

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:

**Introduction to the Immersed
Boundary and Interface Methods:
Part I**

邀请人: 陈志明研究员

报告时间: 2011年5月13日(周五)

上午 9:00~12:00

报告地点: 科技综合楼三层 311

计算数学所报告厅

Abstract:

Peskin's Immersed Boundary (IB) Method is a popular mathematical model and numerical method developed for simulating blood flow in human's heart in 1980's. Since then, it has been applied to problems in mathematical biology, material science, fluid mechanics, and many others. In this talk, I will introduce the IB method through some examples and describe mathematical formulations, theory, and related numerical methods.

The Immersed Interface Method (IIM) was motivated by the Peskin's Immersed Boundary Method. The IIM shares many characteristics of the IB method. Both methods use simple grid structure. The original motivation of IIM is to improve the accuracy of the IB method from first order to second order. This has been achieved by incorporating the jump conditions into numerical schemes near or on the interface.

Reference: The Immersed Interface Method -- Numerical Solutions of PDEs Involving Interfaces and Irregular Domains, Zhilin Li and Kazufumi Ito, SIAM Frontiers in Applied mathematics, 33.

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