

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

Colloquium

Stabilised finite element methods for ill-posed elliptic problems

By

**Prof. Erik Burman
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Abstract

In this talk we will discuss some recent advances in the use of stabilised finite element methods for ill-posed elliptic problems. Such problems appear in a variety of inverse problems and are notoriously difficult to solve numerically. We will consider the special case of unique continuation where the boundary conditions are unknown, but measurements of the solution are available in some subset of the bulk domain. For this problem we will present a theory reminiscent of Lax equivalence theorem where we combine consistency, numerical stability and the physical stability of the problem to obtain error bounds. The influence of data perturbations and solution regularity on the bounds will be discussed. Different finite element methods such as continuous Galerkin or a hybridised discontinuous Galerkin method enter the framework and we will illustrate the theory with some numerical examples.

Date : 28 April 2021 (Wednesday)

Time : 16:00-17:00 (Hong Kong Standard Time GMT +8)

Venue : Online Talk via Zoom (Meeting ID: 966 5295 6125)

Speaker: Prof. Erik Burman, University College London

Host: Dr. Zhi Zhou, The Hong Kong Polytechnic University

Click to join :

<https://polyu.zoom.us/j/96652956125?pwd=emx4eWtBeW93L3RsNlITenFDS28xdz09>



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

For enrolment, please send your name and email to shuk-wai.ko@polyu.edu.hk on or before 27 April 2021