



北京理工大学

数学与统计学院学术报告

Low-degree conservative finite element schemes for incompressible flows

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摘要: The strict preservation of the conservation property is important in the design of numerical schemes for various model problems. I will firstly talk about why we would like to study low-degree strictly conservative finite element method for incompressible flows. Then I will talk about a nonstandard approach for designing finite element schemes for fluid computation, which can preserve strictly the divergence free condition for incompressible fluid flows. The schemes work on general triangulations with lower degree of polynomials than known results, and its superiority with respect to some existing schemes are partially illustrated with numerical experiments. The theoretical analysis depends on a careful application of Stokes complex. Both boundary value problems and eigenvalue problems will be mentioned, in case the time permits.

个人简介:

张硕，中国科学院数学与系统科学研究院研究员。先后毕业于于山东大学数学学院和北京大学数学学院，获理学学士、理学博士学位，并于美国宾夕法尼亚州立大学做博士后研究。主要从事偏微分方程数值算法研究，研究兴趣包括有限元方法、多水平方法及保结构算法等。在国内外高质量学术期刊发表研究论文30余篇，以第一作者/通讯作者发表的论文曾获中国计算数学学会优秀青年论文奖二等奖及一等奖各一项。研究工作获得国家自然科学基金面上项目（主持）和重大研究计划项目、中国科学院先导专项等资助。CSIAM第一届金融科技与算法专业委员会委员。