



Breaking Waves in Hamiltonian Boussinesq Models

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We are interested in the modeling of wave propagation from deeper water region to the shallow water region, wave breaking and wave-current interactions. The reduced model we are looking for should include both dispersive and nonlinear effects.

Such a model was derived by us based on Hamiltonian techniques. It has a three-dimensional velocity field consisting of the full three dimensional velocity potential field plus horizontal velocity components such that the vertical vorticity component is nonzero.

Our aims are:

- (i) to show the results of a novel variational approach to derive jump conditions for the shallow water system, our new Boussinesq-type model and its approximations, and
- (ii) to explore these jump conditions with geometric numerical techniques.