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：

相场和流体高性能计算中的指数时间差分法讨论

邀请人：　黄记祖 博士

报告时间：**2018** 年 **12** 月 **19** 日（周三）

下午 **15:00-16:00**

报告地点：　科技综合楼三层

311 报告厅

Abstract:

Exponential time differencing (ETD) methods are popular for stiff temporal differential equations. the linear operators of the high-order derivative are precisely handled. As a result, the corresponding stability constraint is completely removed, and large time steps can be used. We report a high order ETD scheme for multi-variable phase field equations. The stability is a consequence of the operator splitting and the fact that ETD schemes are essentially semi-implicit schemes where the use of matrix exponential eliminates the need to solve linear systems. A localized matrix exponential computing algorithm based on overlapping domain-decomposition is adopted to enhance the scalability, and the resulting Scalable Localized ETD scheme enable us to perform large-scale long-time simulations efficiently on modern high performance computers. We'll present recent results on energy stability and convergence analysis of the scheme as well as its application to Euler equation.

欢迎大家参加！