1142-35-209 **Ramazan Ercan*** (ramazan.ercan@mavs.uta.edu), 703 Bolton Walk Apt 207, Goleta, CA 93117, and **Tuncay Aktosun** (aktosun@uta.edu), The University of Texas at Arlington, Department of Mathematics Box 19408, Arlington, TX 76019. *Direct and inverse scattering problems for a first-order system with energy-dependent potentials.*

The direct and inverse scattering problems on the full line are analyzed for a first-order system of ordinary linear differential equations associated with the derivative nonlinear Schrödinger equations. The system contains a spectral parameter λ and two potentials, and the potentials are functions of the spatial variable x and also linearly contain λ and hence are called energy-dependent potentials. Through a series of transformations the scattering data for the energy-dependent system is related to the scattering data for an energy-independent system. Using such transformations the direct problem is solved, where the goal is to determine the scattering data when the energy-dependent potentials are given. Again with the help of such transformations, the inverse problem is solved, where the goal is to determine the energy-dependent potentials from the corresponding scattering data. A contrast is made with the earlier solution method developed by Kaup and Newell and another method developed by Tsuchida. (Received September 04, 2018)