Remainder-Based Spatial Refinement Criteria of a Moving Mesh Discontinuous Galerkin Method for 2D Unsteady Convection-Diffusion Equation

Ezra Rozier, Universität Hamburg

In convection-dominated flows, large-scale trends necessarily coexist with small-scale effects. While reducing the convection-dominance by moving the mesh, also called Arbitrary Lagrangian-Eulerian (ALE), already proved efficient, Adaptive Mesh Refinement (AMR) is able to catch the small scale effects. But ALE introduces uncertainties that cannot be neglected compared to the small-scale effects, so that it is unsatisfying to use AMR in an ALE situation in the same way as it is used on static meshes. Consecutively to the study of an \textit{a priori} error estimate that would help to choose the ALE-velocity, we develop remainder-based \textit{a posteriori} refinement criteria of a moving-mesh, interior-penalty discontinuous Galerkin semi-discretization of the 2D nonstationary convection-diffusion equation.