

h-Adaptive RKDG Methods for Several Model Problems

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In this talk we present an h-adaptive Runge-Kutta discontinuous Galerkin method which is based on mesh refinement and coarsening. First, the framework of this method is presented, together with the implementation details. After that, we show its applications to different model problems, including hyperbolic conservation laws, detonation wave simulations, Vlasov-Poisson system and 2D incompressible Euler equations in the vorticity-stream function formulation. Numerical results of classical test problems are given to illustrate the effectiveness and the capability of this method.