



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PDE

**Optimal estimates for the conductivity problems with
closely spaced inclusions of high contrast**

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Abstract

In this talk, I will describe an elliptic PDE that models electric conduction, and the electric field concentration phenomenon between closely spaced inclusions of high contrast. In the first part, I will present some results on the insulated conductivity problem (jointly with Hongjie Dong and Yanyan Li). We obtained an optimal gradient estimate in terms of the distance between inclusions. This solved one of the major open problems in this area. In the second part, I will present a recent work regarding optimal estimates for higher derivatives of the conductivity problem with circular inclusions in 2D, when the relative conductivities of inclusions have different signs (Jointly with Hongjie Dong). This improves a recent result of Ji and Kang.

Date: 31 March 2023 (Friday)

Time: 9:00am

Zoom Meeting: <https://hkust.zoom.us/j/98459200811> (Passcode: 834124)

All are Welcome!