



The Hong Kong Polytechnic University Department of Applied Mathematics

Colloquium

Energy-preserving mixed finite element methods for a ferrofluid flow model

By

Prof. Xiaoping XIE Sichuan University

Abstract

We develop a class of mixed finite element methods for the ferrofluid flow model proposed by Shliomis [Soviet Physics JETP, 1972]. We show that the energy stability of the weak solutions to the model is preserved exactly for both the semi- and fully discrete finite element solutions. Furthermore, we prove the existence and uniqueness of the discrete solutions and derive optimal error estimates for both the the semi- and fully discrete schemes. Numerical experiments confirm the theoretical results.

Date: 15 November 2022 (Tuesday) Time: 11:00-12:00 (Hong Kong Standard Time GMT +8) Venue: Online Talk via Zoom (Meeting ID: 920 9148 7224) Speaker: Prof. Xiaoping Xie, Sichuan University Host: Dr. Jianbo Cui, The Hong Kong Polytechnic University Click to join: https://polyu.zoom.us/j/92091487224?pwd=NjdYalc4NUxJaExNVnc3MnZITkt0QT09



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