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FIRST IN CHANGE

Analysis and PDE Seminar

Professor Chulkwang Kwak

Department of Mathematics,
Ewha Womans University

TITLE: On global dynamics of zero-speed and superluminal solutions to Benjamin-Bona-Mahony equation

Date : May 11th, 2022 (Wednesday)
Time : 10am-11am (Hong Kong time)
11am-12noon (Korea time)

Link to ZOOM : https://unist-kr.zoom.us/j/3170659442
Meeting ID : 317 065 9442
Password : APDE21

Abstract. In this talk, we are going to discuss the long time behavior of solutions to a model derived from the water waves in the shallow water wave regime, in particular, Benjamin-Bona-Mahony equation. We are going to consider globally defined solutions to the generalized BBM equation, which have the decay property in large portions of the physical space, extending previous known results, and only assuming data in the energy space. Main difficulties to investigate such properties of solutions are due to very weak linear decay estimates ($O(t^{-\frac{1}{3}})$), the presence of long range nonlinearities ($p = 2$ and 3), and the existence of non-scattering solutions (solitary waves). Also, we are going to see that, under the suitable assumptions, zero-speed and breather solutions do not exist at least in a spatial interval of appropriate size. The proof follows from the construction of a suitable virial functional for which the dynamics is converging to zero when integrated in time.

All are welcome

This is a joint activity organized by Department of Mathematics, The Chinese University of Hong Kong, Hong Kong; Department of Mathematics, Institute of Mathematical Research, Research Division of Mathematical and Statistical Science, The University of Hong Kong, Hong Kong; and Department of Mathematical Sciences, Ulsan National Institute of Science and Technology, Korea. More details can be found in https://hkumath.hku.hk/~imr/event/CUHK_HKU_UNIST_Analysis_and_PDE/index.php.