

PDE, COMPLEX ANALYSIS AND DIFFERENTIAL GEOMETRY SEMINAR

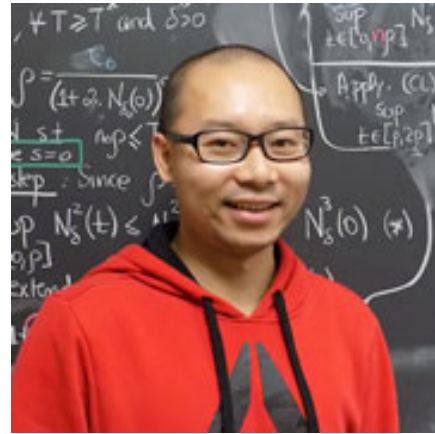
Guest Speaker: Fangchi Yan
**Virginia Polytechnic Institute and State
University**

Date: Tuesday, October 11, 2022

Time: 11:00 AM

Location: 258 Hurley Hall

Zoom URL: notredame.zoom.us/j/99553608698



Lecture Title:

The Robin and Neumann problems for KdV on the half-line

Abstract

The well-posedness of the initial-boundary value problem (ibvp) for the Korteweg-de Vries (KdV) equation on the half-line is studied for initial data $u_0(x)$ in spatial Sobolev spaces $H^s(0, \infty)$, $s > -3/4$, and Robin and Neumann boundary data $\varphi(t)$ in the temporal Sobolev spaces suggested by the time regularity of the Cauchy problem for the corresponding linear equation. First, linear estimates in Bourgain spaces are derived by utilizing the Fokas solution formula of the ibvp for the forced linear equation. Then, using these and the needed bilinear estimates, it is shown that the iteration map defined by the Fokas solution formula is a contraction in an appropriate solution space. This is work in collaboration of Alex Himonas.