

---

# Analysis of 2+1 Diffusive-Dispersive PDE Arising in River Braiding

Saleh Tanveer<sup>1</sup> and Charis Tsikkou<sup>\*2</sup>

<sup>1</sup>The Ohio State University (OSU) – United States

<sup>2</sup>West Virginia University (WVU) – United States

## Abstract

In the context of a weakly nonlinear study of bar instabilities in a river carrying sediment, P. Hall introduced an evolution equation for the deposited depth which is dispersive in one spatial direction, while being diffusive in the other. In this talk, we present local existence and uniqueness results using a contraction mapping argument in a Bourgain-type space. We also show that the energy and cumulative dissipation are globally controlled in time.

---

\*Speaker