
PETER GIBSON, York University
Inversion of the Miura map on the line

The Miura map relates the modified and classical Korteweg-de-Vries equations, as well as the one-dimensional Helmholtz and Schrödinger equations. The problem of inverting the Miura map arises in the context of scattering theory. Although the Miura map on the circle has long been known to be a global fold, the structure of the Miura map on the line has until recently been less well understood. In this talk we present a recent solution to the scalar Riccati equation that allows explicit inversion of the Miura map. We show that, for an appropriate notion of weak solution to the Riccati equation, inverse images of the Miura map on the line are parameterized by the Riemann sphere.