

TEMPLE UNIVERSITY

Department of Mathematics

Analysis Seminar

Room 617 Wachman Hall

Monday, November 7, 2022, 2:30 p.m.

Electroconvection in Porous Media

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Abstract: We consider an electroconvection model describing the evolution of a charge density carried by a two-dimensional incompressible fluid flowing through a porous medium. Electrical forces are created by the charge density and balanced by Darcy's law. The resulting partial differential equation obeyed by the charge density is nonlinear and nonlocal. In this talk, we study the global existence, uniqueness, and regularity of solutions to the model for small initial data.