

数学与系统科学研究院  
计算数学所网络学术报告

报告人: 梁慧 教授

( 哈尔滨工业大学 (深圳) )

报告题目:

**On Galerkin and discontinuous  
Galerkin approximations to  
second-kind Volterra integral  
equations**

邀请人: 龚伟 副研究员

报告时间: 2021 年 11 月 12 日 (周五)

上午 9:00-10:00

报告工具: 腾讯会议 (ID: 707 900 127)

会议链接:

<https://meeting.tencent.com/dm/HLfYSAuomSeT>

## **Abstract:**

Collocation and Galerkin methods in the discontinuous and globally continuous piecewise polynomial spaces, in short, denoted as DC, CC, DG and CG methods respectively, are employed to solve second-kind Volterra integral equations (VIEs). It is proved that the quadrature DG and CG (QDG and QCG) methods obtained from the DG and CG methods by approximating the inner products by suitable numerical quadrature formulas, are equivalent to the DC and CC methods, respectively. In addition, the fully discretised DG and CG (FDG and FCG) methods are equivalent to the corresponding fully discretised DC and CC (FDC and FCC) methods. The convergence theories are established for DG and CG methods, and their semi-discretised (QDG and QCG) and fully discretised (FDG and FCG) versions. In particular, it is proved that the CG method for second-kind VIEs possess a similar convergence to the DG method for first-kind VIEs. Numerical examples illustrate the theoretical results.

**欢迎大家参加！**