



SACRAMENTO STATE

Department of Physics & Astronomy Spring 2006

Physics Colloquium Series

“Energy Loss and Vortex Reconnection in Superfluid Helium”

For over a century scientists have studied fluid dynamics, assisted in recent years by vast amounts of computer time. The most complex and interesting parts of a fluid flow are the vortices, or swirls within the flow. Examples include the common bathtub vortex as well as cyclones, whirlpools, and airflow behind an airplane wing. How these vortices develop over time remains an important but intractable problem. Surprisingly, fluid flow in a quantum mechanical liquid may actually be easier to understand than flow in a classical fluid. Near absolute zero temperature, liquid helium becomes a “superfluid” with unusual quantum properties. In particular, helium vortices are simpler versions of their classical counterparts. I will discuss my lab's measurements on single vortex motion in superfluid helium, focusing on energy loss mechanisms for the moving vortex. We hope that ultimately our work will illuminate the classical situation.

Rena Zieve

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**Thursday, Mar. 2, 2006
4:00-5:20 PM MND 1015**

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