# The Hong Kong Polytechnic University
# Department of Applied Mathematics

# Colloquium

# Superconvergence of discontinuous Galerkin methods for linear hyperbolic equations

**by**

## Prof. Cao Waixiang

### Sun Yat -Sen University

## Abstract

In this talk, we will give a general introduction to the superconvergence properties of DG methods for 1-D and 2-D hyperbolic equations.   Superconvergence results of the DG approximation at numerical fluxes, Radau points as well as for the cell average will be discussed. We prove, for any polynomial degree $k$, the $2k+1$th superconvergence rate of the DG approximation at the downwind points and for the cell average under some suitable initial and boundary discretizations. Moreover, we prove that the derivative approximation of the DG solution is superconvergent with a rate $k+1$ at all interior left Radau points. Numerical experiments demonstrate that the error bounds are sharp

**Date :   11 January, 2017 (Wednesday)**
**Time :    11:00a.m. – 12:00noon**
**Venue : TU801, The Hong Kong Polytechnic University**

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