

1078-65-215

Thomas Trogdon* (trogdon@amath.washington.edu), **Sheehan Olver**
(sheehan.olver@sydney.edu.au) and **Bernard Deconinck** (bernard@amath.washington.edu).

Uniform numerical approximation of integrable equations via Riemann-Hilbert problems.

The Riemann-Hilbert formulations of the Korteweg-de Vries and the Painlevé II transcendent have proved to be computationally valuable. Borrowing ideas from the method of nonlinear steepest descent, the resulting numerical schemes are seen to be asymptotically reliable. Here we derive some sufficient conditions for a numerical method to maintain accuracy throughout unbounded regions of the plane on which the differential equation is posed. (Received December 08, 2011)