

CASTS TALKS

CASTS Talk

A class of nonlinear wave equations and their integrable discretizations

2014 - 06 - 13 (Fri.)

15:00 - 16:00

308, Mathematics Research Center Building (ori. New Math. Bldg.)

Recently, much attention has been paid to a class of nonlinear wave equations, which include the Camassa-Holm equation, the Degasperis-Procesi equation and their short-wave limits (the Hunter-Saxton and the reduced Ostrovsky equations), the short pulse and coupled short equations etc. These equations share some common features: (1) they are connected to some well-known integrable systems such as two-dimensional Toda-lattice via hodograph (reciprocal) transformations; (2) they admit bizarre solutions such as loop, cusp, peakon, or breather solutions.

In this talk, we will report our recent work on the study of this class of soliton equations and their integrable discretizations. Firstly, we make it clear for the bilinear structure and their multi-soliton solution. Then, by Hirota's bilinear method and appropriate discrete Hodograph transformation, we construct integrable discretizations for most of these soliton equations, as well as their multi-soliton solutions.

This is a joint work with Dr. Kenichi Maruno, Dr. Yasuhiro Ohta at Kobe University of Japan.



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