Institut für
Angewandte Mathematik

Leibniz
Universität
Hannover

Institut für Angewandte Mathematik
10.01.2012

Oberseminar
Analysis und Theoretische Physik

Prof. Dr. Rossen Ivanov
Dublin Institute of Technology, Ireland

"Singular solutions of cross-coupled EPDiff equations: waltzing peakons and compacton pairs"

Abstract:
We consider singular solutions of a system of two cross-coupled Camassa-Holm (CCCH) equations. This CCCH system admits peakon solutions, but it is not integrable. The system is a pair of coupled Hamiltonian partial differential equations for two types of solutions on the real line, each of which separately possesses exp(-|x|) peakon solutions. However, there are no self-interactions, so each of the two types of peakon solutions moves only under the induced velocity of the other type.

We analyse the `waltzing' solution behaviour of the cases with a single bound peakon pair (a peakon couple), as well as the over-taking collisions of peakon couples and the antisymmetric case of the head-on collision of a peakon couple and a peakon anti-couple. We discuss compacton couple solutions of the cross-coupled Euler-Poincare (CCEP) equations and illustrate the same types of collisions as for peakon couples, with triangular and parabolic compacton couples. The cross-coupled generalization of the EPDiff equation also posesses solutions in the form of waltzing concentric peakons whose interaction involves also rotation around their center.

Donnerstag, 26.01.2012, 15:00 Uhr, Raum a310
Hauptgebäude der Universität

Über Ihren Besuch würden sich freuen:

Prof. Dr. Joachim Escher
Prof. Dr. Olaf Lechtenfeld
Prof. Dr. Elmar Schrohe
Prof. Dr. Christoph Walker