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Boundary-value problem for nonlinear Schrödinger equation. (English. Russian original)

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Summary: A boundary value problem on the half-line for the nonlinear Schrödinger equation (NLS) and its generalization is studied by means of the inverse scattering transform method. A connection between conservation laws and boundary conditions for the integrable boundary value problems for higher NLS equations is established. It is shown that the generalized boundary value problem needs the consideration of both regular and singular solution of NLS equations in the repulsive case.

MSC:

35Q99 Partial differential equations of mathematical physics and other areas of application

35G30 Boundary value problems for nonlinear higher-order PDEs

Keywords:

boundary value problem; nonlinear Schrödinger equation; inverse scattering transform; conservation laws

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