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A Spectral Approach for the Non-linear Shallow Water Wave Equation in a Constantly Sloping U-Shaped bay of Finite length.

In this talk, we consider the tsunami run-up problem in a sloping bathymetry of finite length with u shaped cross section. For the offshore boundary, we assume that the wave height is 0. This model represents a constantly sloping beach with u shaped cross sections that has a wall some distance from the shore. Examples include some glaciers and bays similar to Lituya bay. We discuss the generalized CG transform and how it was used to transform the nonlinear run-up problem into a corresponding linear problem; the construction of a series solution to the corresponding linear system; the difficulties we overcame to build a numerical algorithm that uses the simi-analytic series solution; the back conversion to the physical system; and the advantages/limitations of our method.

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Thursday, November 7, 2013
Chapman 104
1:00 – 2:00 pm
Refreshments after the talk in Chapman 101A