
Blow up for the two-component Camassa–Holm system

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Abstract

The two-component Camassa–Holm system

$$\begin{cases} u_t - u_{txx} + 3uu_x - 2u_xu_{xx} - uu_{xxx} + \rho\rho_x & = 0, \\ \rho_t + (u\rho)_x & = 0, \end{cases}$$

serves as a model for shallow water. Furthermore, it is a generalization of the famous Camassa–Holm equation, which has been studied intensively due to its rich mathematical structure. Thus a huge class of solutions enjoys wave breaking within finite time, but there is also a regularising effect which prevents many solutions from blowing up. Hence the aim of this talk is twofolded. On the one hand we want to study this regularising effect in some detail and on the other hand we want to focus on how to predict if a solution enjoys wave breaking in the nearby future or not.

This talk is based on joint work with H. Holden and X. Raynaud.

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