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David H Sattinger* (dhs@math.usu.edu), David H. Sattinger, Department of Mathematics and Statistics, Utah State University, Logan, UT 84322, and **Richard W Beals** and **Jacek Szmigielski**. *On inverse scattering solutions to the Hunter-Saxton equation.*

The nonlinear partial differential equation $(u_t + uu_x)_{xx} = \frac{1}{2}(u_x^2)_x$ was proposed by Hunter and Saxton as an asymptotic model equation for nematic liquid crystals. Hunter and Zheng showed that it is a member of the Harry Dym hierarchy of integrable flows, and solved the equation explicitly for a family of finite dimensional, piecewise linear functions in the case when u_x has compact support. In this note, the associated inverse scattering problem is used to obtain the explicit solutions of the finite dimensional flows in both the compact and non-compact case. (Received September 01, 2000)