



**Speaker:** Henrik Kalisch  
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Thursday, February 7, 2013  
2:30 PM  
125 Hayes-Healy Hall

**Title:** Mechanical Balance Laws for Boussinesq and KdV equations

**Abstract:**

The Boussinesq scaling regime appears prominently in the study of long-crested surface waves as a requirement on the relation between undisturbed depth, amplitude and wavelength. If the waves appearing in a modeling situation fall into this regime, then the wave evolution may be effectively studied using a number of well known Boussinesq systems. If the waves are traveling predominantly in a single direction, then the KdV equation may be used to describe the waves. In this presentation, the focus will be on connections between surface wave patterns in the Boussinesq scaling, and properties of the underlying fluid flow. In particular, it will be shown how the reconstruction of the velocity field from the principal dependent variables of the evolution equations yields information about the associated flow beneath the surface. Such an analysis can be used advantageously in the study of undular bores, and the description of particle trajectories.