



The Hong Kong University of Science and Technology

Department of Mathematics

Mathematics Colloquium

**Mathematical Analysis and Numerical
Methods for an Underground Oil
Recovery Model**

By

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Abstract

In this talk, I will discuss an underground oil recovery model which include a third-order mixed derivatives term resulting from the dynamic effects in the pressure difference between the two phases. Analytic study on the computational domain reduction will be provided. A variety of numerical examples in both one and two space dimensions will be given. They show that the solutions may have many different saturation profiles depending on the initial conditions, diffusion parameter, and the third-order mixed derivatives parameter. The results are consistent with the study of traveling wave solutions and their bifurcation diagrams.

Date: Wednesday, 27 February 2019

Time: 3:00 p.m. – 4:00 p.m.

**Venue: Room 3472, Academic Building
(near Lifts 25-26), HKUST**

All are welcome!