

The $\bar{\partial}$ - approach to approximate inverse scattering at fixed energy in three dimensions.

R.G.Novikov (CNRS, Université de Nantes, France)

Abstract:

We develop the $\bar{\partial}$ - approach to inverse scattering at fixed energy in dimension $d \geq 3$ of [Beals, Coifman 1985] and [Henkin, Novikov 1987]. As a result we propose a stable method for nonlinear approximate finding a potential v from its scattering amplitude f at fixed energy $E > 0$ in dimension $d = 3$. In particular, in three dimensions we stably reconstruct n -times smooth potential v with sufficient decay at infinity, $n > 3$, from its scattering amplitude f at fixed energy E up to $O(E^{-(n-3-\varepsilon)/2})$ in the uniform norm as $E \rightarrow +\infty$ for any fixed arbitrary small $\varepsilon > 0$ (that is with almost the same decay rate of the error for $E \rightarrow +\infty$ as in the linearized case near zero potential).

This talk is based on [R.G.Novikov, International Mathematics Research Papers 2005].