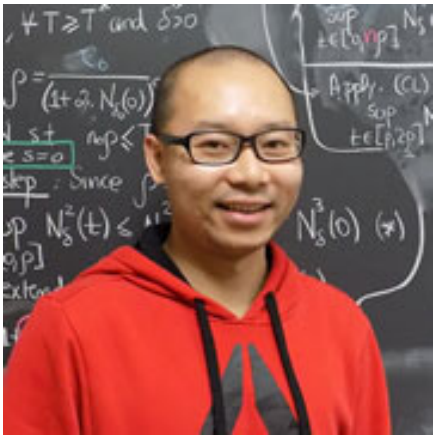
Department of Mathematics
University of Notre Dame

PDE, COMPLEX ANALYSIS AND DIFFERENTIAL GEOMETRY SEMINAR

Guest Speaker: Fangchi Yan
University of Notre Dame



Date: Tuesday, September 17, 2019
Time: 11:00 AM
Location: 258 Hurley Hall

Lecture Title:

Well-posedness of the initial-boundary value problem for KdV type equations

Abstract
The initial-boundary value problem (IBVP) for Korteweg-de Vries (KdV) type equations on the half-line is studied by extending a novel approach recently developed for the well-posedness of the KdV and the NLS equations on the half-line by Fokas, Himonas and Mantzavinos, which is based on the solution formula produced via Fokas unified transform method for the associated forced linear IBVP. Replacing in this formula the forcing by the nonlinearity and using data in Sobolev spaces suggested by the space-time regularity of the Cauchy problem of the linear problem gives an iteration map for the IBVP which is shown to be a contraction in an appropriately chosen solution space. The proof relies on key linear estimates and a bilinear estimate similar to the one used for the KdV Cauchy problem by Kenig, Ponce, and Vega.

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