



JOINT QUANTOP – LTC SEMINAR

Title: Vortices in Bose gases and classical fluids

Speaker: Chris Pethick
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Time: Friday, February 23, at 11:15

Place: 1525-323

Abstract:

Quantum atomic gases provide us with an unprecedented opportunity for investigating experimentally a number of properties of vortices that are inaccessible in other fluids, and this has stimulated theoretical studies.

I shall begin by discussing rapidly rotating condensates, in which the vortex core size is comparable to the spacing between vortices.

Following that, I shall discuss the motion of single vortices, and investigate the extent to which a vortex “moves with the local fluid”, as it is generally assumed to do in classical hydrodynamics. Finally, I shall consider a vortex in quantum mechanics, and show how a vortex may reverse the sense of its circulation. Mean-field theory is very bad for describing the states in this process, which are much better characterized as Schroedinger cat states.

Michael Budde