
- void [setParams](#) (const std::vector< NRmatrix< Doub >> &M, const std::vector< NRvector< Doub >> &v, const std::vector< std::vector< int >> &i)
- void [setMats](#) (const std::vector< NRmatrix< Doub >> &M)
- void [setVecs](#) (const std::vector< NRvector< Doub >> &v)
- void [setNames](#) (const std::vector< std::string > &n)
- void [setIdx](#) (const std::vector< std::vector< int >> &i)
- double [mkII](#) (const NRmatrix< Doub > &A, const double *x, const NRvector< Doub > &b) const

6.21.1 Member Typedef Documentation

- 6.21.1.1 `typedef AbstractOptimizer<shark::VectorSpace< double
>,double,SingleObjectiveResultSet<typename shark::VectorSpace< double
>::PointType> > PRPSEvolution::WholeTomatoMkII::base_type`
- 6.21.1.2 `typedef base_type::ObjectiveFunctionType PRPSEvolution::WholeTomatoMkII::-
ObjectiveFunctionType`

6.21.2 Constructor & Destructor Documentation

- 6.21.2.1 `PRPSEvolution::WholeTomatoMkII::WholeTomatoMkII (unsigned int
numberOfVariables = 5) [inline]`

6.21.3 Member Function Documentation

- 6.21.3.1 `void PRPSEvolution::WholeTomatoMkII::configure (const PropertyTree &
node) [inline]`
- 6.21.3.2 `double PRPSEvolution::WholeTomatoMkII::eval (const SearchPointType & p)
const [inline]`

Here is the call graph for this function:



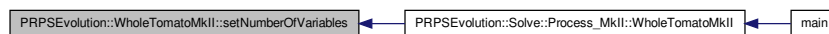
- 6.21.3.3 `bool PRPSEvolution::WholeTomatoMkII::hasScalableDimensionality ()
const [inline]`
- 6.21.3.4 `double PRPSEvolution::WholeTomatoMkII::mkII (const NRmatrix< Doub > &
A, const double * x, const NRvector< Doub > & b) const [inline]`
- 6.21.3.5 `std::string PRPSEvolution::WholeTomatoMkII::name () const [inline]`

From INameable: return the class name.

- 6.21.3.6 `std::size_t PRPSEvolution::WholeTomatoMkII::numberOfVariables ()
const [inline]`

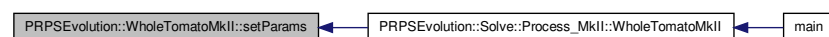
- 6.21.3.7 void PRPSEvolution::WholeTomatoMkII::proposeStartingPoint (SearchPointType & *x*) const [inline]
- 6.21.3.8 void PRPSEvolution::WholeTomatoMkII::setIdx (const std::vector< std::vector< int >> & *i*) [inline]
- 6.21.3.9 void PRPSEvolution::WholeTomatoMkII::setMats (const std::vector< NRmatrix< Doub >> & *M*) [inline]
- 6.21.3.10 void PRPSEvolution::WholeTomatoMkII::setNames (const std::vector< std::string > & *n*) [inline]
- 6.21.3.11 void PRPSEvolution::WholeTomatoMkII::setNumberOfVariables (std::size_t *numberOfVariables*) [inline]

Here is the caller graph for this function:



- 6.21.3.12 void PRPSEvolution::WholeTomatoMkII::setParams (const std::vector< NRmatrix< Doub >> & *M*, const std::vector< NRvector< Doub >> & *v*, const std::vector< std::string > & *n*) [inline]

Here is the caller graph for this function:



- 6.21.3.13 void PRPSEvolution::WholeTomatoMkII::setParams (const std::vector< NRmatrix< Doub >> & *M*, const std::vector< NRvector< Doub >> & *v*, const std::vector< std::vector< int >> & *i*) [inline]
- 6.21.3.14 void PRPSEvolution::WholeTomatoMkII::setVecs (const std::vector< NRvector< Doub >> & *v*) [inline]

The documentation for this struct was generated from the following file:

- [trunk/libSolve/Objectivefunctions/WholeTomatoMkII.h](#)

Chapter 7

File Documentation

7.1 trunk/CMakeFiles/CompilerIdC/CMakeCCompilerId.c File - Reference

Defines

- `#define COMPILER_ID ""`
- `#define PLATFORM_ID ""`
- `#define ARCHITECTURE_ID ""`

Functions

- `int main (int argc, char *argv[])`

Variables

- `char const * info_compiler = ""`
- `char const * info_platform = ""`
- `char const * info_arch = ""`

7.1.1 Define Documentation

7.1.1.1 `#define ARCHITECTURE_ID ""`

7.1.1.2 `#define COMPILER_ID ""`

7.1.1.3 `#define PLATFORM_ID ""`

7.1.2 Function Documentation

7.1.2.1 `int main (int argc, char * argv[])`

7.1.3 Variable Documentation

7.1.3.1 `char const* info_arch = ""`

7.1.3.2 `char const* info_compiler = ""`

7.1.3.3 `char const* info_platform = ""`

7.2 trunk/CMakeFiles/CompilerIdCXX/CMakeCXXCompilerId.cpp File Reference

Defines

- `#define COMPILER_ID ""`
- `#define PLATFORM_ID ""`
- `#define ARCHITECTURE_ID ""`

Functions

- `int main (int argc, char *argv[])`

Variables

- `char const * info_compiler = ""`
- `char const * info_platform = ""`
- `char const * info_arch = ""`

7.2.1 Define Documentation

7.2.1.1 `#define ARCHITECTURE_ID ""`

7.2.1.2 `#define COMPILER_ID ""`

7.2.1.3 `#define PLATFORM_ID ""`

7.2.2 Function Documentation

7.2.2.1 `int main (int argc, char * argv[])`

7.2.3 Variable Documentation

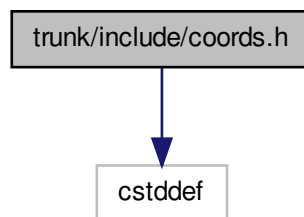
7.2.3.1 `char const* info_arch = ""`

7.2.3.2 `char const* info_compiler = ""`

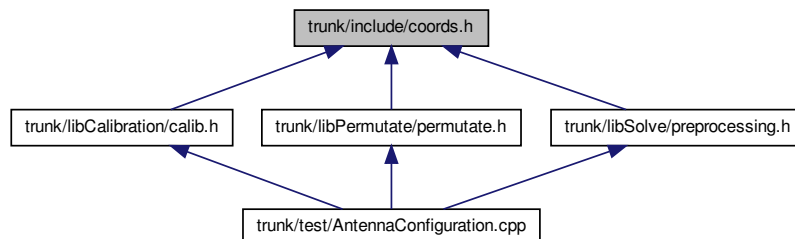
7.2.3.3 `char const* info_platform = ""`

7.3 trunk/include/coords.h File Reference

`#include <cstdint>` Include dependency graph for coords.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::Positioning::CoordContainer< N, T >](#)

Namespaces

- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Positioning](#)

7.4 trunk/include/prps.h File Reference

Variables

- const int [ANTENNA_AMOUNT](#) = 8
- const int [EXPECTED_LINES](#) = 10
- const int [EXPECTED_VALUES](#) = 10

7.4.1 Variable Documentation

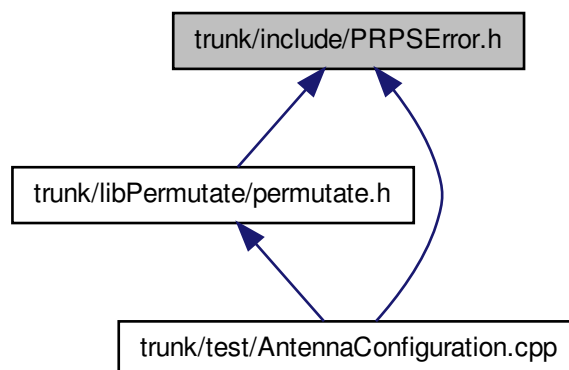
7.4.1.1 const int [ANTENNA_AMOUNT](#) = 8

7.4.1.2 const int [EXPECTED_LINES](#) = 10

7.4.1.3 const int [EXPECTED_VALUES](#) = 10

7.5 trunk/include/PRPSError.h File Reference

This graph shows which files directly or indirectly include this file:



Namespaces

- namespace [PRPSError](#)
- namespace [PRPSError::FileIO](#)

Variables

- const int [PRPSError::FileO::okay](#) = 0
- const int [PRPSError::FileO::generalError](#) = -1
- const int [PRPSError::FileO::fnf](#) = -2
- const int [PRPSError::FileO::inputmalformed](#) = -3
- const int [PRPSError::okay](#) = 0
- const int [PRPSError::general](#) = -1
- const int [PRPSError::critical](#) = 10

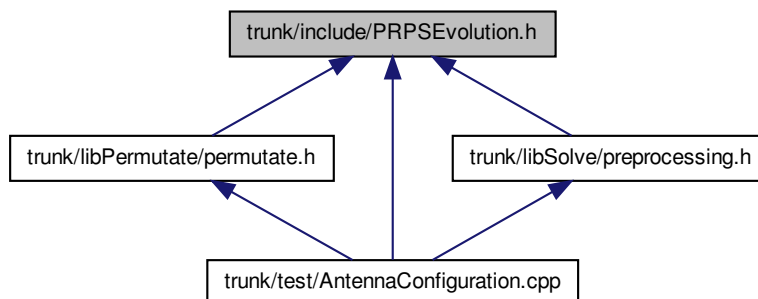
7.5.1 Detailed Description

Date

2013|Jun|18 This file contains definitions belonging to the PRPSError-namespace. It is split into sub-namespaces for keeping thing nicely small.

7.6 trunk/include/PRPSEvolution.h File Reference

This graph shows which files directly or indirectly include this file:



Namespaces

- namespace [PRPSEvolution](#)

Variables

- const int [PRPSEvolution::ANTENNA_AMOUNT](#) = 8
- const int [PRPSEvolution::EXPECTED_LINES_CALIBRATION_FILE](#) = 4

- `const int PRPSEvolution::EXPECTED_VALUES_CALIBRATION_FILE = ANTENNA_AMOUNT`
- `const int PRPSEvolution::EXPECTED_LINES_COORD_FILE = ANTENNA_AMOUNT`
- `const int PRPSEvolution::EXPECTED_VALUES_COORD_FILE = 3`
- `const int PRPSEvolution::EXPECTED_LINES_SYSTEM_INI_FILE = 2`
- `const int PRPSEvolution::MAT_ROWS = 3`
- `const int PRPSEvolution::MAT_COLS = 10`
- `const int PRPSEvolution::CALIBRATION_POINTS_AVAILABLE = 4`
- `const int PRPSEvolution::EXPECTED_LINES_MEASUREMENT_FILE = ANTENNA_AMOUNT`
- `const int PRPSEvolution::EXPECTED_VALUES_MEASUREMENT_FILE = 2`
- `const int PRPSEvolution::DATA_NV = 65535`
- `const int PRPSEvolution::DEFAULT_MIN_GROUP_SIZE = 4`

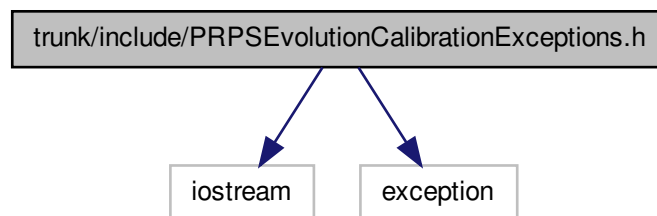
7.6.1 Detailed Description

Date

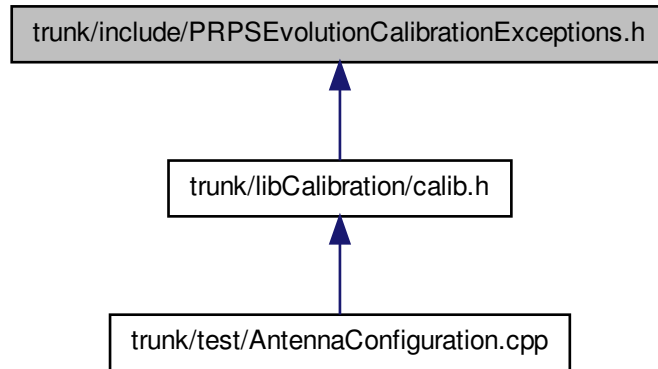
2013|Jun|18 This file collects definitions belonging to the PRPSEvolution-namespace. Especially const. defines.

7.7 trunk/include/PRPSEvolutionCalibrationExceptions.h File - Reference

`#include <iostream> #include <exception>` Include dependency graph for PRPSEvolutionCalibrationExceptions.h:



This graph shows which files directly or indirectly include this file:

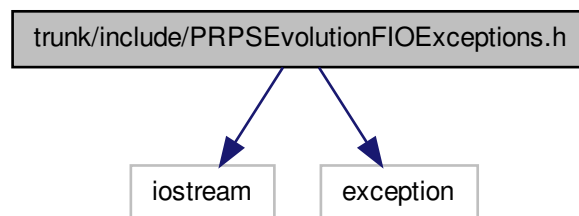


Namespaces

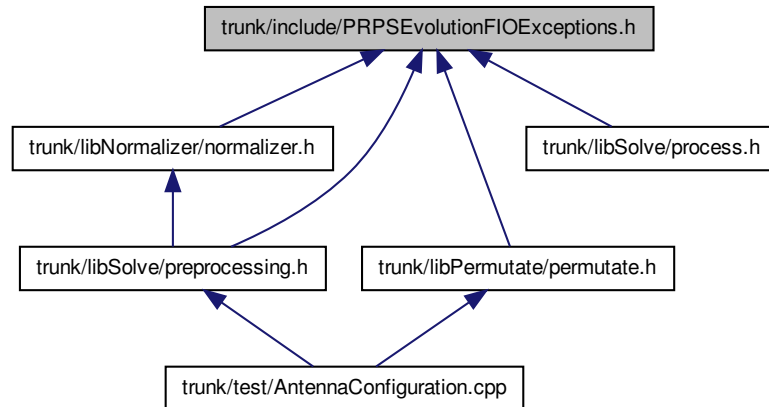
- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Exceptions](#)
- namespace [PRPSEvolution::Exceptions::Calibration](#)

7.8 trunk/include/PRPSEvolutionFIOExceptions.h File Reference

`#include <iostream> #include <exception>` Include dependency graph for PRPSEvolutionFIOExceptions.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::Exceptions::FileIO::FileNotFound](#)
- struct [PRPSEvolution::Exceptions::FileIO::MalformedInput](#)
- struct [PRPSEvolution::Exceptions::FileIO::OutputFailure](#)

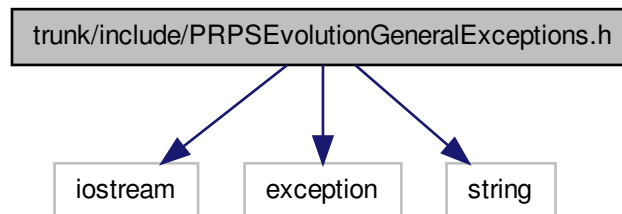
Namespaces

- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Exceptions](#)
- namespace [PRPSEvolution::Exceptions::FileIO](#)

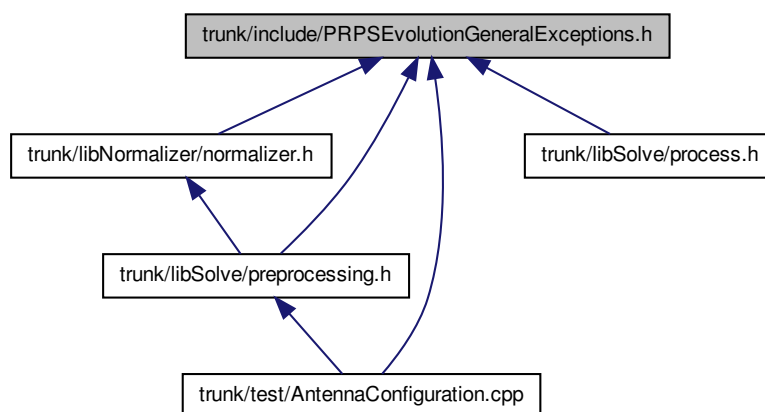
7.9 trunk/include/PRPSEvolutionGeneralExceptions.h File Reference

```
#include <iostream> #include <exception> #include <string> ×
```

Include dependency graph for PRPSEvolutionGeneralExceptions.h:



This graph shows which files directly or indirectly include this file:



Classes

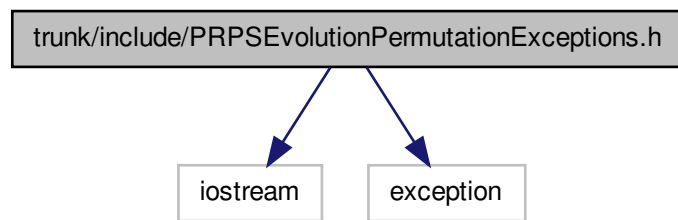
- struct [PRPSEvolution::Exceptions::General::NotImplemented](#)

Namespaces

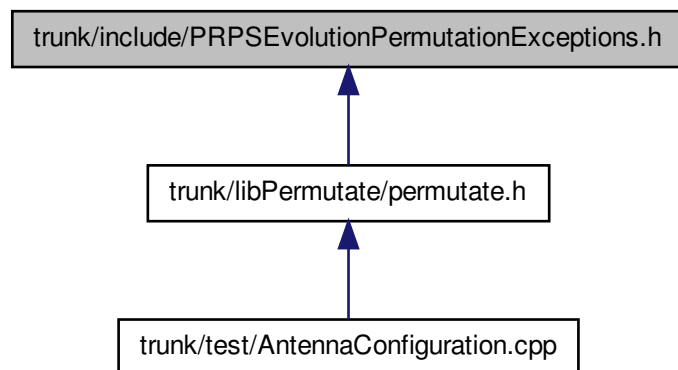
- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Exceptions](#)
- namespace [PRPSEvolution::Exceptions::General](#)

7.10 trunk/include/PRPSEvolutionPermutationExceptions.h File - Reference

`#include <iostream> #include <exception>` Include dependency graph for PRPSEvolutionPermutationExceptions.h:



This graph shows which files directly or indirectly include this file:



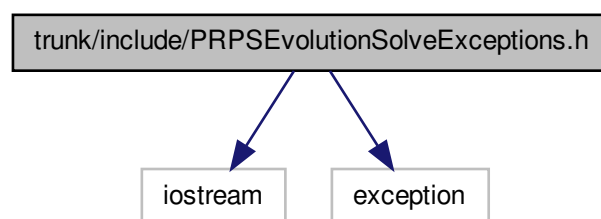
Namespaces

- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Exceptions](#)

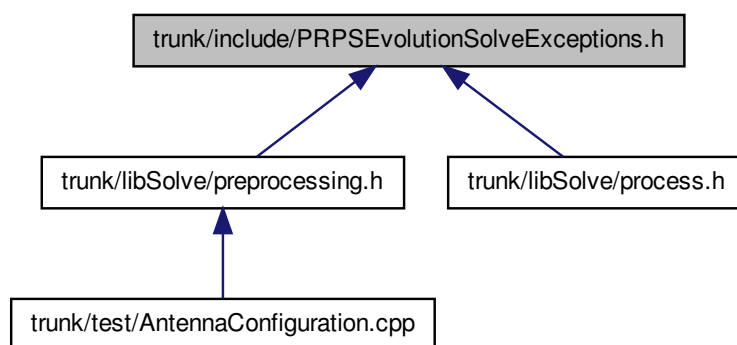
- namespace [PRPSEvolution::Exceptions::Permutation](#)

7.11 trunk/include/PRPSEvolutionSolveExceptions.h File Reference

`#include <iostream> #include <exception>` Include dependency graph for PRPSEvolutionSolveExceptions.h:



This graph shows which files directly or indirectly include this file:



Namespaces

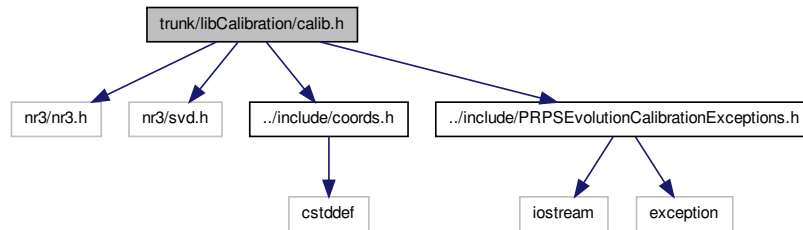
- namespace [PRPSEvolution](#)

- namespace [PRPSEvolution::Exceptions](#)
- namespace [PRPSEvolution::Exceptions::Solve](#)

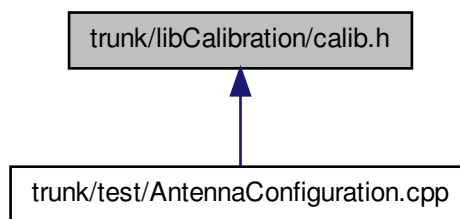
7.12 trunk/libCalibration/calib.cpp File Reference

7.13 trunk/libCalibration/calib.h File Reference

```
#include <nr3/nr3.h> #include <nr3/svd.h> #include "../include/coords.-
h" #include "../include/PRPSEvolutionCalibrationExceptions.-
h" Include dependency graph for calib.h:
```



This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::Calibration::performCalibration< N_ANTA, N_CALPOS, T >](#)

Namespaces

- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Calibration](#)

7.13.1 Detailed Description

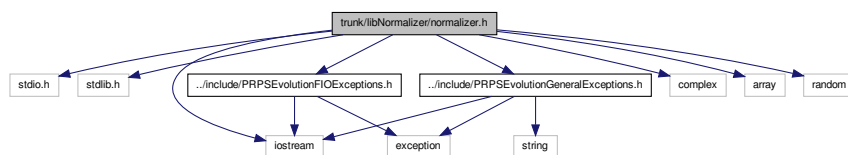
Date

2013|Jun|25

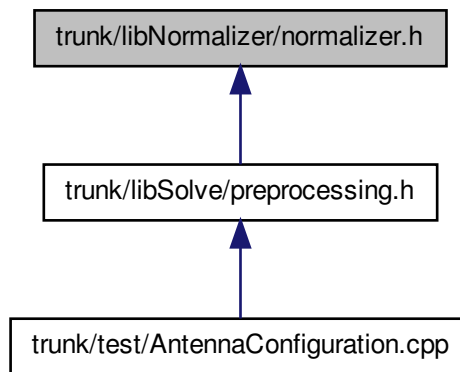
7.14 trunk/libNormalizer/normalizer.cpp File Reference

7.15 trunk/libNormalizer/normalizer.h File Reference

```
#include <stdio.h> #include <stdlib.h> #include <iostream> ×  
#include "../include/PRPSEvolutionGeneralExceptions.-  
h" #include "../include/PRPSEvolutionFIOExceptions.h" ×  
#include <complex> #include <array> #include <random> ×  
Include dependency graph for normalizer.h:
```



This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::Normalizer< N, T >](#)

Namespaces

- namespace [PRPSEvolution](#)

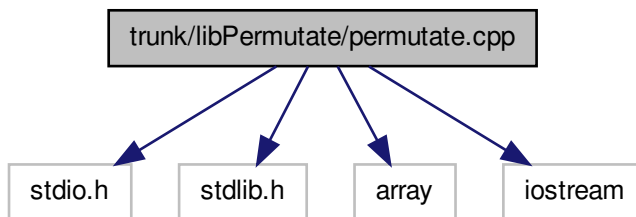
Enumerations

- enum [PRPSEvolution::NormalizatioMethodes](#) { [PRPSEvolution::Native](#), [PRPSEvolution::B](#), [PRPSEvolution::CMPLX](#), [PRPSEvolution::RND](#) }

7.15.1 Detailed Description

Collects normalizations for the input data

```
#include <stdio.h> #include <stdlib.h> #include <array> x
#include <iostream> Include dependency graph for permute.cpp:
```



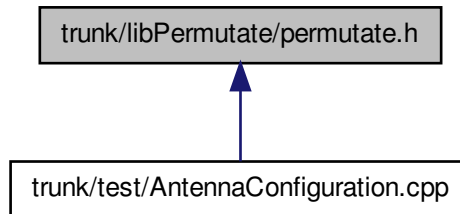
- void test2 ()

7.16.1.1 void test2 ()

```
#include <stdio.h>#include <stdlib.h>#include <iterator>×
#include <iostream>#include <algorithm>#include <array>×
#include <string> #include "../include/coords.h" #include
"../include/PRPSEvolution.h" #include "../include/PRPS-
EvolutionPermutationExceptions.h" #include "../include/-
PRPSEvolutionFIOExceptions.h" #include "../include/PRPS-
Error.h" #include "../libPRPSSystem/prpsevolutionsystem.-
h" #include "nr3/nr3.h" #include "nr3/svd.h" Include dependency
graph for permute.h:
```



This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::Permutate::AntennaPermutations](#)< N_MAT, T >
- struct [PRPSEvolution::Permutate::permuteAntennas](#)< N_ANTA, N_ANTPERM, T >

Namespaces

- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Permutate](#)

Functions

- int [PRPSEvolution::Permutate::Factorial](#) (int x)
- template<typename Iterator >
bool [PRPSEvolution::Permutate::next_combination](#) (const Iterator first, Iterator k, const Iterator last)

Variables

- const int [PRPSEvolution::Permutate::MAX_PERMUTATION_AMOUNT](#) = 35

7.17.1 Detailed Description

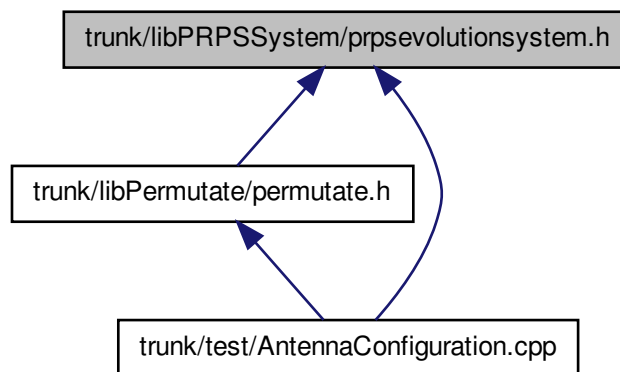
Date

2013|Jun|25

7.18 trunk/libPRPSSystem/prpsevolutionsystem.cpp File Reference

7.19 trunk/libPRPSSystem/prpsevolutionsystem.h File Reference

This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::Constants](#)
- struct [PRPSEvolution::System](#)

Namespaces

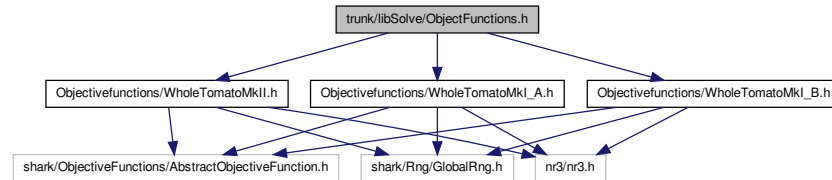
- namespace [PRPSEvolution](#)

7.20 trunk/libSolve/ObjectFunctions.cpp File Reference

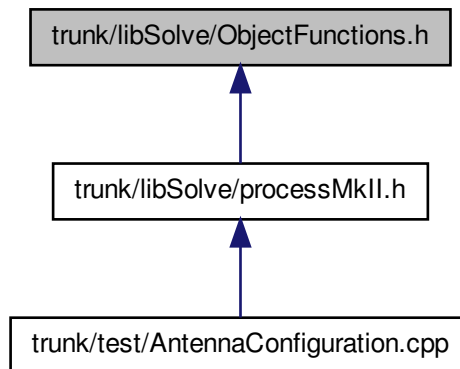
7.21 trunk/libSolve/ObjectFunctions.h File Reference

```
#include "Objectivefunctions/WholeTomatoMkII.h" #include  
"Objectivefunctions/WholeTomatoMkI_A.h" #include "Objectivefunctions/-
```

WholeTomatoMkI_B.h" Include dependency graph for ObjectFunctions.h:



This graph shows which files directly or indirectly include this file:



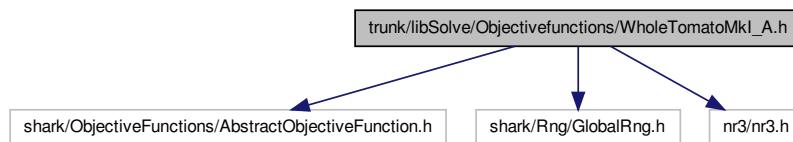
7.22 trunk/libSolve/Objectivefunctions/WholeTomatoMkI.cpp File - Reference

7.23 trunk/libSolve/Objectivefunctions/WholeTomatoMkI_A.h File - Reference

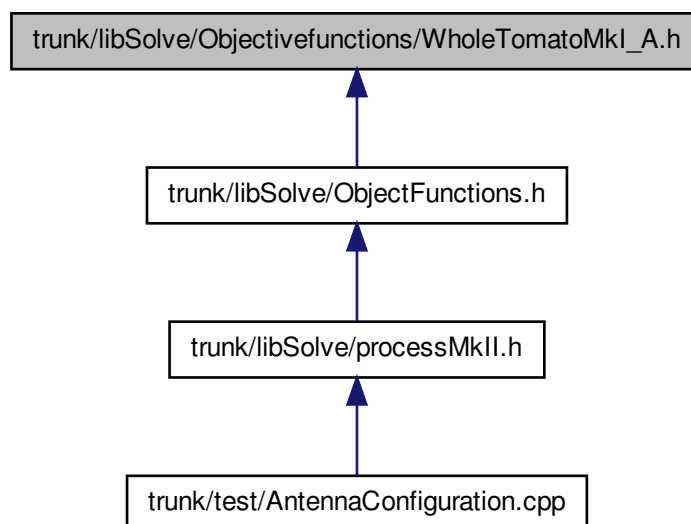
```
#include <shark/ObjectiveFunctions/AbstractObjective-
Function.h> #include <shark/Rng/GlobalRng.h> #include
```


7.23 trunk/libSolve/Objectivefunctions/WholeTomatoMkI_A.h File Reference 81

<nr3/nr3.h> Include dependency graph for WholeTomatoMkI_A.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::WholeTomatoMkI_A](#)

Namespaces

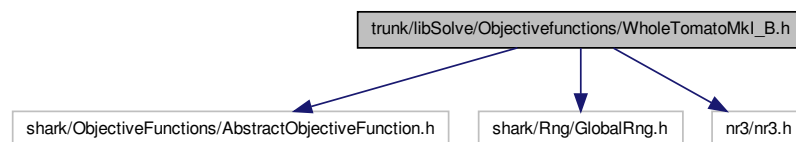
- namespace [PRPSEvolution](#)

Functions

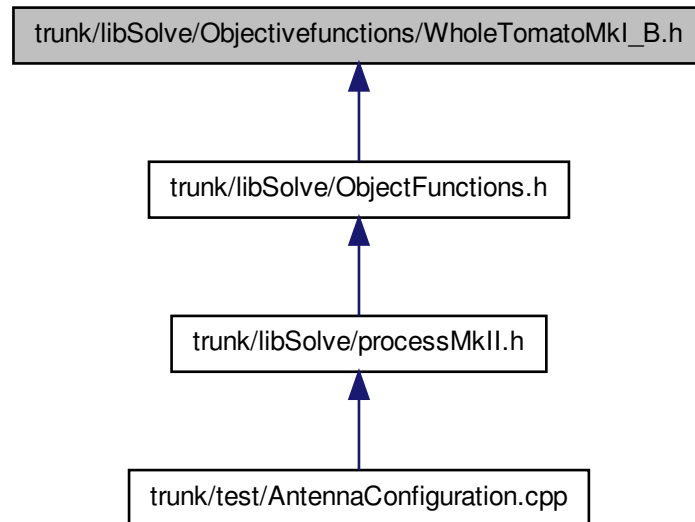
- [PRPSEvolution::ANNOUNCE_SINGLE_OBJECTIVE_FUNCTION](#) (Whole-TomatoMkl_A, shark::soo::RealValuedObjectiveFunctionFactory)

7.24 trunk/libSolve/Objectivefunctions/WholeTomatoMkl_B.h File - Reference

```
#include <shark/ObjectiveFunctions/AbstractObjectiveFunction.h> #include <shark/Rng/GlobalRng.h> #include <nr3/nr3.h> Include dependency graph for WholeTomatoMkl_B.h:
```



This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::WholeTomatoMkl_B](#)

Namespaces

- namespace [PRPSEvolution](#)

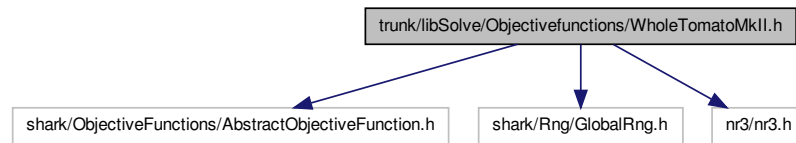
Functions

- [PRPSEvolution::ANNOUNCE_SINGLE_OBJECTIVE_FUNCTION](#) (Whole-TomatoMkl_B, shark::soo::RealValuedObjectiveFunctionFactory)

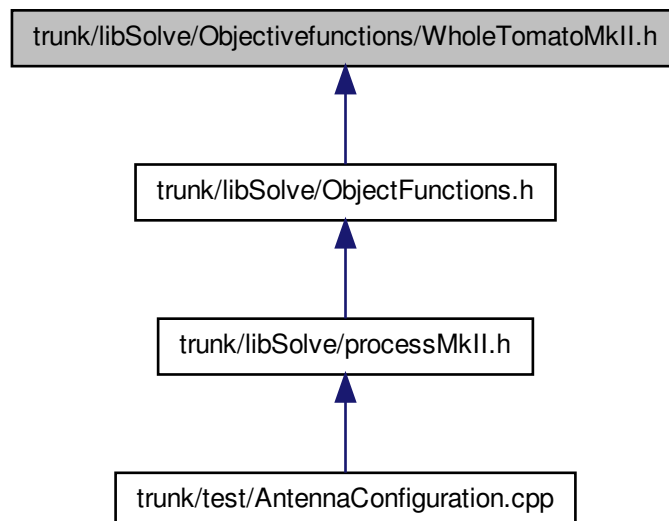
7.25 trunk/libSolve/Objectivefunctions/WholeTomatoMkl.h File - Reference

```
#include <shark/ObjectiveFunctions/AbstractObjectiveFunction.h> #include <shark/Rng/GlobalRng.h> #include
```

<nr3/nr3.h> Include dependency graph for WholeTomatoMkII.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::WholeTomatoMkII](#)

Namespaces

- namespace [PRPSEvolution](#)

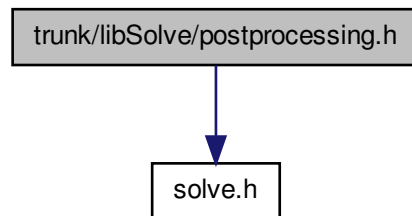
Functions

- [PRPSEvolution::ANNOUNCE_SINGLE_OBJECTIVE_FUNCTION](#) (Whole-TomatoMkII, soo::RealValuedObjectiveFunctionFactory)

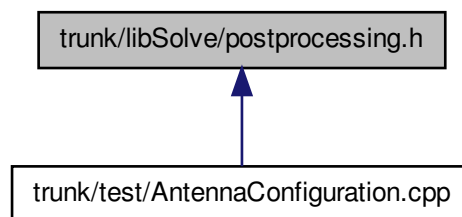
7.26 trunk/libSolve/postprocessing.cpp File Reference

7.27 trunk/libSolve/postprocessing.h File Reference

#include "solve.h" Include dependency graph for postprocessing.h:



This graph shows which files directly or indirectly include this file:



Classes

- class [PRPSEvolution::Solve::PostProcessing](#)

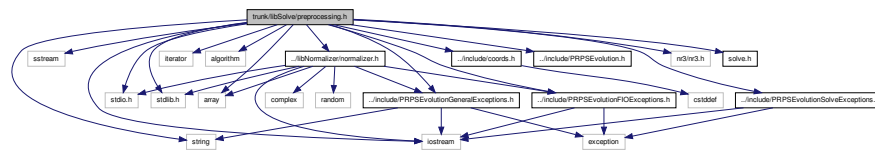
Namespaces

- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Solve](#)

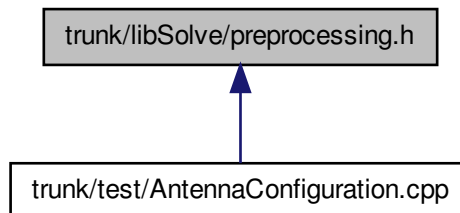
7.28 trunk/libSolve/preprocessing.cpp File Reference

7.29 trunk/libSolve/preprocessing.h File Reference

```
#include <iostream> #include <sstream> #include <string> ×
#include <stdio.h> #include <stdlib.h> #include <iterator> ×
#include <algorithm> #include <array> #include "../lib-
Normalizer/normalizer.h" #include "../include/coords.h"
#include "../include/PRPSEvolution.h" #include "../include/-
PRPSEvolutionSolveExceptions.h" #include "../include/-
PRPSEvolutionFIOExceptions.h" #include "../include/PR-
PSEvolutionGeneralExceptions.h" #include "nr3/nr3.h" ×
#include "solve.h" Include dependency graph for preprocessing.h:
```



This graph shows which files directly or indirectly include this file:



Classes

- class [PRPSEvolution::Solve::PreProcessing](#)< [N_ANTA](#), [N_Configs](#), [T](#), [T_Measure](#) >

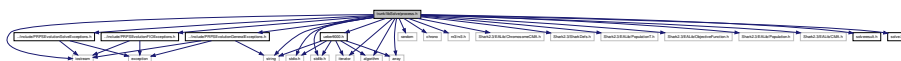
Namespaces

- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Solve](#)

7.30 trunk/libSolve/process.cpp File Reference

7.31 trunk/libSolve/process.h File Reference

```
#include <iostream> #include <string> #include <random>
#include <stdio.h> #include <chrono> #include <stdlib.-
h> #include <iterator> #include <algorithm> #include
<array> #include "nr3/nr3.h" #include <Shark2.3/EALib/-
ChromosomeCMA.h> #include <Shark2.3/SharkDefs.h> #include
<Shark2.3/EALib/PopulationT.h> #include <Shark2.3/EALib/-
ObjectiveFunction.h> #include <Shark2.3/EALib/Population.-
h> #include <Shark2.3/EALib/CMA.h> #include "../include/-
PRPSEvolutionSolveExceptions.h" #include "../include/P-
RPSEvolutionFIOExceptions.h" #include "../include/PRPS-
EvolutionGeneralExceptions.h" #include "solveresult.h"×
#include "solve.h" #include "ueber9000.h" Include dependency
graph for process.h:
```



Classes

- class [PRPSEvolution::Solve::Process](#)

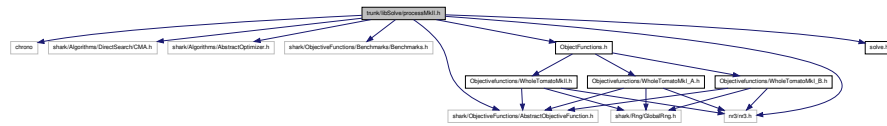
Namespaces

- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Solve](#)

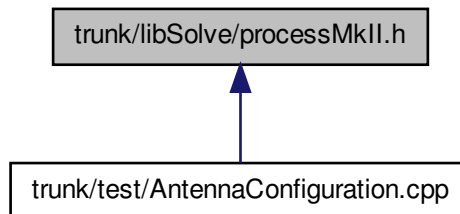
7.32 trunk/libSolve/processMkII.cpp File Reference

7.33 trunk/libSolve/processMkII.h File Reference

```
#include <chrono>          #include <shark/Algorithms/Direct-
Search/CMA.h> #include <shark/Algorithms/AbstractOptimizer.-
h> #include <shark/ObjectiveFunctions/Benchmarks/Benchmarks.-
h> #include <shark/ObjectiveFunctions/AbstractObjective-
Function.h> #include "solve.h" #include "ObjectFunctions.-
h" #include <nr3/nr3.h> Include dependency graph for processMkII.h:
```



This graph shows which files directly or indirectly include this file:



Classes

- class [PRPSEvolution::Solve::Process_MkII](#)

Namespaces

- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Solve](#)

Defines

- #define [STUFF](#)(Function, Vars)
- #define [SOLVE](#)(MODEL)
- #define [SOLVE_AND_WRITE](#)(MODEL)

7.33.1 Define Documentation

7.33.1.1 #define SOLVE(MODEL)

Value:

```
shark::CMA cma;
\
    cma.init( MODEL );
\
    do { cma.step( MODEL ); } while(cma.solution().value > epsilon );
\
```

7.33.1.2 #define SOLVE_AND_WRITE(MODEL)

Value:

```
shark::CMA cma;
\
    cma.init( MODEL );
\
    do {
\
        cma.step( MODEL );
\
        f << model.evaluationCounter() << " "
\
\
\
        << cma.solution().value << " "
\
        << cma.solution().point << " "
\
\
        << cma.sigma()
\
        << std::endl;
\
    } while(cma.solution().value > epsilon
\
        && model.evaluationCounter() < maxEvaluations);
\
```

7.33.1.3 #define STUFF(Function, Vars)

Value:

```
Function model(Vars);
\
```

```

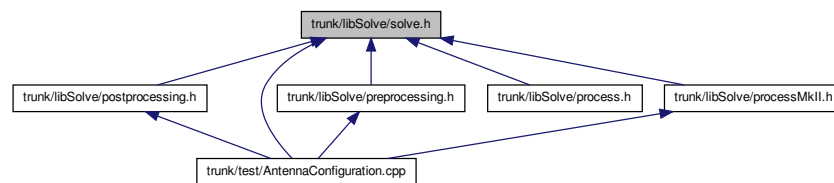
    model.setNumberOfVariables( Vars );
\
    shark::CMA cma;
\
    cma.init( model );
\
    do { cma.step( model ); } while( cma.solution().value > epsilon );
\

```

7.34 trunk/libSolve/solve.cpp File Reference

7.35 trunk/libSolve/solve.h File Reference

This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::Solve::ProblemDimensions](#)

Namespaces

- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Solve](#)

Enumerations

- enum [PRPSEvolution::Solve::SelectBy](#) { [PRPSEvolution::Solve::ConditionNumber](#), [PRPSEvolution::Solve::Random](#), [PRPSEvolution::Solve::AllPossible](#), [PRPSEvolution::Solve::Best10ByCN](#), [PRPSEvolution::Solve::AllFrom4Ant](#) }
- enum [PRPSEvolution::Solve::ESStrategy](#) { [PRPSEvolution::Solve::OnePlusOne](#), [PRPSEvolution::Solve::MuPlusLambda](#), [PRPSEvolution::Solve::MuCommaLambda](#), [PRPSEvolution::Solve::MuCommaLambda_MkII](#), [PRPSEvolution::Solve::MuPlusLambda_MkII](#), [PRPSEvolution::Solve::CMA_ES_MkI](#), [PRPSEvolution::Solve::CMA_ES_MkII](#) }
- enum [PRPSEvolution::Solve::Models](#) { [PRPSEvolution::Solve::WholeTomatoMkI](#), [PRPSEvolution::Solve::WholeTomatoMkII](#), [PRPSEvolution::Solve::TestSphere](#) }

Functions

- double [PRPSEvolution::Solve::meanFromVector](#) (std::vector< double > &res)

Variables

- const int [PRPSEvolution::Solve::nConfigsForProcessing](#) = 1

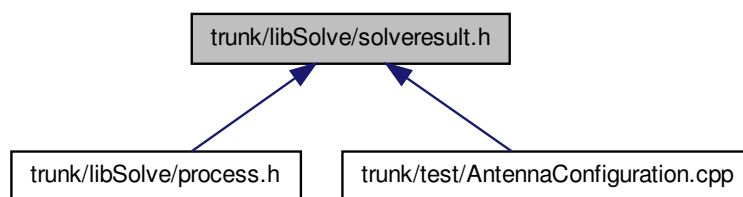
7.35.1 Detailed Description

Date

2013|Jun|25

7.36 trunk/libSolve/solverresult.h File Reference

This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::Solve::solverresult_t](#)< T_Store1, T_Store2, T_Return >

Namespaces

- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Solve](#)

7.36.1 Detailed Description

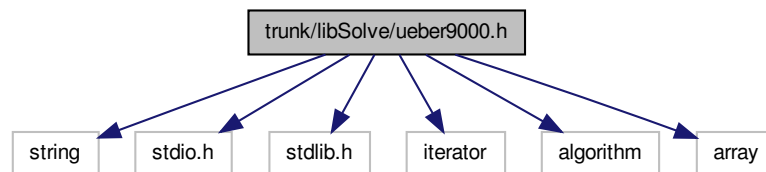
Date

2013|Jul|5

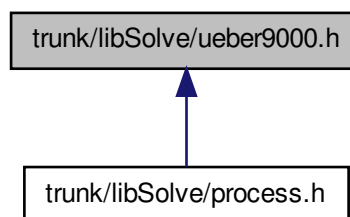
7.37 trunk/libSolve/ueber9000.cpp File Reference

7.38 trunk/libSolve/ueber9000.h File Reference

```
#include <string> #include <stdio.h> #include <stdlib.-  
h> #include <iterator> #include <algorithm> #include  
<array> Include dependency graph for ueber9000.h:
```



This graph shows which files directly or indirectly include this file:



Classes

- struct [PRPSEvolution::Solve::Ueber9000< T >](#)

Namespaces

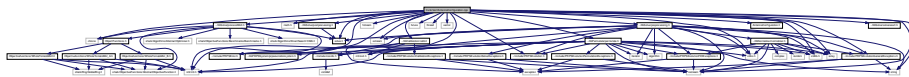
- namespace [PRPSEvolution](#)
- namespace [PRPSEvolution::Solve](#)

Variables

- std::mutex [PRPSEvolution::Solve::wMutex](#)
- int [PRPSEvolution::Solve::_i](#) = 0

7.39 trunk/test/AntennaConfiguration.cpp File Reference

```
#include <stdio.h> #include <stdlib.h> #include <math.-
h> #include <array> #include <iostream> #include <exception> ×
#include <fstream> #include <sstream> #include <string>
#include <chrono> #include <future> #include <thread> ×
#include <vector> #include "../libSolve/processMkII.h"
#include "../include/PRPSEvolution.h" #include "../include/-
PRPSError.h" #include "../include/PRPSEvolutionGeneral-
Exceptions.h" #include "AntennaConfiguration.h" #include
"../libPermutate/permutate.h" #include "../libPRPSSystem/prpsevolutionsystem.-
h" #include "../libCalibration/calib.h" #include "../lib-
Solve/solve.h" #include "../libSolve/solverresult.h" #include
"../libSolve/preprocessing.h" #include "../libSolve/postprocessing.-
h" Include dependency graph for AntennaConfiguration.cpp:
```



Defines

- #define [_USE_SHARK_3_0_](#)
- #define [_Write_Result](#)
- #define [_DROP_BAD_](#)

Functions

- int [main](#) (int argc, char *argv[])

Variables

- const int [SOLUTION_AMOUNT](#) = 1

- int [VARIANT_SW](#)
- int [NO_OF_SOLUTIONS](#)
- bool [DROPBAD](#) = false
- std::string [FILENAME](#) = ""

7.39.1 Detailed Description

This File contains the [main\(\)](#) of the AntennaApp-Project

7.39.2 Define Documentation

7.39.2.1 `#define _DROP_BAD_`

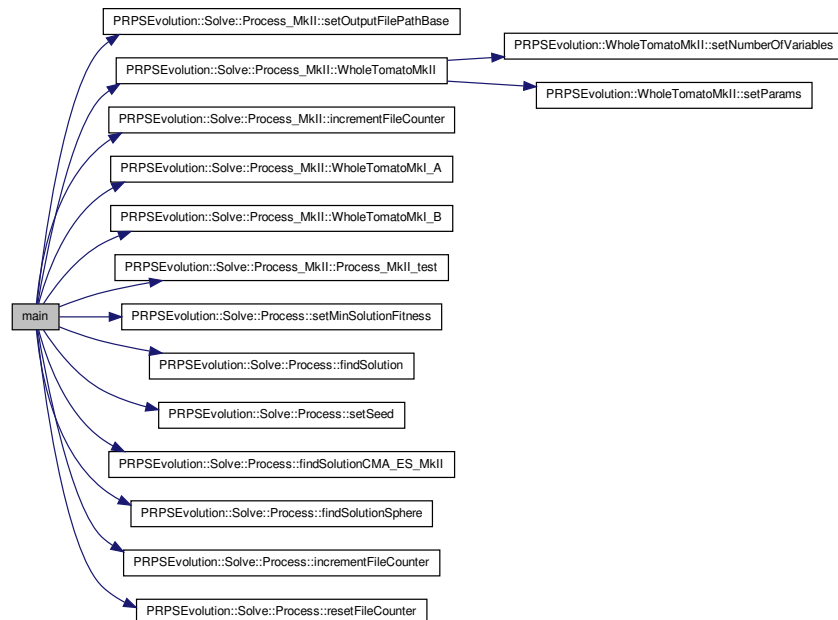
7.39.2.2 `#define _USE_SHARK_3_0_`

7.39.2.3 `#define _Write_Result`

7.39.3 Function Documentation

7.39.3.1 `int main (int argc, char * argv[])`

Here is the call graph for this function:



7.39.4 Variable Documentation

7.39.4.1 `bool DROPBAD = false`

7.39.4.2 `std::string FILENAME = ""`

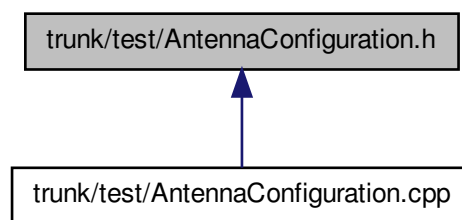
7.39.4.3 `int NO_OF_SOLUTIONS`

7.39.4.4 `const int SOLUTION_AMOUNT = 1`

7.39.4.5 `int VARIANT_SW`

7.40 trunk/test/AntennaConfiguration.h File Reference

This graph shows which files directly or indirectly include this file:



Defines

- `#define VERSION_MAJOR 0`
- `#define VERSION_MINOR 1`
- `#define VERSION_SUB_MINOR 1`

7.40.1 Define Documentation

7.40.1.1 `#define VERSION_MAJOR 0`

7.40.1.2 `#define VERSION_MINOR 1`

7.40.1.3 `#define VERSION_SUB_MINOR 1`