Applied and Computational Mathematics Seminar

Title: UCD Wave Group Seminar

Speaker: (1) Dr. Denys Dutykh (Université de Savoie-CNRS, France), (2) Dr. Emiliano Renzi (UCD)

Date: Fri 25th May 2012 at 11:00AM

Location: (See abstract)

Abstract: Date: Fri, 25 May 2012 Time: 11:00 to 13:00 Location: Merrion Seminar Room (ground floor Radio House)

Talk 1: Relaxed variational approach to water wave modeling

Speaker: Dr. Denys Dutykh (Université de Savoie-CNRS, France)

Abstract: In this talk we will present a new method for deriving approximate equations for water waves. This method is based on a relaxed variational principle. In other words, the Lagrangian functional contains additional degrees of freedom. This formulation is particularly suitable for the construction of approximations since it allows more flexibility while preserving the variational structure. The advantages of this method will be illustrated on numerous examples in shallow and deep waters. Using thoroughly chosen constraints in various combinations, several model equations are derived, some being well-known, other being new. These models are studied

analytically and exact traveling wave solutions are constructed when possible. The Hamiltonian structure is also unveiled whenever possible. At the end of this talk we will present a novel modified shallow water system particularly suitable to model flows with large bathymetry variations.

Talk 2: Is the Oyster a 2D device? – An in-depth view of the Oscillating Wave Surge Converter dynamics

Speaker: Dr. Emiliano Renzi (UCD)

Abstract: This talk has been stimulated by a fruitful exchange of ideas in recent workshops and conferences. Despite many encouraging results in experimental and numerical modelling, doubts are still in place concerning the reliability of the Oyster as an efficient device to harness energy from water waves. The main objection is that such a device, characterised by a very large surface area, behaves almost as a two-dimensional body, for which the optimum efficiency is as much as 50