



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PDE

**A Hele-Shaw type flow with interior and free boundary
oscillation**

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Abstract

We investigate a Hele-Shaw type free boundary problem in one spatial dimension, where heterogeneities appear both on the free boundary and within the interior of the positivity set. Our contributions are twofold. First, we establish well-posedness and a comparison principle for the problem by introducing a novel notion of viscosity flows. Second, assuming the coefficients are stationary ergodic, we prove a stochastic homogenization result. To derive the effective free boundary velocity, we use a new approximation that accounts for interior homogenization as well as for the free boundary propagation. This is joint work with Olga Turanova.

Date: 14 March 2025 (Friday)

Time: 9:30am

Zoom Meeting: <https://hkust.zoom.us/j/91943494293> (Passcode: 354618)

All are Welcome!