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The Hong Kong University of Science and Technology

Department of Mathematics

Seminar on Applied Mathematics

**Mathematical Studies of Extraordinary Field
Enhancement in Subwavelength Slits**

By

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Abstract

Since the discovery of the extraordinary optical transmission through nanohole arrays in metallic films by Ebbesen, a wealth of research has been sparked in the experimental and theoretical investigation of localized electromagnetic field enhancement in subwavelength nanostructures. This remarkable phenomenon can lead to potentially significant applications in near-field imaging, bio-sensing, etc. However, there has been a long debate on the interpretation of the enhancement effect since Ebbesen's work. In addition, a quantitative analysis of the field enhancement in subwavelength structures is still widely open. In this talk, using two-dimensional slits as a prototype, I will present mathematical studies of the field enhancement in the subwavelength structures. Based upon the layer potential technique, asymptotic analysis and homogenization theory, the enhancement mechanisms for both the single slit and an array of slits are studied quantitatively.

Date: Thursday, 22 June 2017

Time: 2:30p.m. – 3:30p.m.

***Venue: Room 4502, Academic Building
(near Lifts 25&26), HKUST***

All are welcome!