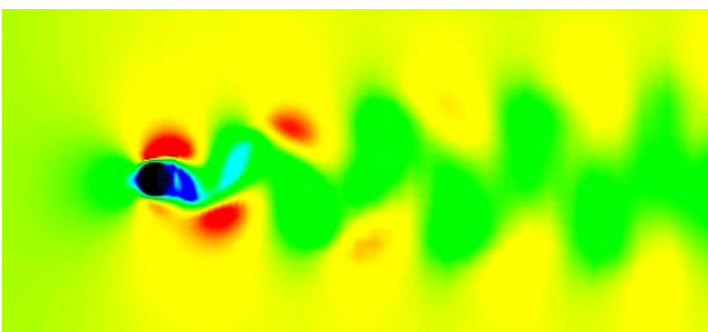


## Topic 19:

# Development of a CFD-Code based on the Finite Volume Method

The aim of this software project is to develop a code for fluid simulations based on the Finite Volume Method (FVM). The specifications are the following:

- physical model: incompressible Navier-Stokes equations
- two-dimensional
- capable of steady-state and laminar flows
- no turbulence models
- simple 4-node elements
- BC: velocity inlet and pressure outlet
- based on MATLAB
- using all the functionality of MATLAB for pre-, postprocessing, solving, etc.
- possibility to choose between different numerical schemes for the approximation schemes



The advantage of this software project is to learn from scratch writing software for scientific purposes. The principal setup of simulation software is always very similar, no matter, if for example the Finite Element, the Finite Volume, or the Finite Difference Method are used. All the different aspects such as preprocessing, postprocessing, numerical setup and solving have to be touched, but in a basic way.

As a prerequisite candidates who are interested in this task should have a basic knowledge in programming with MATLAB, experience in CFD-calculations, and interest in numerical methods.

If you are interested in participation in this project, please contact Thomas Gallinger (email: [gallinger@bv.tum.de](mailto:gallinger@bv.tum.de)) for further details.