数学与系统科学研究院

计算数学所定期学术报告

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报告题目：

Accurate large time step algorithm for phase field equations and its applications

邀请人： 赵旭鹰 博士

报告时间：**2014 年 12 月 18 日（周四）**

下午 16：00~17：00

报告地点： 数学院思源楼一层

报告厅

Abstract：

An explicit numerical method and its highly efficient implementation are proposed and for the solution of a wide class of semilinear equations including the Allen-Cahn and Chan-Hilliard equation as special cases. To perform efficient and accurate long time integration, we develop a high order, fast and stable algorithm for discretization Cahn-Hilliard equations. The spatial discretization is carried out by compact difference methods while the time integration is done through a high order exponential time difference multistep approach. It can deal with stiff nonlinearity and both homogeneous and inhomogeneous boundary conditions of dierent types by use of multistep approximations and analytic evaluations of time integrals. Numerical experiments demonstrate eectiveness of the new method for both linear and nonlinear model problems. Furthermore, the algorithm is implemented on a CPU+MIC computing node. we achieved over 1,200 Gflops performance in double precision(48% peak).

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