## Soliton solutions for the derivative nonlinear Schrödinger equation

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## Abstract

The inverse scattering transform method, applied to the derivative nonlinear Schrödinger equation (dNLS) is reviewed. The dNLS equation plays an important role in many physical problems, and the case of wave propagation in a cold plasma along the direction of a constant magnetic field is particularly discussed. The dNLS eq. results as a compatibility condition of a 2x2 linear matrix spectral problem (slightly different from the usual AKNS case), and a linear time evolution equation. The analytical properties of Jost function and scattering data are briefly discussed, and the inverse problem formulated. The 1-soliton solution is explicitly calculated.