RELEASE Notes: NEW FEATURES IN CASTNET 2.2

New Features for OpenFOAM®:

Warning section: Gives warnings if there is a wrong or incomplete setting for a solver.

Checks many settings (missing definitions (e.g. no controlDict, no solver settings), values for critical variables (turbulence, pressure, temperature, wrong or missing settings in material definition for selected solver)

Example:

```
*********************************************************************
 THIS IS THE WARNING SECTION FOR INCOMPLETE OR MISSING MODEL DEFINITIONS
*********************************************************************

Critical error :
buoyantPisoFoam needs gravity defintion.
Please specify gravity in: Model Specifications/General Models.

Critical error :
buoyantPisoFoam needs Thermophysical material.
Please specify Thermophysical material in: Model Specifications/Material/Thermophysical.

Note: A Face normal velocity is defined in BC  but the value is larger than is zero.
This means that flow is leaving the domain.

Critical error :
k-omega turbulence model is used but no initial conditions for turbluence are set.
Please specify initial conditions for k/eps/omega-models in: Initial Conditions.

k-omega is selected but no BC for turbulence is set  in inlet  in1.
zero Gradient will be used (not necassarily critical).

buoyantPisoFoam is a compressible solver.
k-omega Turbulence-Model will only run for incompressible solvers.

T is needed by buoyantPisoFoam but no initial temperature is set.
Please specify initial conditions for T in: Initial Conditions.

T is needed by buoyantPisoFoam but no BC temperature is set  in inlet  in1.
zero Gradient will be used.

buoyantPisoFoam needs absolute pressure but pressure is below 100 in initial conditions.
Please check initial conditions for p in: Initial Conditions.

*********************************************************************
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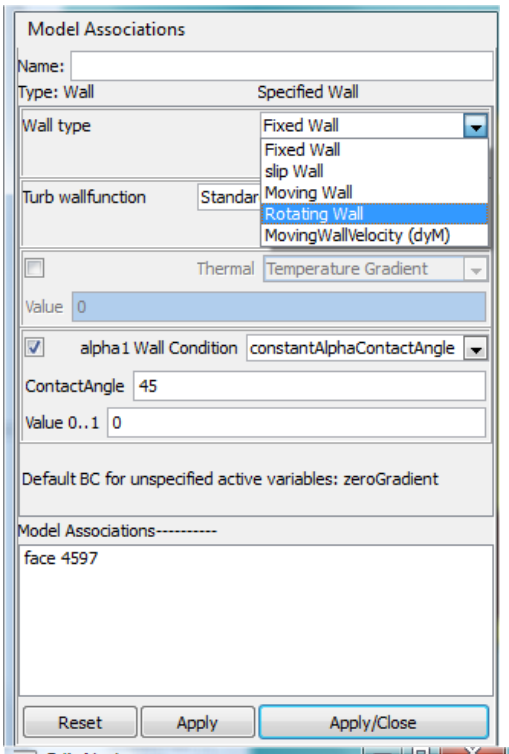
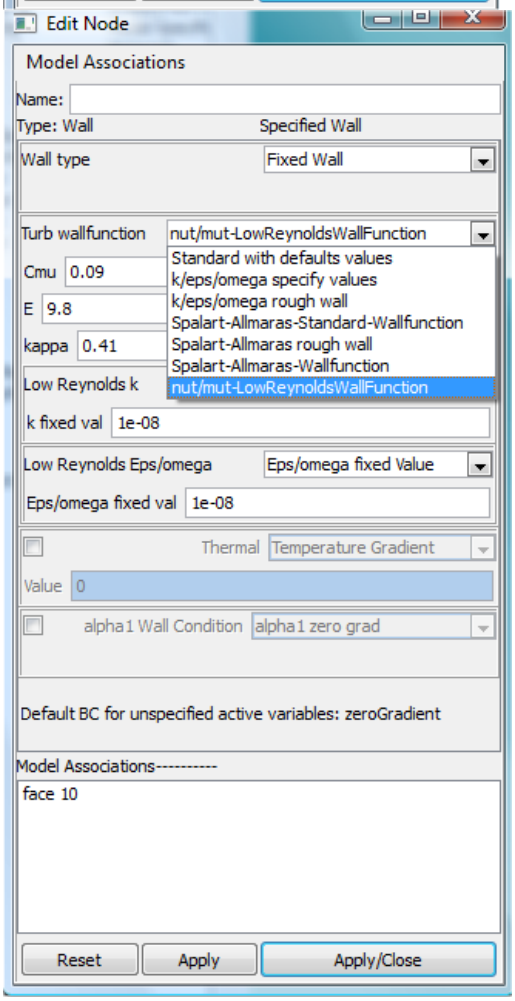


New Wall Functionality:

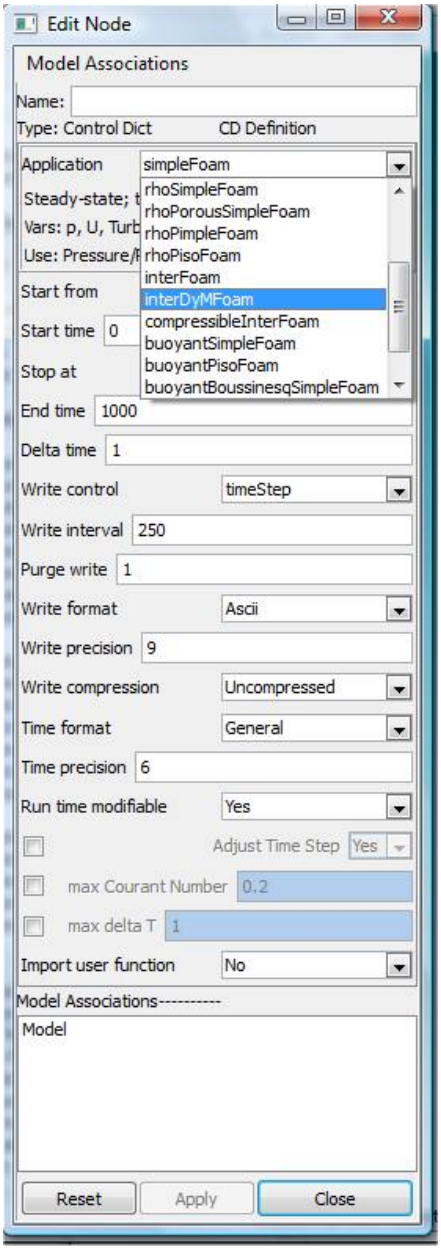
- Rotating Wall
- Moving wall velocity for dynamic mesh
- More thermal options at walls
- Alpha 1 contact angle

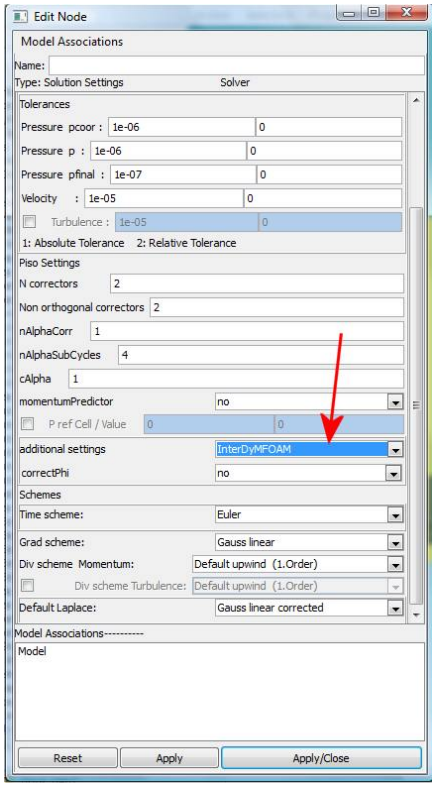


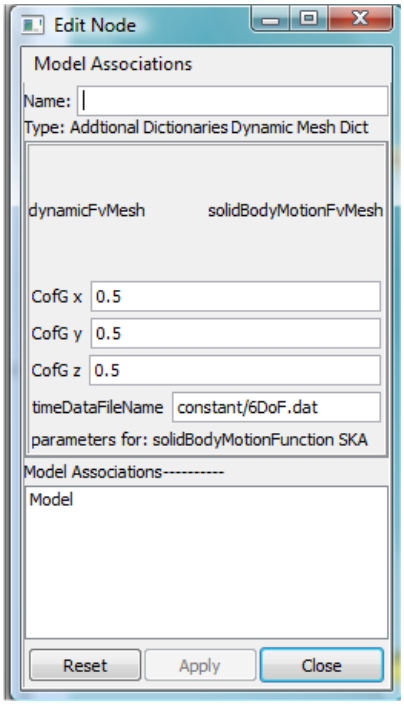
More Wall Functions
(e.g. supporting new LowReynolds Wall Functions and hybrid Spalart Allmaras Wall Function)

New Solvers:

- InterDyMFoam
- CompressibleInterFoam
- Custom Solver

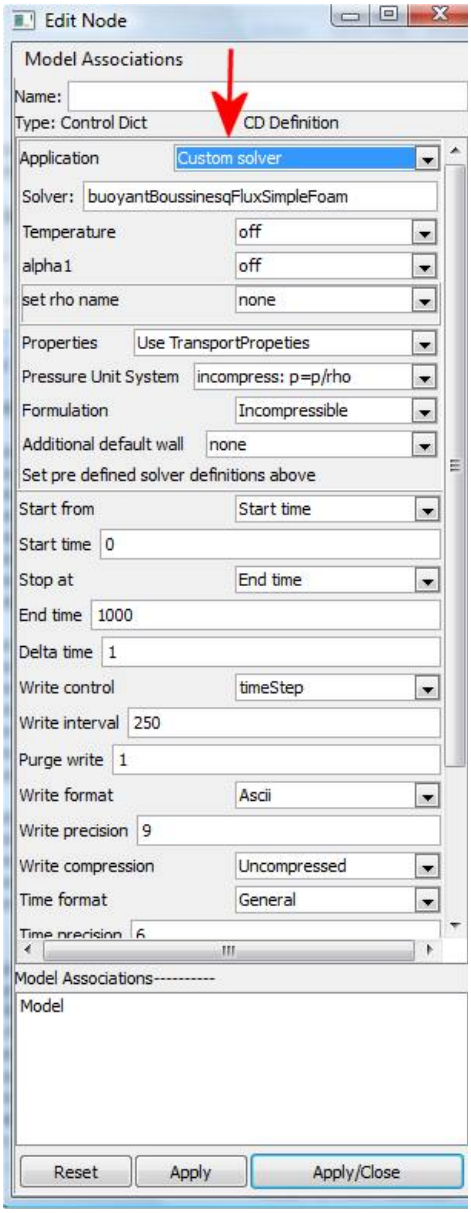




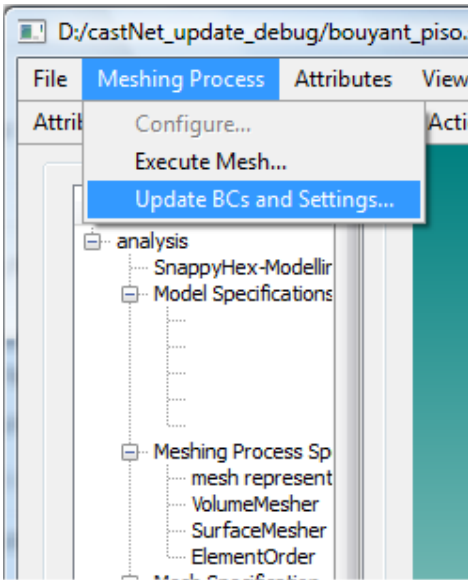


Support of InterDyMFoam with dynamic mesh Dict (referencing motion file)

Also new solver: compressibleInterFOAM



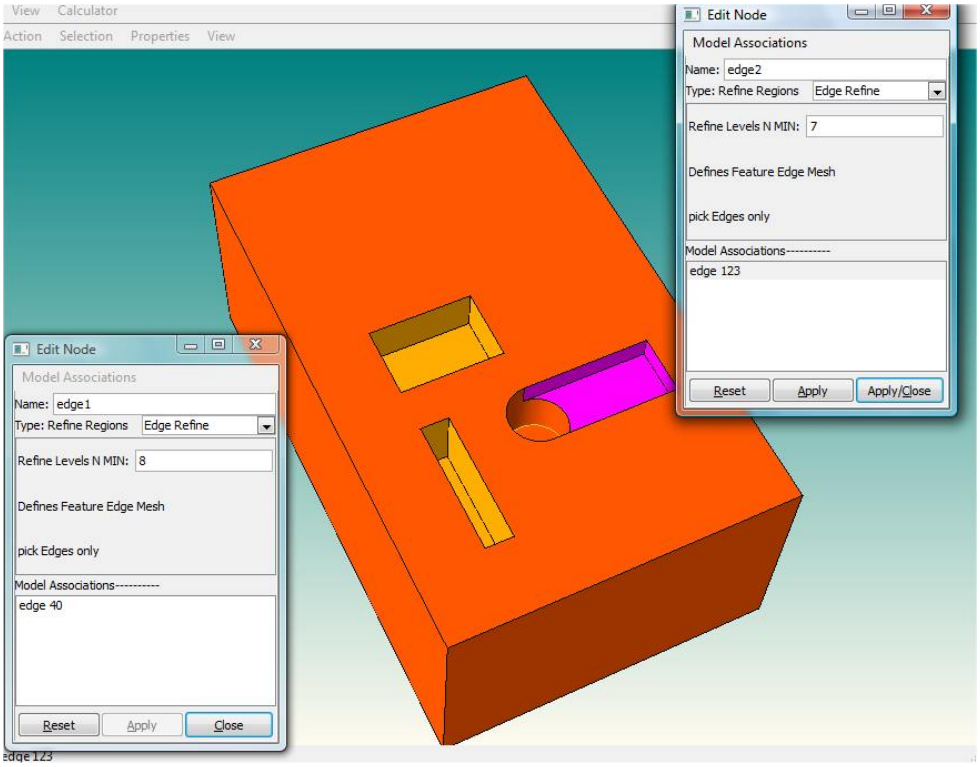
Support of custom solvers

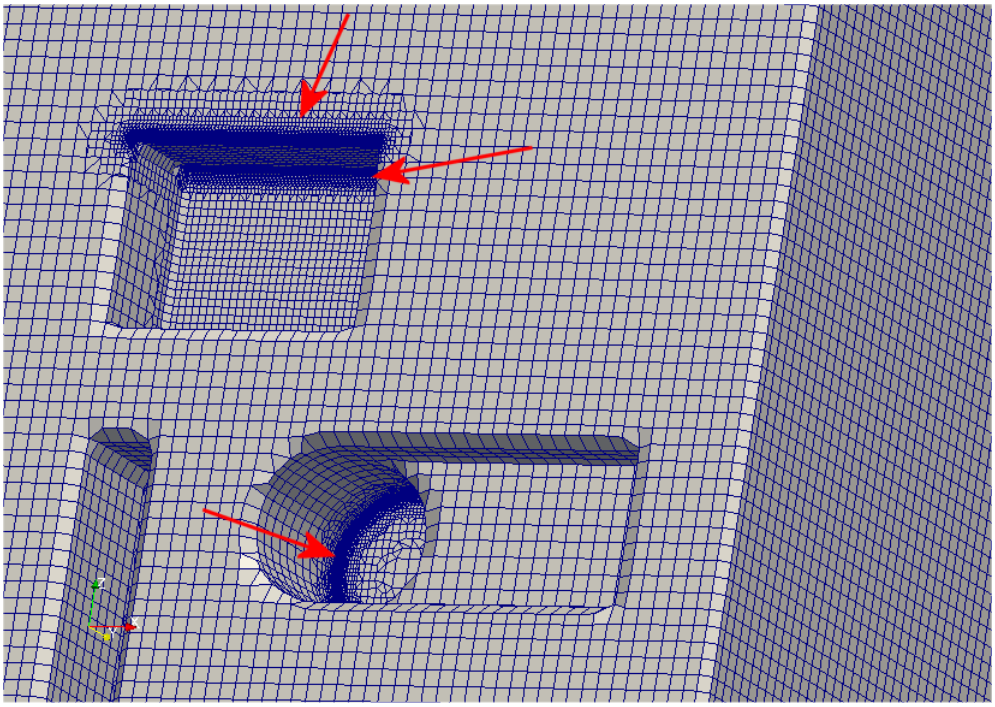


Improved Functions for case update: No mesh needs to be generated or exported if settings for OpenFOAM are changed.

SnappyHexMesh-Modeling in CastNet:

- Support of better edge resolution for SnappyHexMesh: Edges can be picked in CastNet and will be refined by snappyHexMesh (better resolution of sharp geometry changes)

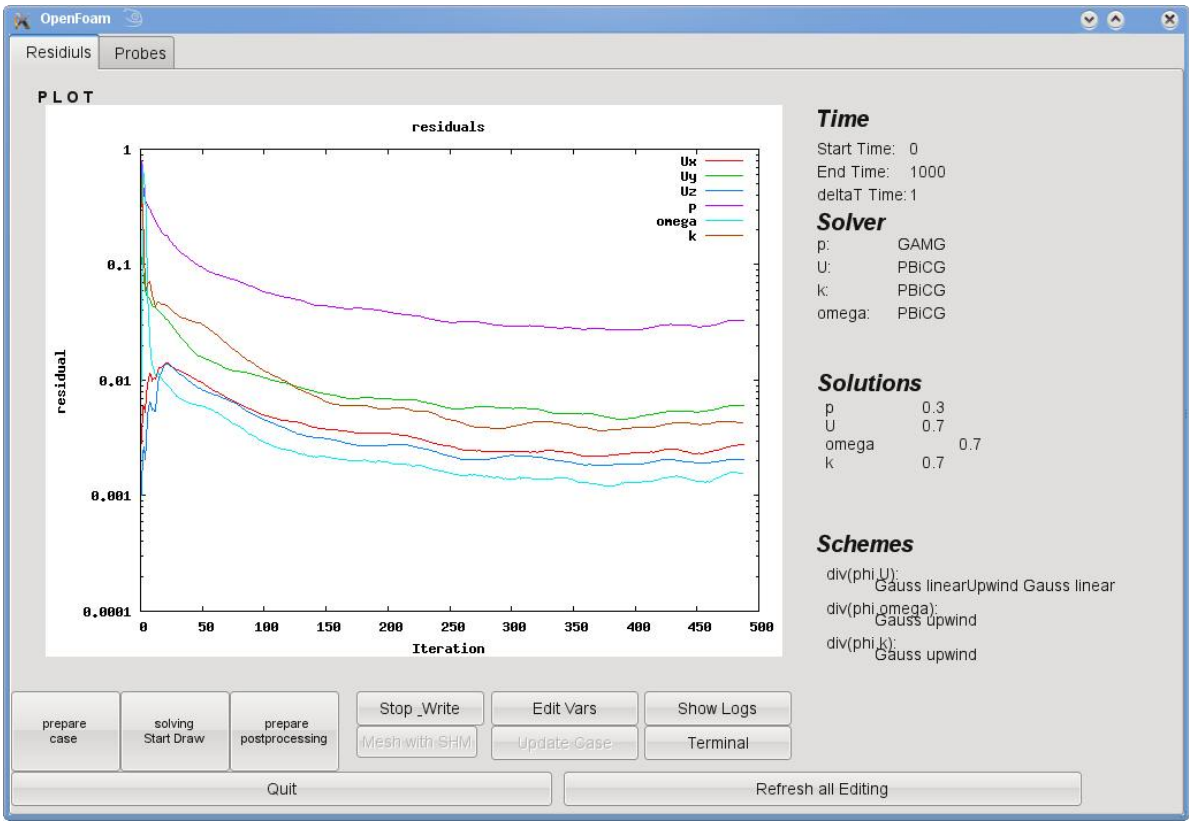


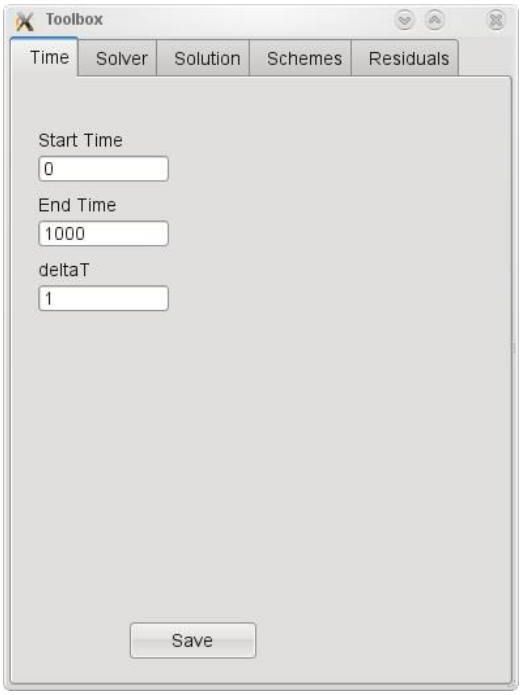


Note: SnappyHexMesh is an additional option besides the CastNet-meshing features.

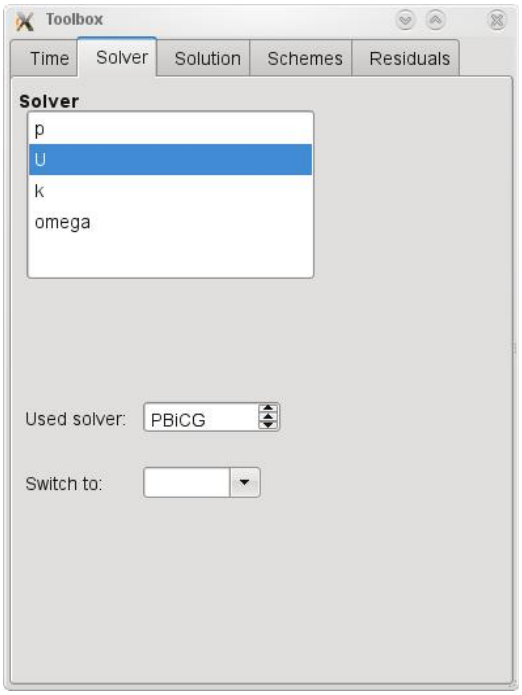
RUN GUI (First release)

Furthermore, version 2.2 contains an additional graphical user interface. This new application completes the graphical process control and model setup for OpenFOAM: The new GUI allows a detailed job control during OpenFOAM calculations. This includes plotting residuals, changing time control settings, switching matrix solvers or discretisation schemes.

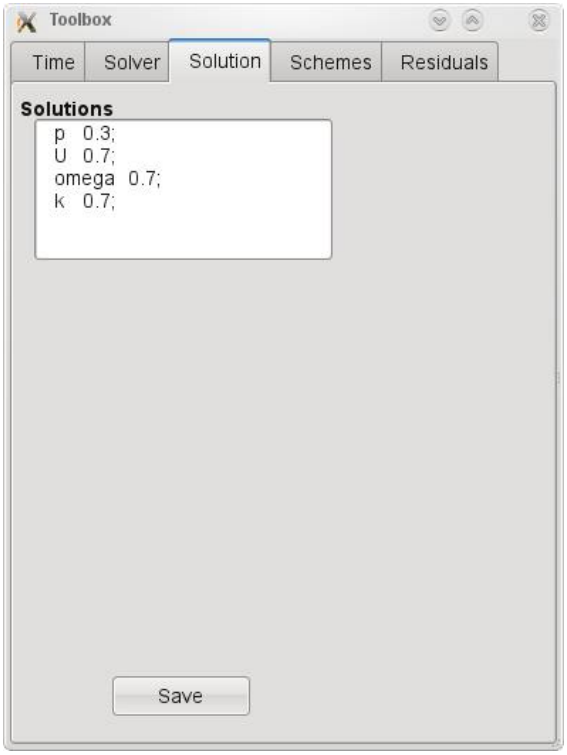




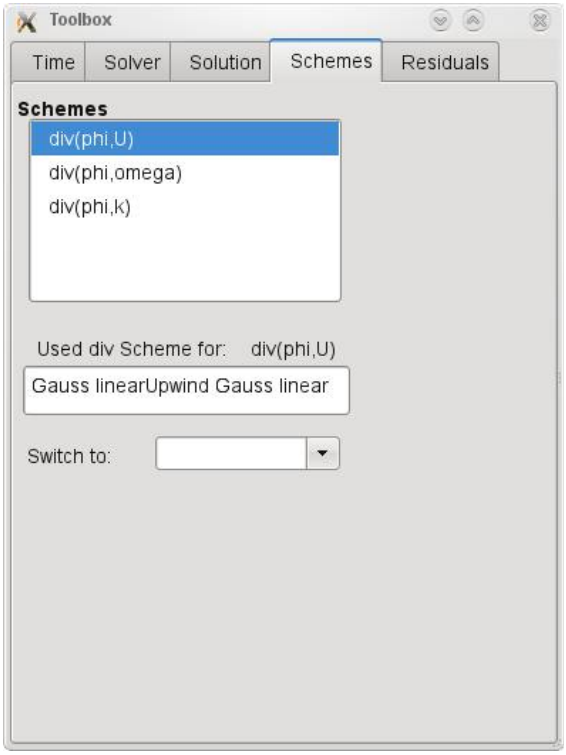
Time: start time, end time and deltaTime can be modified during the calculation



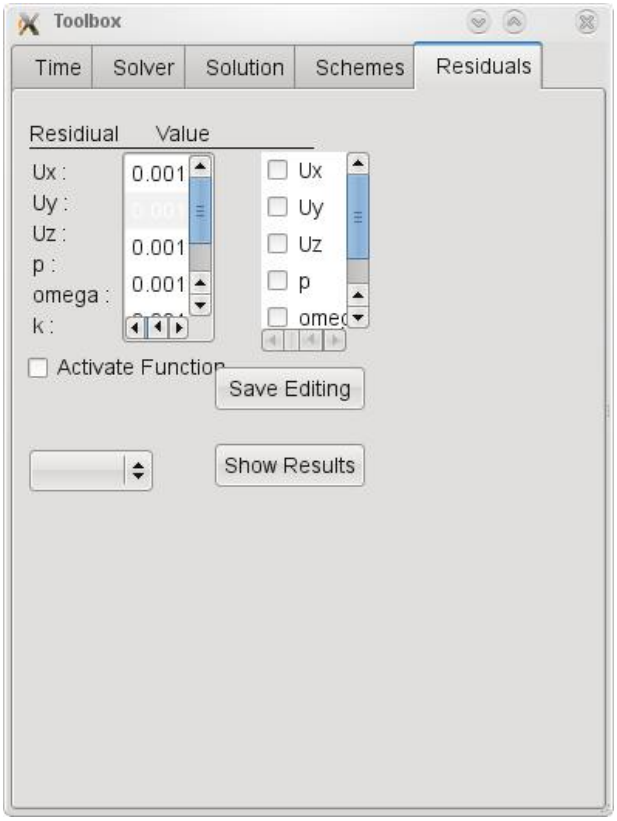
Solver: matrix solvers can be changed, e.g. replace PCG with GAMG

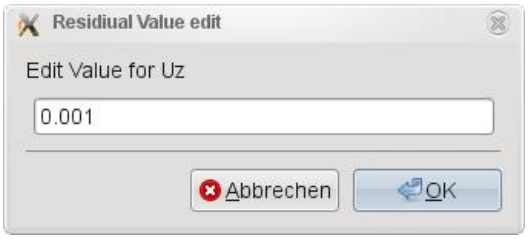


Solution: allows changing under-relaxation values



Schemes: schemes can be changed during the calculation





The feature "*residuals*" allows setting thresholds for residuals. Once these values are reached, the calculation will be terminated.

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