

# WICHITA STATE UNIVERSITY

Department of Mathematics and Statistics

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

## Prof. Andrew Acker

Wichita State University

*"On the existence of convex classical solutions for the  
generalized Prandtl-Batchelor free-boundary problem."*

Abstract:

We discuss an analytical proof of the existence of convex classical solutions for the (convex) Prandtl-Batchelor free boundary problem in fluid dynamics. In this problem, a convex vortex core of constant vorticity is embedded in a closed irrotational flow inside a closed, convex vessel in the Euclidian plane. The unknown boundary of the vortex core is a closed curve along which the square of the outer tangential flow-speed minus the square of the inner tangential flow-speed is a positive constant. The existence results all apply to the natural multidimensional mathematical generalization of the above problem.

Friday, February 13, 2004  
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.*