

数学与系统科学研究院
计算数学所网络学术报告

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报告题目：

**Higher order energy stable ETD
based methods for gradient flows**

邀请人： 许现民 副研究员

报告时间： 2021 年 5 月 12 日 (周三)

下午 16:00-17:00

报告工具： 腾讯会议 (ID: 412 197 549)

会议链接： <https://meeting.tencent.com/s/N4pO4HttndmW>

Abstract:

Many natural and engineering problems follow gradient flow structures in the sense that systems evolve to decrease certain energy. The dynamics of most of these gradient systems are complicated, and hence numerical methods are called for. There are several desirable features for numerical algorithms for gradient flows with long evolution process: 1. efficiency; 2. higher-order accuracy; and 3. long-time stability. We present a class of efficient higher-order energy stable variable step methods for a class of gradient flows based on the exponential time differencing (ETD) method combined with multi-step methods and interpolation. As a specific example, we present a third order ETD based scheme for thin film epitaxial growth model together with numerical results establishing the convergence and stability of the scheme, and the ability of the scheme to capture long-time scaling properties of the system.

欢迎大家参加！