



# PIMS / AMI Seminar



Tuesday, February 11, 2014  
3:30 p.m.  
CAB 657

## “Shape Optimization for Navier-Stokes Boundary and Dimensional Splitting Methods”

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### Abstract

In this talk, we consider the drag functional (i.e., hydrodynamical force acting on the boundary) as an objective functional for the shape optimization of the Navier-Stokes boundary. In using the conjugate gradient methods to carry out an optimization, numerical differential for 3D stress tensor and gateaux derivative of the solutions of Navier-Stokes equation with respect to the shape of the boundary are usually required. This is a difficult problem and not efficient approach.

Our major contribution is to show that the computation for the conjugate gradient methods for optimization does not need the numerical differentiation for the stress tensor and gateaux derivative of the Navier-Stokes solutions with respect to the shape of boundary. It could be achieved by solving two- dimensional boundary layer equations I,III,IV ..

Refreshments will be served in CAB 649 at 3:00 p.m.