

## Applied Mathematics Seminar

### *Computation of three-dimensional standing water waves*

Chris Rycroft (Harvard University)

**Abstract:** We develop a method for computing three-dimensional gravity-driven water waves, which we use to search for time-periodic standing wave solutions. We simulate an inviscid, irrotational, incompressible fluid bounded below by a flat wall, and above by an evolving free surface. The simulations require computing a velocity potential in the bulk of the fluid, which we carry out using a fourth-order finite element method; this computationally expensive step is solved using a parallel multigrid algorithm. Several families of large-amplitude three-dimensional standing waves are found in both shallow and deep regimes, and their physical characteristics will be examined and compared to previously known two-dimensional solutions.

Monday, February 2 at 4:00 PM in SEO 636
--