

Adaptive Space-Time Least Squares Finite Element Methods for Nonlinear Conservation Laws

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In this talk, I will discuss new space-time least-squares finite element methods for nonlinear conservation laws. Traditionally, numerical methods for nonlinear conservation laws are based on a discretization on the space domain with time marching. In our new methods, we treat the space and time together, and the methods are based on least-squares nonlinear variational formulations. Several formulations will be presented. The discussion will be focused on how to choose the right approximation space to guarantee the convergence of the physical meaningful solution, the entropy solution.