

**RYERSON UNIVERSITY
DEPARTMENT OF MATHEMATICS
BIOMATHEMATICS & FLUIDS SEMINAR**

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Date: Thursday, April 4, 2013

Time: 2:10pm

Location: ENG 210

**Vortex dynamics in inhomogeneous 2d
quantum fluids**

Abstract:

We characterize the asymptotic dynamical law for quantized vortices in inhomogeneous 2d Bose-Einstein condensates. These condensates are described very well by the Gross-Pitaevskii equation, which is a specific inhomogeneous nonlinear Schroedinger equation. Thus, our main result is a theorem that describes the behaviour of solutions of this equation in a certain scaling limit, and for well-chosen initial data. Results of this sort are known for equations that describe homogeneous quantum fluids, so the inhomogeneity introduced by the background density is the new feature of the problem. This is joint work with Didier Smets.

ALL FACULTY, STAFF, STUDENTS AND GUESTS ARE WELCOME TO ATTEND