PS-MMM : Parallel Simulator for (IM-)Miscible Multi-Phase Mixing Flow

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Classes

- struct concentrMatrix
- struct concentrRHS
- struct diffusion_step
- struct pressure_rot_step
- struct projection_step
- struct relaxation_div_velocity_step

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Classes

- class concentrInitialValues
- class concentrInletValues

- class Inflow_Velocity
- class Outflow_Pressure

Variables

- const double pipe_diameter = 19.05
- const double gravitiy_accelation = 9800
- const double upstream_concentr = 0.0
- const double downstream_concentr = 1.0
- const double kinematic_viscosity = 1.0

5.4.1 Variable Documentation

5.4.1.1 const double EquationData::downstream_concentr = 1.0

5.4.1.2 const double EquationData::gravitiy_accelation = 9800

5.4.1.3 const double EquationData::kinematic_viscosity = 1.0

5.4.1.4 const double EquationData::pipe_diameter = 19.05

5.4.1.5 const double EquationData::upstream_concentr = 0.0

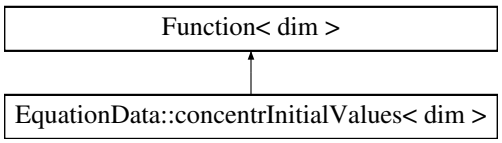
Chapter 6

Class Documentation

6.1 EquationData::concentrInitialValues< dim > Class Template Reference

`#include <equation_data.h>`

Inheritance diagram for EquationData::concentrInitialValues< dim >:



Public Member Functions

- concentrInitialValues (double x)
- virtual double value (const Point< dim > &p, const unsigned int component=0) const
- virtual void vector_value (const Point< dim > &p, Vector< double > &value) const
- virtual void vector_value_list (const std::vector< Point< dim > > &p, std::vector< Vector< double > > &values) const

Public Attributes

- double x

6.1.1 Constructor & Destructor Documentation

6.1.1.1 template<int dim> EquationData::concentrInitialValues< dim >::concentrInitialValues (double *x*)

6.1.2 Member Function Documentation

6.1.2.1 template<int dim> double EquationData::concentrInitialValues< dim >::value (const Point< dim > & *p*, const unsigned int *component* = `0`) const `[virtual]`

6.1.2.2 template<int dim> void EquationData::concentrInitialValues< dim >::vector_value (const Point< dim > & *p*, Vector< double > & *value*) const `[virtual]`

6.1.2.3 template<int dim> void EquationData::concentrInitialValues< dim >::vector_value_list (const std::vector< Point< dim > > & *p*, std::vector< Vector< double > > & *values*) const `[virtual]`

6.1.3 Member Data Documentation

6.1.3.1 template<int dim> double EquationData::concentrInitialValues< dim >::x

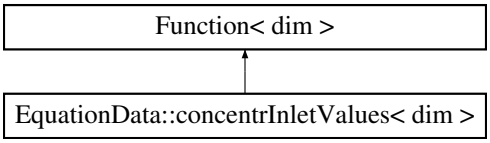
The documentation for this class was generated from the following file:

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/equation_data.h

6.2 EquationData::concentrInletValues< dim > Class Template Reference

`#include <equation_data.h>`

Inheritance diagram for EquationData::concentrInletValues< dim >:



Public Member Functions

- concentrInletValues ()
- virtual double value (const Point< dim > &p, const unsigned int component=0) const
- virtual void vector_value (const Point< dim > &p, Vector< double > &value) const

6.2.1 Constructor & Destructor Documentation

6.2.1.1 template<int dim> EquationData::concentrInletValues< dim >::concentrInletValues ( ) [inline]

6.2.2 Member Function Documentation

6.2.2.1 template<int dim> double EquationData::concentrInletValues< dim >::value (const Point< dim > & *p*, const unsigned int *component* = 0) const [virtual]

6.2.2.2 template<int dim> void EquationData::concentrInletValues< dim >::vector_value (const Point< dim > & *p*, Vector< double > & *value*) const [virtual]

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/equation_data.h

6.3 Assembly::Scratch::concentrMatrix< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- concentrMatrix (const FiniteElement< dim > &concentr_fe, const Mapping< dim > &mapping, const Quadrature< dim > &concentr_quadrature)
- concentrMatrix (const concentrMatrix &data)

Public Attributes

- FEValues< dim > concentr_fe_values
- std::vector< double > phi_T
- std::vector< Tensor< 1, dim > > grad_phi_T

6.3.1 Constructor & Destructor Documentation

6.3.1.1 template<int dim> Assembly::Scratch::concentrMatrix< dim >::concentrMatrix (const FiniteElement< dim > & *concentr_fe,* const Mapping< dim > & *mapping,* const Quadrature< dim > & *concentr_quadrature*)

6.3.1.2 template<int dim> Assembly::Scratch::concentrMatrix< dim >::concentrMatrix (const concentrMatrix< dim > & *data*)

6.3.2 Member Data Documentation

6.3.2.1 template<int dim> FEValues<dim> Assembly::Scratch::concentrMatrix< dim >::concentr_fe_values

6.3.2.2 template<int dim> std::vector<Tensor<1,dim> > Assembly::Scratch::concentrMatrix< dim >::grad_phi_T

6.3.2.3 template<int dim> std::vector<double> Assembly::Scratch::concentrMatrix< dim >::phi_T

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.4 Assembly::CopyData::concentrMatrix< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- concentrMatrix (const FiniteElement< dim > &concentr_fe)
- concentrMatrix (const concentrMatrix &data)

Public Attributes

- FullMatrix< double > local_mass_matrix
- FullMatrix< double > local_stiffness_matrix
- std::vector< types::global_dof_index > local_dof_indices

6.4.1 Constructor & Destructor Documentation

6.4.1.1 template<int dim> Assembly::CopyData::concentrMatrix< dim >::concentrMatrix (const FiniteElement< dim > & *concentr_fe*)

6.4.1.2 template<int dim> Assembly::CopyData::concentrMatrix< dim >::concentrMatrix (const concentrMatrix< dim > & *data*)

6.4.2 Member Data Documentation

6.4.2.1 template<int dim> std::vector<types::global_dof_index> Assembly::CopyData::concentrMatrix< dim >::local_dof_indices

6.4.2.2 template<int dim> FullMatrix<double> Assembly::CopyData::concentrMatrix< dim >::local_mass_matrix

6.4.2.3 template<int dim> FullMatrix<double> Assembly::CopyData::concentrMatrix< dim >::local_stiffness_matrix

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.5 Assembly::Scratch::concentrRHS< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- concentrRHS (const FiniteElement< dim > &concentr_fe, const FiniteElement< dim > &fe_velocity, const Mapping< dim > &mapping, const Quadrature< dim > &quadrature)
- concentrRHS (const concentrRHS &data)

Public Attributes

- FEValues< dim > concentr_fe_values
- FEValues< dim > fe_velocity_values
- std::vector< double > phi_T
- std::vector< Tensor< 1, dim > > grad_phi_T
- std::vector< Tensor< 1, dim > > old_velocity_values
- std::vector< Tensor< 1, dim > > old_old_velocity_values
- std::vector< SymmetricTensor< 2, dim > > old_strain_rates
- std::vector< SymmetricTensor< 2, dim > > old_old_strain_rates
- std::vector< double > old_concentr_values
- std::vector< double > old_old_concentr_values
- std::vector< Tensor< 1, dim > > old_concentr_grads
- std::vector< Tensor< 1, dim > > old_old_concentr_grads
- std::vector< double > old_concentr_laplacians
- std::vector< double > old_old_concentr_laplacians

6.5.1 Constructor & Destructor Documentation

6.5.1.1 template<int dim> Assembly::Scratch::concentrRHS< dim >::concentrRHS (const FiniteElement< dim > & *concentr_fe,* const FiniteElement< dim > & *fe_velocity,* const Mapping< dim > & *mapping,* const Quadrature< dim > & *quadrature*)

6.5.1.2 template<int dim> Assembly::Scratch::concentrRHS< dim >::concentrRHS (const concentrRHS< dim > & *data*)

6.5.2 Member Data Documentation

6.5.2.1 template<int dim> FEValues<dim> Assembly::Scratch::concentrRHS< dim >::concentr_fe_values

6.5.2.2 template<int dim> FEValues<dim> Assembly::Scratch::concentrRHS< dim >::fe_velocity_values

6.5.2.3 template<int dim> std::vector<Tensor<1,dim> > Assembly::Scratch::concentrRHS< dim >::grad_phi_T

6.5.2.4 template<int dim> std::vector<Tensor<1,dim> > Assembly::Scratch::concentrRHS< dim >::old_concentr_grads

6.5.2.5 template<int dim> std::vector<double> Assembly::Scratch::concentrRHS< dim >::old_concentr_laplacians

6.5.2.6 template<int dim> std::vector<double> Assembly::Scratch::concentrRHS< dim >::old_concentr_values

6.5.2.7 template<int dim> std::vector<Tensor<1,dim> > Assembly::Scratch::concentrRHS< dim >::old_old_concentr_grads

6.5.2.8 template<int dim> std::vector<double> Assembly::Scratch::concentrRHS< dim >::old_old_concentr_laplacians

6.5.2.9 template<int dim> std::vector<double> Assembly::Scratch::concentrRHS< dim >::old_old_concentr_values

6.5.2.10 template<int dim> std::vector<SymmetricTensor<2,dim> > Assembly::Scratch::concentrRHS< dim >::old_old_strain_rates

6.5.2.11 template<int dim> std::vector<Tensor<1,dim> > Assembly::Scratch::concentrRHS< dim >::old_old_velocity_values

6.5.2.12 template<int dim> std::vector<SymmetricTensor<2,dim> > Assembly::Scratch::concentrRHS< dim >::old_strain_rates

6.5.2.13 template<int dim> std::vector<Tensor<1,dim> > Assembly::Scratch::concentrRHS< dim >::old_velocity_values

6.5.2.14 template<int dim> std::vector<double> Assembly::Scratch::concentrRHS< dim >::phi_T

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.6 Assembly::CopyData::concentrRHS< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- concentrRHS (const FiniteElement< dim > &concentr_fe)
- concentrRHS (const concentrRHS &data)

Public Attributes

- Vector< double > local_rhs
- std::vector< types::global_dof_index > local_dof_indices
- FullMatrix< double > matrix_for_bc

6.6.1 Constructor & Destructor Documentation

6.6.1.1 template<int dim> Assembly::CopyData::concentrRHS< dim >::concentrRHS (const FiniteElement< dim > & *concentr_fe*)

6.6.1.2 template<int dim> Assembly::CopyData::concentrRHS< dim >::concentrRHS (const concentrRHS< dim > & *data*)

6.6.2 Member Data Documentation

6.6.2.1 template<int dim> std::vector<types::global_dof_index> Assembly::CopyData::concentrRHS< dim >::local_dof_indices

6.6.2.2 template<int dim> Vector<double> Assembly::CopyData::concentrRHS< dim >::local_rhs

6.6.2.3 template<int dim> FullMatrix<double> Assembly::CopyData::concentrRHS< dim >::matrix_for_bc

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.7 Assembly::Scratch::diffusion_step< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- diffusion_step (const FiniteElement< dim > &fe_velocity, const Mapping< dim > &velocity_mapping, const Quadrature< dim > &quadrature, const UpdateFlags velocity_update_flags, const FiniteElement< dim > &fe_pressure, const Mapping< dim > &pressure_mapping, const UpdateFlags pressure_update_flags, const FiniteElement< dim > &concentr_fe, const Mapping< dim > &concentr_mapping, const UpdateFlags concentr_update_flags)
- diffusion_step (const diffusion_step &data)

Public Attributes

- FEValues< dim > fe_velocity_values
- FEValues< dim > fe_pressure_values
- FEValues< dim > concentr_fe_values
- std::vector< Tensor< 2, dim > > grads_phi_u
- std::vector< SymmetricTensor< 2, dim > > symm_grads_phi_u
- std::vector< Tensor< 1, dim > > phi_u
- std::vector< Tensor< 1, dim > > divergence_phi_u
- std::vector< Tensor< 1, dim > > vel_star_values
- std::vector< Tensor< 1, dim > > vel_n_values
- std::vector< Tensor< 1, dim > > vel_n_minus_1_values
- std::vector< Tensor< 2, dim > > grad_vel_star_values
- std::vector< Tensor< 1, dim > > laplacian_vel_star_values
- std::vector< Tensor< 1, dim > > grad_aux_n_values
- std::vector< Tensor< 1, dim > > grad_aux_n_minus_1_values
- std::vector< Tensor< 1, dim > > grad_pre_n_values
- std::vector< Tensor< 2, dim > > grad_grad_aux_n_values
- std::vector< Tensor< 2, dim > > grad_grad_aux_n_minus_1_values
- std::vector< Tensor< 2, dim > > grad_grad_pre_n_values
- std::vector< double > aux_n_values

- std::vector< double > aux_n_minus_1_values
- std::vector< double > pre_n_values
- std::vector< double > concentr_values
- std::vector< SymmetricTensor< 2, dim > > symm_grads_vel_star

6.7.1 Constructor & Destructor Documentation

6.7.1.1 template<int dim> **Assembly::Scratch::diffusion_step< dim >::diffusion_step** (const FiniteElement< dim > & *fe_velocity,* const Mapping< dim > & *velocity_mapping,* const Quadrature< dim > & *quadrature,* const UpdateFlags *velocity_update_flags,* const FiniteElement< dim > & *fe_pressure,* const Mapping< dim > & *pressure_mapping,* const UpdateFlags *pressure_update_flags,* const FiniteElement< dim > & *concentr_fe,* const Mapping< dim > & *concentr_mapping,* const UpdateFlags *concentr_update_flags*)

6.7.1.2 template<int dim> **Assembly::Scratch::diffusion_step< dim >::diffusion_step** (const **diffusion_step**< dim > & *data*)

6.7.2 Member Data Documentation

6.7.2.1 template<int dim> std::vector<double> **Assembly::Scratch::diffusion_step< dim >::aux_n_minus_1_values**

6.7.2.2 template<int dim> std::vector<double> **Assembly::Scratch::diffusion_step< dim >::aux_n_values**

6.7.2.3 template<int dim> FEValues<dim> **Assembly::Scratch::diffusion_step< dim >::concentr_fe_values**

6.7.2.4 template<int dim> std::vector<double> **Assembly::Scratch::diffusion_step< dim >::concentr_values**

6.7.2.5 template<int dim> std::vector<Tensor<1,dim> > **Assembly::Scratch::diffusion_step< dim >::divergence_phi_u**

6.7.2.6 template<int dim> FEValues<dim> **Assembly::Scratch::diffusion_step< dim >::fe_pressure_values**

6.7.2.7 template<int dim> FEValues<dim> **Assembly::Scratch::diffusion_step< dim >::fe_velocity_values**

6.7.2.8 template<int dim> std::vector<Tensor<1,dim> > **Assembly::Scratch::diffusion_step< dim >::grad_aux_n_minus_1_values**

6.7.2.9 template<int dim> std::vector<Tensor<1,dim> > **Assembly::Scratch::diffusion_step< dim >::grad_aux_n_values**

6.7.2.10 template<int dim> std::vector<Tensor<2,dim> > **Assembly::Scratch::diffusion_step< dim >::grad_grad_aux_n_minus_1_values**

6.7.2.11 template<int dim> std::vector<Tensor<2,dim> > **Assembly::Scratch::diffusion_step< dim >::grad_grad_aux_n_values**

6.7.2.12 template<int dim> std::vector<Tensor<2,dim> > **Assembly::Scratch::diffusion_step< dim >::grad_grad_pre_n_values**

6.7.2.13 template<int dim> std::vector<Tensor<1,dim> > **Assembly::Scratch::diffusion_step< dim >::grad_pre_n_values**

6.7.2.14 template<int dim> std::vector<Tensor<2,dim> > **Assembly::Scratch::diffusion_step< dim >::grad_vel_star_values**

6.7.2.15 template<int dim> std::vector<Tensor<2,dim> > Assembly::Scratch::diffusion_step< dim >::grads_phi_u

6.7.2.16 template<int dim> std::vector<Tensor<1,dim> > Assembly::Scratch::diffusion_step< dim >::laplacian_vel_star_values

6.7.2.17 template<int dim> std::vector<Tensor<1,dim> > Assembly::Scratch::diffusion_step< dim >::phi_u

6.7.2.18 template<int dim> std::vector<double> Assembly::Scratch::diffusion_step< dim >::pre_n_values

6.7.2.19 template<int dim> std::vector<SymmetricTensor<2,dim> > Assembly::Scratch::diffusion_step< dim >::symm_grads_phi_u

6.7.2.20 template<int dim> std::vector<SymmetricTensor<2,dim> > Assembly::Scratch::diffusion_step< dim >::symm_grads_vel_star

6.7.2.21 template<int dim> std::vector<Tensor<1,dim> > Assembly::Scratch::diffusion_step< dim >::vel_n_minus_1_values

6.7.2.22 template<int dim> std::vector<Tensor<1,dim> > Assembly::Scratch::diffusion_step< dim >::vel_n_values

6.7.2.23 template<int dim> std::vector<Tensor<1,dim> > Assembly::Scratch::diffusion_step< dim >::vel_star_values

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.8 Assembly::CopyData::diffusion_step< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- diffusion_step (const FiniteElement< dim > &fe_velocity)
- diffusion_step (const diffusion_step &data)

Public Attributes

- FullMatrix< double > local_matrix
- Vector< double > local_rhs
- std::vector< types::global_dof_index > local_dof_indices

6.8.1 Constructor & Destructor Documentation

6.8.1.1 template<int dim> Assembly::CopyData::diffusion_step< dim >::diffusion_step (const FiniteElement< dim > & *fe_velocity*)

6.8.1.2 template<int dim> Assembly::CopyData::diffusion_step< dim >::diffusion_step (const diffusion_step< dim > & *data*)

6.8.2 Member Data Documentation

6.8.2.1 template<int dim> std::vector<types::global_dof_index> Assembly::CopyData::diffusion_step< dim >::local_dof_indices

6.8.2.2 template<int dim> FullMatrix<double> Assembly::CopyData::diffusion_step< dim >::local_matrix

6.8.2.3 template<int dim> Vector<double> Assembly::CopyData::diffusion_step< dim >::local_rhs

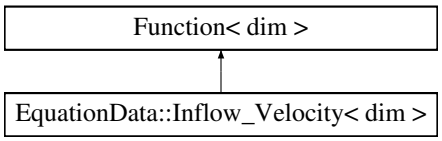
The documentation for this struct was generated from the following file:

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.9 EquationData::Inflow_Velocity< dim > Class Template Reference

`#include <equation_data.h>`

Inheritance diagram for EquationData::Inflow_Velocity< dim >:



Public Member Functions

- Inflow_Velocity (double, unsigned int)
- virtual double value (const Point< dim > &p, const unsigned int component=0) const
- virtual void vector_value (const Point< dim > &p, Vector< double > &value) const
- virtual void vector_value_list (const std::vector< Point< dim > > &p, std::vector< Vector< double > > &values) const

Public Attributes

- double init_mean_vel
- unsigned int which_inflow_type

6.9.1 Constructor & Destructor Documentation

6.9.1.1 template<int dim> EquationData::Inflow_Velocity< dim >::Inflow_Velocity (double *init_mean_vel*, unsigned int *which_inflow_type*)

6.9.2 Member Function Documentation

6.9.2.1 template<int dim> double EquationData::Inflow_Velocity< dim >::value (const Point< dim > & *p*, const unsigned int *component* = `0`) const `[virtual]`

6.9.2.2 template<int dim> void EquationData::Inflow_Velocity< dim >::vector_value (const Point< dim > & *p*, Vector< double > & *value*) const `[virtual]`

6.9.2.3 template<int dim> void EquationData::Inflow_Velocity< dim >::vector_value_list (const std::vector< Point< dim > > & *p*, std::vector< Vector< double > > & *values*) const [virtual]

6.9.3 Member Data Documentation

6.9.3.1 template<int dim> double EquationData::Inflow_Velocity< dim >::init_mean_vel

6.9.3.2 template<int dim> unsigned int EquationData::Inflow_Velocity< dim >::which_inflow_type

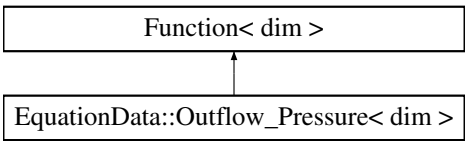
The documentation for this class was generated from the following file:

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/equation_data.h

6.10 EquationData::Outflow_Pressure< dim > Class Template Reference

`#include <equation_data.h>`

Inheritance diagram for EquationData::Outflow_Pressure< dim >:



Public Member Functions

- Outflow_Pressure (double, double)
- virtual double value (const Point< dim > &p, const unsigned int component=0) const
- virtual void vector_value (const Point< dim > &p, Vector< double > &value) const
- virtual void vector_value_list (const std::vector< Point< dim > > &p, std::vector< Vector< double > > &values) const

Public Attributes

- double inclined_angle
- double Froude_number

6.10.1 Constructor & Destructor Documentation

6.10.1.1 template<int dim> EquationData::Outflow_Pressure< dim >::Outflow_Pressure (double *inclined_angle*, double *Froude_number*)

6.10.2 Member Function Documentation

6.10.2.1 template<int dim> double EquationData::Outflow_Pressure< dim >::value (const Point< dim > & *p*, const unsigned int *component* = 0) const [virtual]

6.10.2.2 template<int dim> void EquationData::Outflow_Pressure< dim >::vector_value (const Point< dim > & *p*, Vector< double > & *value*) const [virtual]

6.10.2.3 template<int dim> void EquationData::Outflow_Pressure< dim >::vector_value_list (const std::vector< Point< dim > > & *p*, std::vector< Vector< double > > & *values*) const [virtual]

6.10.3 Member Data Documentation

6.10.3.1 template<int dim> double EquationData::Outflow_Pressure< dim >::Froude_number

6.10.3.2 template<int dim> double EquationData::Outflow_Pressure< dim >::inclined_angle

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/equation_data.h

6.11 UBC_mis_mixing< dim >::Parameters Struct Reference

`#include <class.h>`

Public Member Functions

- Parameters (std::string &parameters_filename)
- void parse_parameters (ParameterHandler &prm)

Static Public Member Functions

- static void declare_parameters (ParameterHandler &prm)

Public Attributes

- std::string input_mesh_file
- Point< dim > length_of_domain
- std::vector< double > domain_size
- std::vector< double > domain_boundary
- unsigned int num_element_size
- unsigned int flow_direction
- unsigned int depth_direction
- unsigned int latitude_direction
- unsigned int num_slices_domain
- bool is_symmetry_boundary
- unsigned int max_grid_level
- unsigned int type_adaptivity_rule
- double error_threshold
- double ref_crit
- double coar_crit
- unsigned int no_refine_period
- unsigned int intial_ratio_refinement
- double stabilization_alpha
- double stabilization_beta
- double stabilization_c_R
- unsigned int ist_optimization_method
- unsigned int ist_projection_method
- unsigned int ist_pressure_boundary
- unsigned int ist_flow_source

- bool ist_uniform_flow
- double coeff_relax_div_velocity
- unsigned int no_steps_for_buffering
- double mesh_speed
- unsigned int dir_concentration
- unsigned int which_method_for_c
- unsigned int which_interpl_c
- bool ist_add_reinit
- double coeff_gamma_grad_div
- double coeff_arti_viscosity
- double maximum_coeff_arti_viscosity
- bool exclude_depth_direction
- bool is_verbal_output
- double CFL_number
- double init_sep_x
- double inclined_angle
- double Atwood_number
- double mean_velocity_inlet
- double inlet_pressure
- double viscosity_ratio
- double computed_time_step
- double Reynolds_number
- double Froude_number
- double reference_length
- double reference_time
- double reference_velocity
- bool is_density_stable_flow
- double upstream_concentr
- double downstream_concentr
- double mean_viscosity
- double ratio_pow_law
- double n_pow_law
- Point< dim > inclined_angle_vector
- double tau_step
- double eps_v_concentr
- unsigned int degree_of_velocity
- unsigned int degree_of_pressure
- unsigned int degree_of_concentr
- unsigned int data_id
- unsigned int output_fac_vtu
- unsigned int output_fac_data
- unsigned int number_slices_coarse_mesh
- bool is_restart
- unsigned int save_fac_period
- unsigned int index_for_restart
- unsigned int restart_no_timestep
- double check_total_time
- double check_total_real_time
- double check_current_time_step
- double check_old_time_step
- double eps_ns
- double eps_c
- unsigned int kry_size
- unsigned int no_test_case

6.11.1 Constructor & Destructor Documentation

6.11.1.1 template<int dim> UBC_mis_mixing< dim >::Parameters::Parameters (std::string & *parameters_filename*)

6.11.2 Member Function Documentation

6.11.2.1 template<int dim> void UBC_mis_mixing< dim >::Parameters::declare_parameters (ParameterHandler & *prm*) [static]

6.11.2.2 template<int dim> void UBC_mis_mixing< dim >::Parameters::parse_parameters (ParameterHandler & *prm*)

6.11.3 Member Data Documentation

6.11.3.1 template<int dim> double UBC_mis_mixing< dim >::Parameters::Atwood_number

6.11.3.2 template<int dim> double UBC_mis_mixing< dim >::Parameters::CFL_number

6.11.3.3 template<int dim> double UBC_mis_mixing< dim >::Parameters::check_current_time_step

6.11.3.4 template<int dim> double UBC_mis_mixing< dim >::Parameters::check_old_time_step

6.11.3.5 template<int dim> double UBC_mis_mixing< dim >::Parameters::check_total_real_time

6.11.3.6 template<int dim> double UBC_mis_mixing< dim >::Parameters::check_total_time

6.11.3.7 template<int dim> double UBC_mis_mixing< dim >::Parameters::coar_crit

6.11.3.8 template<int dim> double UBC_mis_mixing< dim >::Parameters::coeff_arti_viscosity

6.11.3.9 template<int dim> double UBC_mis_mixing< dim >::Parameters::coeff_gamma_grad_div

6.11.3.10 template<int dim> double UBC_mis_mixing< dim >::Parameters::coeff_relax_div_velocity

6.11.3.11 template<int dim> double UBC_mis_mixing< dim >::Parameters::computed_time_step

6.11.3.12 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::data_id

6.11.3.13 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::degree_of_concentr

6.11.3.14 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::degree_of_pressure

6.11.3.15 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::degree_of_velocity

6.11.3.16 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::depth_direction

6.11.3.17 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::dir_concentration

6.11.3.18 template<int dim> std::vector<double> UBC_mis_mixing< dim >::Parameters::domain_boundary

6.11.3.19 template<int dim> std::vector<double> UBC_mis_mixing< dim >::Parameters::domain_size

6.11.3.20 template<int dim> double UBC_mis_mixing< dim >::Parameters::downstream_concentr

6.11.3.21 template<int dim> double UBC_mis_mixing< dim >::Parameters::eps_c

6.11.3.22 template<int dim> double UBC_mis_mixing< dim >::Parameters::eps_ns

6.11.3.23 template<int dim> double UBC_mis_mixing< dim >::Parameters::eps_v_concentr

6.11.3.24 template<int dim> double UBC_mis_mixing< dim >::Parameters::error_threshold

6.11.3.25 template<int dim> bool UBC_mis_mixing< dim >::Parameters::exclude_depth_direction

6.11.3.26 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::flow_direction

6.11.3.27 template<int dim> double UBC_mis_mixing< dim >::Parameters::Froude_number

6.11.3.28 template<int dim> double UBC_mis_mixing< dim >::Parameters::inclined_angle

6.11.3.29 template<int dim> Point<dim> UBC_mis_mixing< dim >::Parameters::inclined_angle_vector

6.11.3.30 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::index_for_restart

6.11.3.31 template<int dim> double UBC_mis_mixing< dim >::Parameters::init_sep_x

6.11.3.32 template<int dim> double UBC_mis_mixing< dim >::Parameters::inlet_pressure

6.11.3.33 template<int dim> std::string UBC_mis_mixing< dim >::Parameters::input_mesh_file

6.11.3.34 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::intial_ratio_refinement

6.11.3.35 template<int dim> bool UBC_mis_mixing< dim >::Parameters::is_density_stable_flow

6.11.3.36 template<int dim> bool UBC_mis_mixing< dim >::Parameters::is_restart

6.11.3.37 template<int dim> bool UBC_mis_mixing< dim >::Parameters::is_symmetry_boundary

6.11.3.38 template<int dim> bool UBC_mis_mixing< dim >::Parameters::is_verbal_output

6.11.3.39 template<int dim> bool UBC_mis_mixing< dim >::Parameters::ist_add_reinit

6.11.3.40 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::ist_flow_source

6.11.3.41 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::ist_optimization_method

6.11.3.42 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::ist_pressure_boundary

6.11.3.43 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::ist_projection_method

6.11.3.44 template<int dim> bool UBC_mis_mixing< dim >::Parameters::ist_uniform_flow

6.11.3.45 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::kry_size

6.11.3.46 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::latitude_direction

6.11.3.47 template<int dim> Point<dim> UBC_mis_mixing< dim >::Parameters::length_of_domain

6.11.3.48 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::max_grid_level

6.11.3.49 template<int dim> double UBC_mis_mixing< dim >::Parameters::maximum_coeff_arti_viscosity

6.11.3.50 template<int dim> double UBC_mis_mixing< dim >::Parameters::mean_velocity_inlet

6.11.3.51 template<int dim> double UBC_mis_mixing< dim >::Parameters::mean_viscosity

6.11.3.52 template<int dim> double UBC_mis_mixing< dim >::Parameters::mesh_speed

6.11.3.53 template<int dim> double UBC_mis_mixing< dim >::Parameters::n_pow_law

6.11.3.54 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::no_refine_period

6.11.3.55 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::no_steps_for_buffering

6.11.3.56 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::no_test_case

6.11.3.57 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::num_element_size

6.11.3.58 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::num_slices_domain

6.11.3.59 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::number_slices_coarse_mesh

6.11.3.60 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::output_fac_data

6.11.3.61 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::output_fac_vtu

6.11.3.62 template<int dim> double UBC_mis_mixing< dim >::Parameters::ratio_pow_law

6.11.3.63 template<int dim> double UBC_mis_mixing< dim >::Parameters::ref_crit

6.11.3.64 template<int dim> double UBC_mis_mixing< dim >::Parameters::reference_length

6.11.3.65 template<int dim> double UBC_mis_mixing< dim >::Parameters::reference_time

6.11.3.66 template<int dim> double UBC_mis_mixing< dim >::Parameters::reference_velocity

6.11.3.67 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::restart_no_timestep

6.11.3.68 template<int dim> double UBC_mis_mixing< dim >::Parameters::Reynolds_number

6.11.3.69 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::save_fac_period

6.11.3.70 template<int dim> double UBC_mis_mixing< dim >::Parameters::stabilization_alpha

6.11.3.71 template<int dim> double UBC_mis_mixing< dim >::Parameters::stabilization_beta

6.11.3.72 template<int dim> double UBC_mis_mixing< dim >::Parameters::stabilization_c_R

6.11.3.73 template<int dim> double UBC_mis_mixing< dim >::Parameters::tau_step

6.11.3.74 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::type_adaptivity_rule

6.11.3.75 template<int dim> double UBC_mis_mixing< dim >::Parameters::upstream_concentr

6.11.3.76 template<int dim> double UBC_mis_mixing< dim >::Parameters::viscosity_ratio

6.11.3.77 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::which_interpl_c

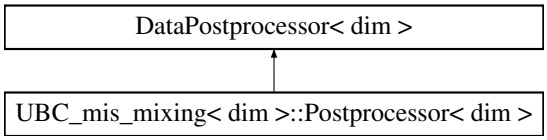
6.11.3.78 template<int dim> unsigned int UBC_mis_mixing< dim >::Parameters::which_method_for_c

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/class.h
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/parameter.h

6.12 UBC_mis_mixing< dim >::Postprocessor< dim > Class Template Reference

Inheritance diagram for UBC_mis_mixing< dim >::Postprocessor< dim >:



Public Member Functions

- Postprocessor (const unsigned int partition)
- virtual void compute_derived_quantities_vector (const std::vector< Vector< double > > &uh, const std::vector< std::vector< Tensor< 1, dim > > > &duh, const std::vector< std::vector< Tensor< 2, dim > > > &dduh, const std::vector< Point< dim > > &normals, const std::vector< Point< dim > > &evaluation_points, std::vector< Vector< double > > &computed_quantities) const
- virtual std::vector< std::string > get_names () const
- virtual std::vector< DataComponentInterpretation::DataComponentInterpretation > get_data_component_interpretation () const
- virtual UpdateFlags get_needed_update_flags () const

6.12.1 Constructor & Destructor Documentation

6.12.1.1 template<int dim> template<int dim> UBC_mis_mixing< dim >::Postprocessor< dim >::Postprocessor (const unsigned int *partition*)

6.12.2 Member Function Documentation

6.12.2.1 template<int dim> template<int dim> void UBC_mis_mixing< dim >::Postprocessor< dim >::compute_derived_quantities_vector (const std::vector< Vector< double > > & *uh*, const std::vector< std::vector< Tensor< 1, dim > > > & *duh*, const std::vector< std::vector< Tensor< 2, dim > > > & *dduh*, const std::vector< Point< dim > > & *normals*, const std::vector< Point< dim > > & *evaluation_points*, std::vector< Vector< double > > & *computed_quantities*) const [virtual]

6.12.2.2 template<int dim> template<int dim> std::vector< DataComponentInterpretation::DataComponentInterpretation > UBC_mis_mixing< dim >::Postprocessor< dim >::get_data_component_interpretation ( ) const [virtual]

6.12.2.3 template<int dim> template<int dim> std::vector< std::string > UBC_mis_mixing< dim >::Postprocessor< dim >::get_names ( ) const [virtual]

6.12.2.4 template<int dim> template<int dim> UpdateFlags UBC_mis_mixing< dim >::Postprocessor< dim >::get_needed_update_flags ( ) const [virtual]

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Post_Processing/post_processing.cc

6.13 Assembly::CopyData::pressure_rot_step< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- pressure_rot_step (const FiniteElement< dim > &fe_pressure)
- pressure_rot_step (const pressure_rot_step &data)

Public Attributes

- FullMatrix< double > local_matrix
- Vector< double > local_rhs
- std::vector< types::global_dof_index > local_dof_indices

6.13.1 Constructor & Destructor Documentation

6.13.1.1 template<int dim> **Assembly::CopyData::pressure_rot_step< dim >::pressure_rot_step** (const FiniteElement< dim > & *fe_pressure*)

6.13.1.2 template<int dim> **Assembly::CopyData::pressure_rot_step< dim >::pressure_rot_step** (const **pressure_rot_step**< dim > & *data*)

6.13.2 Member Data Documentation

6.13.2.1 template<int dim> std::vector<types::global_dof_index> **Assembly::CopyData::pressure_rot_step**< dim >::local_dof_indices

6.13.2.2 template<int dim> FullMatrix<double> **Assembly::CopyData::pressure_rot_step**< dim >::local_matrix

6.13.2.3 template<int dim> Vector<double> **Assembly::CopyData::pressure_rot_step**< dim >::local_rhs

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.14 Assembly::Scratch::pressure_rot_step< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- pressure_rot_step (const FiniteElement< dim > &fe_pressure, const Mapping< dim > &pressure_mapping, const Quadrature< dim > &quadrature, const UpdateFlags pressure_update_flags, const FiniteElement< dim > &fe_velocity, const Mapping< dim > &velocity_mapping, const UpdateFlags velocity_update_flags, const FiniteElement< dim > &concentr_fe, const Mapping< dim > &concentr_mapping, const UpdateFlags concentr_update_flags)
- pressure_rot_step (const pressure_rot_step &data)

Public Attributes

- FEValues< dim > fe_pressure_values
- FEValues< dim > fe_velocity_values
- FEValues< dim > concentr_fe_values
- std::vector< double > phi_p
- std::vector< double > aux_sol_values
- std::vector< double > pre_sol_values
- std::vector< Tensor< 2, dim > > grad_vel_sol_values
- std::vector< double > concentr_values
- std::vector< SymmetricTensor< 2, dim > > symm_grads_vel_sol

6.14.1 Constructor & Destructor Documentation

6.14.1.1 template<int dim> **Assembly::Scratch::pressure_rot_step< dim >::pressure_rot_step** (const FiniteElement< dim > & *fe_pressure*, const Mapping< dim > & *pressure_mapping*, const Quadrature< dim > & *quadrature*, const UpdateFlags *pressure_update_flags*, const FiniteElement< dim > & *fe_velocity*, const Mapping< dim > & *velocity_mapping*, const UpdateFlags *velocity_update_flags*, const FiniteElement< dim > & *concentr_fe*, const Mapping< dim > & *concentr_mapping*, const UpdateFlags *concentr_update_flags*)

6.14.1.2 template<int dim> **Assembly::Scratch::pressure_rot_step< dim >::pressure_rot_step** (const **pressure_rot_step**< dim > & *data*)

6.14.2 Member Data Documentation

6.14.2.1 template<int dim> std::vector<double> **Assembly::Scratch::pressure_rot_step< dim >::aux_sol_values**

6.14.2.2 template<int dim> FEValues<dim> **Assembly::Scratch::pressure_rot_step< dim >::concentr_fe_values**

6.14.2.3 template<int dim> std::vector<double> **Assembly::Scratch::pressure_rot_step< dim >::concentr_values**

6.14.2.4 template<int dim> FEValues<dim> **Assembly::Scratch::pressure_rot_step< dim >::fe_pressure_values**

6.14.2.5 template<int dim> FEValues<dim> **Assembly::Scratch::pressure_rot_step< dim >::fe_velocity_values**

6.14.2.6 template<int dim> std::vector<Tensor<2,dim> > **Assembly::Scratch::pressure_rot_step< dim >::grad_vel_sol_values**

6.14.2.7 template<int dim> std::vector<double> **Assembly::Scratch::pressure_rot_step< dim >::phi_p**

6.14.2.8 template<int dim> std::vector<double> **Assembly::Scratch::pressure_rot_step< dim >::pre_sol_values**

6.14.2.9 template<int dim> std::vector<SymmetricTensor<2,dim> > **Assembly::Scratch::pressure_rot_step< dim >::symm_grads_vel_sol**

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.15 Assembly::Scratch::projection_step< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- projection_step (const FiniteElement< dim > &fe_auxilary, const Mapping< dim > &auxilary_mapping, const Quadrature< dim > &quadrature, const UpdateFlags auxilary_update_flags, const FiniteElement< dim > &fe_velocity, const Mapping< dim > &velocity_mapping, const UpdateFlags velocity_update_flags, const FiniteElement< dim > &concentr_fe, const Mapping< dim > &concentr_mapping, const UpdateFlags concentr_update_flags)
- projection_step (const projection_step &data)

Public Attributes

- FEValues< dim > fe_auxilary_values
- FEValues< dim > fe_velocity_values
- FEValues< dim > concentr_fe_values
- std::vector< Tensor< 1, dim > > grads_phi_p
- std::vector< double > phi_p
- std::vector< Tensor< 2, dim > > grad_vel_n_plus_1_values
- std::vector< double > concentr_values
- std::vector< double > div_vel_values

6.15.1 Constructor & Destructor Documentation

6.15.1.1 template<int dim> **Assembly::Scratch::projection_step< dim >::projection_step** (const FiniteElement< dim > & *fe_auxilary,* const Mapping< dim > & *auxilary_mapping,* const Quadrature< dim > & *quadrature,* const UpdateFlags *auxilary_update_flags,* const FiniteElement< dim > & *fe_velocity,* const Mapping< dim > & *velocity_mapping,* const UpdateFlags *velocity_update_flags,* const FiniteElement< dim > & *concentr_fe,* const Mapping< dim > & *concentr_mapping,* const UpdateFlags *concentr_update_flags*)

6.15.1.2 template<int dim> **Assembly::Scratch::projection_step< dim >::projection_step** (const **projection_step**< dim > & *data*)

6.15.2 Member Data Documentation

6.15.2.1 template<int dim> FEValues<dim> **Assembly::Scratch::projection_step< dim >::concentr_fe_values**

6.15.2.2 template<int dim> std::vector<double> **Assembly::Scratch::projection_step< dim >::concentr_values**

6.15.2.3 template<int dim> std::vector<double> **Assembly::Scratch::projection_step< dim >::div_vel_values**

6.15.2.4 template<int dim> FEValues<dim> **Assembly::Scratch::projection_step< dim >::fe_auxilary_values**

6.15.2.5 template<int dim> FEValues<dim> **Assembly::Scratch::projection_step< dim >::fe_velocity_values**

6.15.2.6 template<int dim> std::vector<Tensor<2,dim> > **Assembly::Scratch::projection_step< dim >::grad_vel_n_plus_1_values**

6.15.2.7 template<int dim> std::vector<Tensor<1,dim> > **Assembly::Scratch::projection_step< dim >::grads_phi_p**

6.15.2.8 template<int dim> std::vector<double> **Assembly::Scratch::projection_step< dim >::phi_p**

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.16 Assembly::CopyData::projection_step< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- projection_step (const FiniteElement< dim > &fe_auxilary)
- projection_step (const projection_step &data)

Public Attributes

- FullMatrix< double > local_matrix
- Vector< double > local_rhs
- std::vector< types::global_dof_index > local_dof_indices

6.16.1 Constructor & Destructor Documentation

6.16.1.1 template<int dim> Assembly::CopyData::projection_step< dim >::projection_step (const FiniteElement< dim > & *fe_auxilary*)

6.16.1.2 template<int dim> Assembly::CopyData::projection_step< dim >::projection_step (const projection_step< dim > & *data*)

6.16.2 Member Data Documentation

6.16.2.1 template<int dim> std::vector<types::global_dof_index> Assembly::CopyData::projection_step< dim >::local_dof_indices

6.16.2.2 template<int dim> FullMatrix<double> Assembly::CopyData::projection_step< dim >::local_matrix

6.16.2.3 template<int dim> Vector<double> Assembly::CopyData::projection_step< dim >::local_rhs

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.17 Assembly::Scratch::relaxation_div_velocity_step< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- relaxation_div_velocity_step (const FiniteElement< dim > &fe_auxilary, const Mapping< dim > &auxilary↩ _mapping, const Quadrature< dim > &quadrature, const UpdateFlags auxilary_update_flags, const Finite↩ Element< dim > &fe_velocity, const Mapping< dim > &velocity_mapping, const UpdateFlags velocity_↩ update_flags, const FiniteElement< dim > &concentr_fe, const Mapping< dim > &concentr_mapping, const UpdateFlags concentr_update_flags)
- relaxation_div_velocity_step (const relaxation_div_velocity_step &data)

Public Attributes

- FEValues< dim > fe_auxilary_values
- FEValues< dim > fe_velocity_values
- FEValues< dim > concentr_fe_values
- std::vector< Tensor< 1, dim > > grads_phi_p
- std::vector< double > phi_p
- std::vector< Tensor< 2, dim > > grad_vel_n_plus_1_values
- std::vector< double > concentr_values

6.17.1 Constructor & Destructor Documentation

6.17.1.1 template<int dim> **Assembly::Scratch::relaxation_div_velocity_step< dim >::relaxation_div_velocity_step** (const FiniteElement< dim > & *fe_auxilary*, const Mapping< dim > & *auxilary_mapping*, const Quadrature< dim > & *quadrature*, const UpdateFlags *auxilary_update_flags*, const FiniteElement< dim > & *fe_velocity*, const Mapping< dim > & *velocity_mapping*, const UpdateFlags *velocity_update_flags*, const FiniteElement< dim > & *concentr_fe*, const Mapping< dim > & *concentr_mapping*, const UpdateFlags *concentr_update_flags*)

6.17.1.2 template<int dim> **Assembly::Scratch::relaxation_div_velocity_step< dim >::relaxation_div_velocity_step** (const relaxation_div_velocity_step< dim > & *data*)

6.17.2 Member Data Documentation

6.17.2.1 template<int dim> FEValues<dim> **Assembly::Scratch::relaxation_div_velocity_step< dim >::concentr_fe_values**

6.17.2.2 template<int dim> std::vector<double> **Assembly::Scratch::relaxation_div_velocity_step< dim >::concentr_values**

6.17.2.3 template<int dim> FEValues<dim> **Assembly::Scratch::relaxation_div_velocity_step< dim >::fe_auxilary_values**

6.17.2.4 template<int dim> FEValues<dim> **Assembly::Scratch::relaxation_div_velocity_step< dim >::fe_velocity_values**

6.17.2.5 template<int dim> std::vector<Tensor<2,dim> > **Assembly::Scratch::relaxation_div_velocity_step< dim >::grad_vel_n_plus_1_values**

6.17.2.6 template<int dim> std::vector<Tensor<1,dim> > **Assembly::Scratch::relaxation_div_velocity_step< dim >::grads_phi_p**

6.17.2.7 template<int dim> std::vector<double> **Assembly::Scratch::relaxation_div_velocity_step< dim >::phi_p**

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.18 Assembly::CopyData::relaxation_div_velocity_step< dim > Struct Template Reference

`#include <assembly_copydata.h>`

Public Member Functions

- relaxation_div_velocity_step (const FiniteElement< dim > &fe_auxilary)
- relaxation_div_velocity_step (const relaxation_div_velocity_step &data)

Public Attributes

- FullMatrix< double > local_matrix
- Vector< double > local_rhs
- std::vector< types::global_dof_index > local_dof_indices

6.18.1 Constructor & Destructor Documentation

6.18.1.1 template<int dim> **Assembly::CopyData::relaxation_div_velocity_step< dim >::relaxation_div_velocity_step** (const FiniteElement< dim > & *fe_auxilary*)

6.18.1.2 template<int dim> **Assembly::CopyData::relaxation_div_velocity_step< dim >::relaxation_div_velocity_step** (const relaxation_div_velocity_step< dim > & *data*)

6.18.2 Member Data Documentation

6.18.2.1 template<int dim> std::vector<types::global_dof_index> **Assembly::CopyData::relaxation_div_velocity_step< dim >::local_dof_indices**

6.18.2.2 template<int dim> FullMatrix<double> **Assembly::CopyData::relaxation_div_velocity_step< dim >::local_matrix**

6.18.2.3 template<int dim> Vector<double> **Assembly::CopyData::relaxation_div_velocity_step< dim >::local_rhs**

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h

6.19 UBC_mis_mixing< dim > Class Template Reference

`#include <class.h>`

Classes

- struct Parameters
- class Postprocessor

Public Member Functions

- UBC_mis_mixing (Parameters &parameters)
- void run ()

6.19.1 Constructor & Destructor Documentation

6.19.1.1 template<int dim> UBC_mis_mixing< dim >::UBC_mis_mixing (Parameters & *parameters*)

6.19.2 Member Function Documentation

6.19.2.1 template<int dim> void UBC_mis_mixing< dim >::run ( )

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

- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/class.h
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/AMR/amr.cc
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Main/run.cc
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Post_Processing/extract_data.cc
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Post_Processing/post_processing.cc
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Pre_Processing/mesh_in.cc
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Pre_Processing/read_and_write.cc
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Solver/constructor.cc
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Solver/projection_for_div_velocity.cc
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Solver/setup_dofs.cc
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Solver/solve_hyperbolic_equation.cc
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Solver/solve_ns_equation.cc
- /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Support/utilities.cc

Chapter 7

File Documentation

7.1 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/assembly_copydata.h File Reference

```
#include "include.h"
```

Classes

- struct Assembly::Scratch::diffusion_step< dim >
- struct Assembly::Scratch::relaxation_div_velocity_step< dim >
- struct Assembly::Scratch::projection_step< dim >
- struct Assembly::Scratch::pressure_rot_step< dim >
- struct Assembly::Scratch::concentrMatrix< dim >
- struct Assembly::Scratch::concentrRHS< dim >
- struct Assembly::CopyData::diffusion_step< dim >
- struct Assembly::CopyData::relaxation_div_velocity_step< dim >
- struct Assembly::CopyData::projection_step< dim >
- struct Assembly::CopyData::pressure_rot_step< dim >
- struct Assembly::CopyData::concentrMatrix< dim >
- struct Assembly::CopyData::concentrRHS< dim >

Namespaces

- Assembly
- Assembly::Scratch
- Assembly::CopyData

7.2 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/class.h File Reference

```
#include <fstream>
```

```
#include <iostream>
#include <sstream>
#include <string>
#include <limits>
#include <locale>
#include "include.h"
#include "equation_data.h"
```

Classes

- class UBC_mis_mixing< dim >
- struct UBC_mis_mixing< dim >::Parameters

7.3 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/equation_data.h File Reference

```
#include "include.h"
```

Classes

- class EquationData::Inflow_Velocity< dim >
- class EquationData::Outflow_Pressure< dim >
- class EquationData::concentrInletValues< dim >
- class EquationData::concentrInitialValues< dim >

Namespaces

- EquationData

Variables

- const double EquationData::pipe_diameter = 19.05
- const double EquationData::gravitiy_accelation = 9800
- const double EquationData::upstream_concentr = 0.0
- const double EquationData::downstream_concentr = 1.0
- const double EquationData::kinematic_viscosity = 1.0

7.4 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/include.h File Reference

```
#include <deal.II/base/quadrature_lib.h>
```

```
#include <deal.II/base/logstream.h>
#include <deal.II/base/function.h>
#include <deal.II/base/utilities.h>
#include <deal.II/base/conditional_ostream.h>
#include <deal.II/base/work_stream.h>
#include <deal.II/base/timer.h>
#include <deal.II/base/parameter_handler.h>
#include <deal.II/lac/full_matrix.h>
#include <deal.II/lac/solver_gmres.h>
#include <deal.II/lac/solver_bicgstab.h>
#include <deal.II/lac/solver_cg.h>
#include <deal.II/lac/constraint_matrix.h>
#include <deal.II/lac/block_sparsity_pattern.h>
#include <deal.II/lac/trilinos_block_vector.h>
#include <deal.II/lac/trilinos_sparse_matrix.h>
#include <deal.II/lac/trilinos_block_sparse_matrix.h>
#include <deal.II/lac/trilinos_precondition.h>
#include <deal.II/lac/trilinos_vector_base.h>
#include <deal.II/lac/trilinos_vector.h>
#include <deal.II/lac/trilinos_solver.h>
#include <deal.II/lac/petsc_solver.h>
#include <deal.II/grid/tria.h>
#include <deal.II/grid/grid_in.h>
#include <deal.II/grid/grid_out.h>
#include <deal.II/grid/grid_generator.h>
#include <deal.II/grid/tria_accessor.h>
#include <deal.II/grid/tria_iterator.h>
#include <deal.II/grid/tria_boundary_lib.h>
#include <deal.II/grid/grid_tools.h>
#include <deal.II/grid/grid_refinement.h>
#include <deal.II/grid/filtered_iterator.h>
#include <deal.II/dofs/dof_handler.h>
#include <deal.II/dofs/dof_renumbering.h>
#include <deal.II/dofs/dof_accessor.h>
#include <deal.II/dofs/dof_tools.h>
#include <deal.II/fe/fe_q.h>
#include <deal.II/fe/fe_dgq.h>
#include <deal.II/fe/fe_dgp.h>
#include <deal.II/fe/fe_system.h>
#include <deal.II/fe/fe_values.h>
#include <deal.II/fe/mapping_q.h>
#include <deal.II/numerics/vector_tools.h>
#include <deal.II/numerics/matrix_tools.h>
#include <deal.II/numerics/data_out.h>
#include <deal.II/numerics/error_estimator.h>
#include <deal.II/numerics/solution_transfer.h>
#include <fstream>
#include <iostream>
#include <sstream>
#include <string>
#include <limits>
#include <locale>
#include <deal.II/distributed/solution_transfer.h>
#include <deal.II/base/index_set.h>
#include <deal.II/distributed/tria.h>
#include <deal.II/distributed/grid_refinement.h>
```

7.5 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/include/mismix/parameter.h File Reference

```
#include <fstream>
#include <iostream>
#include <sstream>
#include <string>
#include <limits>
#include <locale>
#include "include.h"
#include "equation_data.h"
#include "class.h"
```

7.6 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/AMR/amr.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
```

7.7 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Main/main.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
```

Functions

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

7.7.1 Function Documentation

7.7.1.1 int main (int *argc,* char * *argv[ ]*)

7.8 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Main/run.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
```

7.9 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Post_Processing/extract_data.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
```

7.10 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Post_Processing/post_processing.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
```

Classes

- class UBC_mis_mixing< dim >::Postprocessor< dim >

7.11 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Pre_Processing/mesh_in.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
```

7.12 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Pre_Processing/read_and_write.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
#include <boost/iostreams/tee.hpp>
#include <boost/iostreams/stream.hpp>
#include <boost/archive/binary_oarchive.hpp>
#include <boost/archive/binary_iarchive.hpp>
```

7.13 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Solver/constructor.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
```

7.14 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Solver/projection_for_div_velocity.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
```

7.15 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Solver/setup_dofs.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
#include <deal.II/base/types.h>
```

7.16 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Solver/solve_hyperbolic_equation.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
```

7.17 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Solver/solve_ns_equation.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
```

7.18 /Users/miranus/work/Devs/miscible_mixing_series/miscible_mixing/source/Support/utilities.cc File Reference

```
#include <mismix/include.h>
#include <mismix/equation_data.h>
#include <mismix/assembly_copydata.h>
#include <mismix/class.h>
#include <mismix/parameter.h>
```

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