



深圳北理莫斯科大学

УНИВЕРСИТЕТ МГУ-ППИ В ШЭНЬЧЖЭНЕ

SHENZHEN MSU-BIT UNIVERSITY

应用数学讲座

Научный Семинар по Прикладной Математике

Research Seminar on Applied Mathematics

应用数学报告 (23)

报告人 / Докладчик / Speaker: Prof. Shen Jie, Purdue University

题目 / Название / Title:

Efficient and accurate structure preserving schemes for complex nonlinear systems

时间 / Время / Time: 7 Nov. 2021, 09:45-10:30

地点 / Место / Venue: 图书馆9楼报告厅

摘要 / Аннотация / Abstract:

Many complex nonlinear systems have intrinsic structures such as energy dissipation or conservation, and/or positivity/maximum principle preserving. It is desirable, sometimes necessary, to preserve these structures in a numerical scheme.

I will present some recent advances on using the scalar auxiliary variable (SAV) approach to develop highly efficient and accurate structure preserving schemes for a large class of complex nonlinear systems. These schemes can preserve energy dissipation/conservation as well as other global constraints and/or are positivity/bound preserving, only require solving decoupled linear equations with constant coefficients at each time step, and can achieve higher-order accuracy.