# 应用数学讲座

## Научный Семинар по Прикладной Математике

## Research Seminar on Applied Mathematics

**Руководитель**: Доцент Чжан Е

主持人：张晔（副教授，深圳北理莫斯科大学）

# 计算数学报告（5）

**报告人 / Докладчик / Speaker**:

Prof. Hai Zhang，Hong Kong University of Science and Technology.

**题目 / Название / Title**:

"A Journey from Subwavelength Resonance to Super-resolution"

**时间 / Время / Time**:

2019 年 12 月 23 日，下午 6 点半至 8 点 / 23 Dec. 2019, 18:30-20:00 p.m.

**地点 / Место / Venue**: 1 教 113/ Building 1, Room 113

**摘要 / Аннотация / Abstract**:

Wave imaging techniques such as optical microscopy play an important role in our understanding of the microscopic world. Because of Abbe's diffraction limit, their resolutions are usually limited by half the wavelength of the radiating waves. In this talk, we develop a mathematical theory to demonstrate how subwavelength resonances can be used to break the diffraction limit to achieve super-resolution. The theory also sheds light on the mechanism of meta-materials. Finally, we investigate the resolution limit from data processing point of view, and propose a theory of super-resolution.