Unicorn - An Adaptive Finite Element Solver

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Abstract

In this talk I will present the adaptive finite element solver Unicorn. It is part of the open source framework FEniCS. Unicorn focus on simple, efficient and general algorithms. The numerical method is based on a General Galerkin stabilized FEM and the model consists of conservation equations for mass, momentum and energy. The implementation is parallelized for distributed memory architecture using MPI, showing strong scaling on hundreds of cores. Beside the mathematical foundation I will present simulation results for compressible and incompressible flow problems.