



DEPARTMENT OF APPLIED MATHEMATICS

應 用 數 學 系

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

Seminar

**A Higher Degree Immersed Finite Element Method Based on a
Cauchy Extension for Elliptic Interface Problems**

by

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Abstract

We present a p -th degree immersed finite element (IFE) method for solving the elliptic interface problems with meshes independent of the coefficient discontinuity in the involved partial differential equations. In this method, an IFE function is the extension of a p -th degree polynomial from one subelement to the whole interface element by solving a local Cauchy problem on interface elements in which the jump conditions across the interface are employed as the boundary conditions. This approach completely addresses the existence issue of higher degree IFE functions circumventing further discussion based on different interface element configurations. Analysis is performed to prove that the proposed IFE method converges optimally in both the L^2 and H^1 norms with arbitrary polynomial degree.

Date: 4 July 2019 (Thursday)

Time: 11:00a.m. - 12:00noon

Venue: TU801, The Hong Kong Polytechnic University

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