

Friday, February 16th (at 4.00pm, UK time)

Eric Ragoucy (LAPTH - CNRS)

Title On Camassa-Holm peakons.

ABSTRACT

The Camassa-Holm fluid equation is an integrable equation, which admits soliton-like solutions, called peakons. The soliton solutions are themselves integrable, with a bi-Hamiltonian structure, with linear and quadratic Poisson brackets.

A one-parameter integrable deformation of the Camassa-Holm peakons was introduced by Ragnisco and Bruschi. However, although integrability was known, an explicit formulation of the r -matrix was missing. Only the r -matrix for the linear Poisson brackets of undeformed CH-peakons was known.

We construct an r -matrix presentation for the quadratic structure of undeformed CH-peakon. Then, we introduce an integrable two-parameter deformation of the CH-peakons which include the deformation of Ragnisco and Bruschi. We construct an r -matrix presentation for this model, which is spectral parameter dependent. The two-parameter deformation of the CH-peakons leads to a deformed version of the CH fluid equation, which appears to be equivalent to the original CH equation. As a consequence, the deformed peakons define new solutions to this fluid equation.
