

## Inverse Scattering for the Intermediate Long Wave Equation

*Thursday, September 5, 2019 9:00 AM (45 minutes)*

This talk reports on joint work with Joel Klipfel (University of Kentucky) and Yilun Wu (University of Oklahoma). The intermediate long wave equation (ILW) is a model of weakly nonlinear wave propagation in a fluid of finite depth. It interpolates between the Benjamin-Ono equation (infinite depth) and the Korteweg-de Vries equation (shallow water). Ablowitz and Kodama showed that ILW is completely integrable and, subsequently, an inverse scattering approach to solving ILW was developed by Ablowitz-Kodama-Satsuma and Santini-Ablowitz-Fokas. Our work is, to our knowledge, the first rigorous analysis of direct and inverse scattering maps for ILW. Both the direct and inverse problems are Riemann-Hilbert problems (respectively local and non-local); their proper formulation involves several interesting technical challenges.

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