STEVENS Institute of Technology

Arthur E. Imperatore School of Sciences and Arts

Department of Mathematical Sciences

Seminar in Nonlinear Systems

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Hamiltonian approximation of the Green-Naghdi equations to the water wave problem.

Tuesday, February 10, 2004
4:00 pm
Pierce 116

Abstract: In this talk, we will show that the Green-Naghdi (GN) equations can be derived using the Hamiltonian structure of the full water wave problem. Using the shallow water configuration, i.e. long wave length compared with the depth of the water. We apply the Taylor expansion of the Dirichlet-Neumann operator to the Hamiltonian density function for the full water wave problem. As a consequence, we show the fact that the Hamiltonian formulation of the GN equations is a second order approximation to that of the full water problem. We will also justify the approximation by comparing solutions to the Cauchy problems of the two systems.

Refreshments at 3:50pm

For additional information contact Marco Lenci (201-216-5453) or Patrick Miller (201-216-5452).