

数学与系统科学研究院

计算数学所学术报告

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报告题目:

**Staggered discontinuous Galerkin
methods**

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计算数学所报告厅

Abstract:

We propose a new class of discontinuous Galerkin methods for the numerical approximation of partial differential equations. The method is based on a novel discretization technique with a cleverly designed and unstructured staggered grid. Staggered finite difference methods are the standard choice of methods and have been widely used for wave propagation. However, for domain with complex geometries, Galerkin type methods are more suitable. Thus, it is our main goal to develop the staggered discontinuous Galerkin methods for wave equations. We have successfully developed and analyzed the new method for the acoustic and the Maxwell's equations. A general framework for the analysis of the method is given. We proved that the method is stable and optimally convergent. Moreover, distinctive advantages of our new method are that it is energy conserving and explicit, in the sense that only block diagonal mass matrices have to be inverted. Hence, our new method is very efficient and is a promising one for wave simulations.

欢迎大家参加!