

1078-65-214

Sheehan Olver* (Sheehan.Olver@sydney.edu.au), School of Mathematics and Statistics, The University of Sydney, Sydney, NSW 2006, Australia, and **Thomas Trogdon** (trogdon@amath.washington.edu), Department of Applied Mathematics, University of Washington, Box 352420, Seattle, WA 98195-2420. *Numerical inverse scattering for KdV and NLS.*

We develop a framework for utilizing inverse scattering theory to numerically solve integrable systems, including the Korteweg–de Vries equation and the focussing and defocussing nonlinear Schrödinger equations. We employ straightforward spectral methods to compute the forward transform. By using a recently developed method for solving Riemann–Hilbert problems, we can successfully compute the inverse transform as well. Deforming the Riemann–Hilbert problems appropriately results in a numerical method which remains accurate for all space and time, unimpaired by the high oscillations present in the solutions. (Received December 08, 2011)