

1035-35-486

**Robert M. Miura\*** (miura@njit.edu), Department of Mathematical Sciences, New Jersey Institute of Tehnology, Newark, NJ 07102. *Solitons and the Inverse Scattering Method.*

Surface water waves were studied in detail by John Scott Russell in the mid-1800s. In particular, he studied a solitary surface water wave that he called the "great wave of translation." A nonlinear PDE model for this solitary wave was developed by Korteweg and de Vries (KdV) in 1895, and now bears their names. Seventy years later, in 1965, Kruskal and Zabusky discovered that the solitary wave solutions of the KdV equation have the remarkable property of retaining their identities after "nonlinear" collisions with other solitary waves. They gave these special types of waves the name "solitons." This discovery motivated a more detailed mathematical study of the KdV equation, including a search for conservation laws that eventually led to devising the "inverse scattering method" for exact determination of the N-soliton solutions. In this talk, I will describe some of these discoveries and how some of them were made. (Received September 09, 2007)