

Inverse Problems Network Meeting 5

Thursday, 23rd May 2019 - Friday, 24th May 2019

University of Kent

Abstract of Talk

NUMERICAL INVERSE SCATTERING FOR INTEGRABLE SYSTEMS, REVISITED

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Beginning in 2011, Tom Trogdon (U. Washington) and I began studying the numerical realisation of the inverse scattering transform used in integrable systems, building on my numerical method for solving matrix-valued Riemann–Hilbert problems with junction points. Since then, there have been significant advances on both the software side—with the development of the Julia programming language—and on the mathematical end—with the development of banded spectral methods for singular integral equations, with R. Mikael Slevinsky (U. Manitoba), as implemented in the Julia package `SingularIntegralEquations.jl`. This talk investigates the ongoing implementation of `RiemannHilbert.jl`, a Julia package for solving Riemann–Hilbert problems that builds on `SingularIntegralEquations.jl`, and its application to integrable systems such as KdV.