



**The Hong Kong Polytechnic University
Department of Applied Mathematics**

Colloquium

On

**Unclaimed Territories of Superconvergence:
Spectral and Spectral Collocation Methods**

by

**Professor Zhimin Zhang
Department of Mathematics
Wayne State University**

Abstract

While the superconvergence phenomenon is well understood for the h -version finite element method, the relevant study for the p -version finite element method and the spectral method is lacking.

In this work, superconvergence properties for some high-order orthogonal polynomial interpolations are studied. The results are twofold: When interpolating function values, we identify those points where the first and second derivatives of the interpolant converge faster; When interpolating the first derivative, we locate those points where the function value of the interpolant superconverges. For both cases we consider various Chebyshev polynomials, but for the latter case, we also include the counterpart Legendre polynomials.

Date : June 29, 2012 (Friday)
Time : 11:00 a.m. – 12:00 noon
Venue : HJ610, The Hong Kong Polytechnic University

*** * * ALL ARE WELCOME * * ***