McGill Applied Mathematics Seminar

Sept. 29, 2006, 11:35 am Friday
At McGill, Burnside Hall 1205

"Title: Vortices in rotating toroidal Bose-Einstein Condensates "

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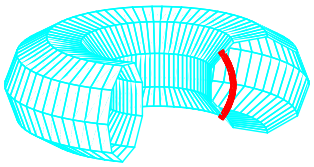
Coffee and refreshments will be served after the seminar

Abstract:

Abstract: We study minimizers of the Gross-Pitaevskii energy, introduced to model Bose–Einstein condensates (BEC) in the Thomas–Fermi regime which are subject to a uniform rotation. Following some recent experiments in BEC, we consider condensates with annular (planar) or toroidal (3D) geometry and examine minimizers to determine the presence and location of vortices in the condensate as the rotational speed increases. These questions involve singularly perturbed elliptic systems, and we will use variational methods with sharp estimates on the energy together with some tools from geometric measure theory to study the 3D case.



Energy minimizers and vortices on a toroid.