

Integrable System Seminar

New Integrable Equations with Non-smooth Solitons

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Abstract

In this paper we present the explicit non-smooth soliton solutions for two integrable equations: $\rho_t = bu_x + \frac{1}{2}[(u^2 - u_x^2)\rho]_x$, $\rho = u - u_{xx}$ and $(\frac{-u_{xx}}{u})_t = 2uu_x$. The first equation is studied under the vanishing condition $u \rightarrow 0$ at infinities. It has been proven to have bi-Hamiltonian structures. Furthermore, this equation possesses Non-smooth solitons — "W/M" - shape-peaks solitons. While the second equation is studied under the inhomogeneous boundary conditions $u \rightarrow A$ as $x \rightarrow +\infty$ and $u \rightarrow B$ as $x \rightarrow -\infty$. Its lax representation has been given here. In addition, this equation also possesses Non-smooth soliton solution— peakon solution.

Date: **Thursday, February 12, 2009**

Time: 1:10pm–2:25pm

Place: MAGC 1.212

For further information or for special accommodations, please contact Dr. Kenichi Maruno via email at kmaruno@utpa.edu.