

A Moving Mesh Discontinuous Galerkin Method for Hyperbolic Conservation Laws

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A moving mesh discontinuous Galerkin method is developed for the numerical solution of hyperbolic conservation laws. The method is a combination of the discontinuous Galerkin method and the mesh movement strategy which is based on the moving mesh partial differential equation approach and moves the mesh continuously in time and orderly in space using a system of mesh partial differential equations. It not only can achieve the high order in smooth regions, but also capture shocks well in nonsmooth regions. For the same number of grid points, the numerical solution with the moving mesh method is much better than ones with the uniform mesh method. Numerical examples are presented to show the accuracy and shock-capturing features of the method.