

A new inverse scattering transform

S. Bernstein

A.S. Fokas introduced a new transform method for solving initial boundary value problems for linear and for integrable nonlinear PDEs in two independent variables. This method is based on the fact that linear and integrable nonlinear equations possess a Lax pair formulation. The implementation of this method involves performing a simultaneous spectral analysis for both parts of the Lax pair and solving a Riemann-Hilbert problem (see for example [1]).

Un this talk we will use Clifford analysis and certain Dirac-type operators to construct Lax pairs. We also highlight the connection to Riemann-Hilbert-type problem in Clifford analysis. In this way we can generalize the Lax pair method to linear PDE with more than two variables.

The talk is based on joint work with U. Kähler and P. Cerejeiras.

[1] A.S. Fokas, A unified transform method for solving linear and certain nonlinear PDEs, Proc. R. Soc. Lond. A 1997, **453**, 1411-1443.