



Kolloquium

Prof. Dr. Christopher Pethick
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Vortices in atomic Bose-Einstein condensates

Atomic Bose-Einstein condensates are ideal systems for exploring vortices under conditions that cannot be realized in a conventional superfluid such as liquid helium 4. After some historical remarks, I shall describe recent work on the motion of a vortex in a superfluid. Contrary to what one might expect on the basis of classical hydrodynamics, a vortex does not move "with the local fluid", and I shall show how the paradox is resolved. A second topic will be the properties of rapidly-rotating condensates when the radius of the vortex core becomes comparable to the separation between vortices.

References:

H. Nilsen, G. Baym, and C. J. Pethick,
Do vortices in inhomogeneous Bose-Einstein condensates move with the local fluid velocity?
PNAS (in press)(cond-mat/0508195)

G. Watanabe, G. Baym, and C. J. Pethick, Landau levels and the Thomas-Fermi structure of rapidly rotating Bose-Einstein condensates, Phys. Rev. Lett. 93, 190401 (2004).

Wann? Freitag, 05.05.2006, 14:00 Uhr

Wo? Universität Stuttgart, NWZ II, Raum 2.136