

The soliton problem for water waves models with a varying medium

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We focus on the study of solitary waves for two deep water wave models: the Whitham equation and the Zakharov water wave system. Specifically, we analyze the behavior of a solitary wave when it encounters a change in the environment, for example, when the bottom of the domain containing the fluid is altered.

Zakharov water waves arises as a free surface model for an irrotational and incompressible fluid under the influence of gravity. Such fluid is considered in a domain with rigid bottom and a free surface. In this talk, we are interested in the analysis of the behavior of the solitary wave solution of the flat-bottom problem when the bottom actually presents a change at some point, the solitary wave entering into an interaction regime with the bottom.

This is a joint work with Claudio Muñoz (Universidad de Chile) and Frédéric Rousset (Université Paris-Sud).

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