

1052-35-65

**Jacek Szmigielski\*** ([szmigiel@math.usask.ca](mailto:szmigiel@math.usask.ca)), Saskatoon, SK S7N 5E6, Canada. *Explicit multipeakon solutions of Novikov's cubically nonlinear integrable Camassa–Holm type equation.*

Recently Vladimir Novikov found a new integrable analogue of the Camassa–Holm equation, admitting peaked soliton (peakon) solutions, which has nonlinear terms that are cubic, rather than quadratic. Using the matrix Lax pair found by Hone and Wang and a transformation of Liouville type, the associated spectral problem is shown to be related to a cubic string equation, which is dual in the sense of M.G. Krein to the cubic string that was previously found in the work of Lundmark and Szmigielski on the multipeakons of the Degasperis–Procesi equation. This fact allows one to give explicit formulas for the positions of peaks and their momenta. In this talk I will highlight three aspects of the problem: 1. distributional Lax pairs and limitations of Lax-pair integrability; 2. a combinatorial lemma (The Canada Day Theorem) which facilitates the presentation of the constants of motion; 3. an alternative solution to the associated inverse problem using the Cauchy biorthogonal polynomials introduced by Bertola, Gekhtman and Szmigielski.

This talk is largely based on joint work with A. Hone (Kent, UK) and H. Lundmark (Linköping, Sweden). (Received August 18, 2009)