

WICHITA STATE UNIVERSITY
Department of Mathematics and Statistics

*The Lecture Series in the
Mathematical Sciences Presents Our Guest:*

Dr. Alan Elcrat
Wichita State University

"Inviscid Vortex Flows Past a Cylinder and Sphere"

Abstract:

This talk will be concerned with solutions of the equations of an ideal fluid: the fluid is incompressible and inviscid, and the flows are steady. The rotational regions (vortices) are confined to compact regions. We will consider 2d and axisymmetric flows past a cylinder and a sphere, respectively, and each flow may be thought of as having a single vortex. With all these restrictions the problem leads to an elliptic boundary value problem, and this is the problem that we will solve. (This is joint work with Bengt Fornberg at Colorado and Ken Miller from Wichita.) Vortices have been described as the "sinews and muscles" of fluid motions, and particular solutions continue to be of interest. In particular, point vortices (2d) and Hill's spherical vortex (axisymmetric) have played an important role in the past and our solutions have close relations with each of these. Some recent results on stability will be given and a set of open problems will be stated.

Friday, April 8, 2005
3:00 PM in 372 Jabara Hall

*Please come join us for refreshments before the lecture
at 2:30 p.m. in room 353 Jabara Hall.*