

SPEAKER:

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TITLE:

The Scattering Problem of the Intermediate Long Wave Equation

ABSTRACT:

The Intermediate Long Wave equation (ILW) describes long internal gravity waves in stratified fluids. Kodama, Ablowitz and Satsuma discovered the formal complete integrability of ILW and formulated inverse scattering transform solutions. If made rigorous, the inverse scattering method will provide powerful tools for asymptotic analysis of ILW. In this talk, I will present some recent results on the ILW direct scattering problem. In particular, a Lax pair formulation is clarified, and the spectral theory of the Lax operators can be studied. Existence and uniqueness of scattering states are established for small interaction potential. The scattering matrix can then be constructed from the scattering states. The solution is related to the theory of analytic functions on a strip. This is joint work with Peter Perry.