# The Hong Kong University of Science and Technology

# Department of Mathematics

# MPhil THESIS EXAMINATION

## *Studies on the Theory and Algorithms of Super-resolution with Multiple Measurements*

### *By*

# Mr. Zetao FEI

### ABSTRACT

Due to the diffraction effect, it is well known that it is impossible to reconstruct sources spaced closely enough in practice. There are several related fundamental resolution limit proposed over a century ago, such as Rayleigh limit and Abbe limit. On the other hand, various of techniques are invented to break the resolution limit including super-resolution microscopy and numerical methods. This thesis reviews basic theory and algorithms of topics related to super-resolution and proposes a new perspective of super-resolution.

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| **Date:** | **4 August 2021, Wednesday** |
| **Time:** | **3:00 p.m.** |
| **Venue:** | **Online via Zoom** |
| | **https://hkust.zoom.us/j/99583204282** |
| | (Passcode: 060659) |

## *Thesis Examination Committee*

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|---|---|---|
| **Chairman** | **:** | **Prof. Jianfeng CAI, MATH /HKUST** |
| **Thesis Supervisor** | **:** | **Prof. Hai ZHANG, MATH/HKUST** |
| **Member** | **:** | **Prof. Shing Yu LEUNG, MATH/HKUST** |

*(Open to all faculty and students)*

**The student's thesis is now being displayed on the reception counter in the General Administration Office (Room 3461).**