On the next generation of CFD Tools

Stefan Turek

`ture@featflow.de`
University of Dortmund, Germany

Processor technology is dramatically advancing and promises enormous improvements in "processing data" for the next decade. On the other hand, much lower advances in "moving data" are expected such that the efficiency of many numerical software tools for PDEs are restricted by the cost for memory access. We demonstrate how "data locality" and "pipelining" can achieve a significant percentage of the available huge computing power, and we explain the influence of processor technology on recent and future numerical simulation tools. Exemplarily, we describe hardware-oriented concepts for incompressible flow solvers which are planned to be incorporated into FEATFLOW, and we discuss their numerical and computational characteristics.