CalculiX support in CastNet

CalculiX is a non-linear structural solver developed at MTU. CalculiX was originally developed on Linux as an open source system. Castnet supports the original Linux version as well as the Windows port provided by bConverged.

In structural mechanics with CalculiX CastNet supports:

- Linear and non-linear statics/dynamics
- Non-linear analysis
  - Non-linear geometry: Large displacement, contact
  - Non-linear material: Plasticity, hyper elasticity
- Linear frequency analysis
- Buckling
- Heat transfer
  - Heat conduction analysis
  - Coupled temperature displacement analysis

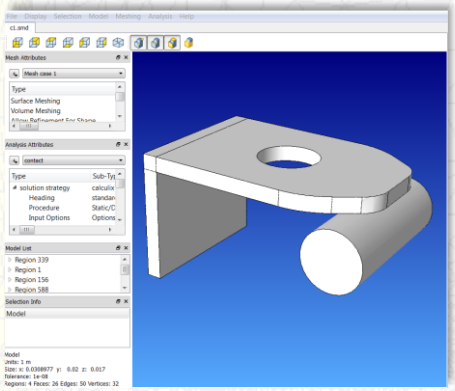
Using CalculiX, a wide number of boundary conditions and loads are available such as fixations, prescribed displacements, concentrated and distributed surface or volume loads.

CastNet supports volume and shell elements, two dimensional element formulation as well as beam elements and spring elements.

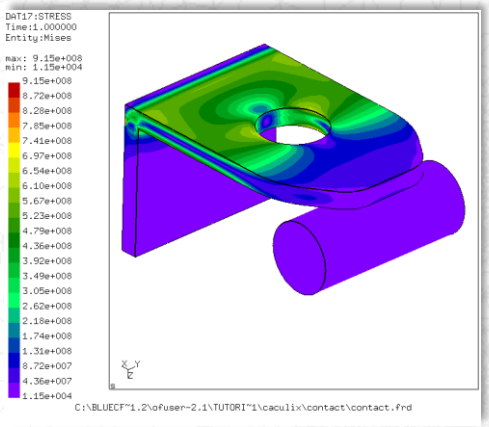
Furthermore, a coupling with CFD results is available:

Pressure distributions estimated in OpenFOAM® can be transferred to CalculiX as surface load.

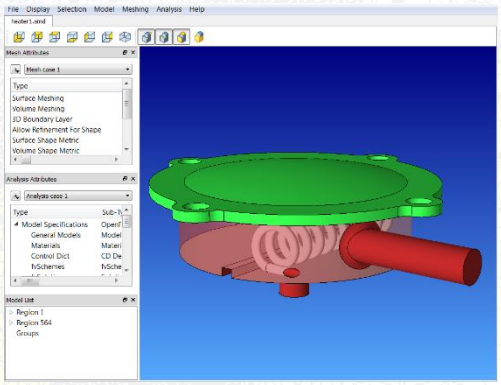
Volume temperature fields from a conjugate heat transfer analysis can be transferred from a solid OpenFOAM® region to CalculiX volume. By this, thermal stresses and displacements can be calculated in CalculiX.



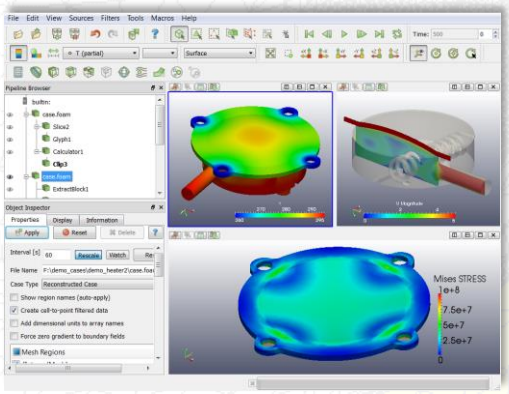
Contact analysis defined in CastNet



Calculated with CalculiX and visualised with CGX



CFD/FEA analysis for thermal stresses defined in CastNet



On Windows: Post-processing can be performed for both analyses at the same time.