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Abstract

Mass conservation properties of CG/DG methods on non-conforming dynamically adaptive meshes.

We investigate the global mass conservation of both continuous and discontinuous Galerkin (CG/DG) methods on non-conforming statically and dynamically adaptive meshes. The unified CG/DG formulation is implemented in the Non-hydrostatic Unified Model of the Atmosphere (NUMA). The study is performed on two standard atmospheric test cases: the density current and the rising thermal bubble. It reveals that the conservation properties of both CG and DG methods are very similar when operating on non-conforming meshes. We found that the adaptive mesh refinement has little influence on the mass conservation error.