

Department of Mathematics  
City University of Hong Kong

## Colloquium

Organised by Prof. P. G. Ciarlet and Prof. F. Cucker

### Nonstandard Kernels and Their Applications

by

Prof. Robert Schaback  
University of Goettingen, Germany

**Abstract** : Besides using standard radial basis functions for recovery of functions from data or as solutions of PDEs, there are a few good reasons to look for kernels with special properties. This talk will provide several examples, starting from an introduction into kernel construction techniques. After providing the “missing” Wendland kernels, the focus will move to kernels based on series expansions. These have some very interesting special cases, namely polynomial and periodic kernels, and “Taylor” kernels for which the reproduction formula coincides with the Taylor formula. Finally, the use of kernels as particular or fundamental solutions of PDEs is reviewed, together with harmonic kernels and kernels generating divergence-free vector fields. Numerical examples will be provided.

Date : 3 March 2010 (Wednesday)  
Time : 4:30pm – 5:30pm  
Venue : **Room Y4701**  
Yellow Zone, Level 4  
Academic Building  
City University of Hong Kong

(Tea, coffee and cookies will be provided in **Y4701** before the colloquium from 4:00 to 4:30pm. Please come and join us.)

**\*\* All interested are welcome \*\***

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