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WELL-POSEDNESS AND ORBITAL STABILITY OF PERIODIC TRAVELING WAVES FOR THE SCHAMEL'S EQUATION

Abstract

The purpose of this seminar is to talk about Schamel's equation

$$u_t + \partial_x(u_{xx} + |u|^{3/2}) = 0. \quad (1)$$

First, by using compactness tools, we establish results of global well-posedness related to the Schamel's equation in a suitable Sobolev space of periodic functions.

In addition, we can see the existence of periodic traveling waves to the equation (1). Such solutions can be given explicitly, depending on the elliptic functions. In making an adaptation of the classical method introduced by Grillakis, Shatah, and Strauss, we can conclude that these waves are orbitally stable solutions to the Schamel's equation.

References

1. Andrade, T.P., Pastor, A.: Orbital stability of periodic traveling-wave solutions for the regularized Schamel equation. *Phys. D.* 317 (2016) 43-58.
2. Byrd, P.F., Friedman, M.D.: Handbook of elliptic integrals for engineers and scientists. New York: Springer, 2nd ed. (1971).
3. Cardoso Jr, E., Natali, F., Pastor, A.: Well-posedness and orbital stability of periodic traveling waves for Schamel's equation. *ZAA* 37 (2018) 221-250.
4. Carles, R., Pelinovsky, D.: On the orbital stability of Gaussian solitary waves in the log-KdV equation. *Nonlinearity* 27 (2014) 3185-3202.
5. Hu, Y., Li, X.: Discrete Fourier restriction associated with KdV equations. *Anal. PDE* 6 (2013) 859-892.
6. Natali, F., Neves, A.: Orbital stability of solitary waves. *IMA J. Appl. Math.* 79 (2014) 1161-1179.

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Room 202 - Maths Department