CURRICULUM VITAE

ROBERT M. KERR

Scientist III, Mesoscale Microscale Meteorology Division

National Center for Atmospheric Research, Boulder, Colorado

PERSONAL:

Work Address	Mesoscale and Microscale Meteorology Division National Center for Atmospheric Research (NCAR) Boulder, CO 80307–3000
303-497-8991	kerrrobt@ncar.ucar.edu
Citizenship:	United States

EDUCATION and PROFESSIONAL EXPERIENCE:

1986 to Present	National Center for Atmospheric Research, Mesoscale and Microscale Meteorology Division. Scientist.
1981	Ph. D., Physics, Cornell University, Ithaca, New York
1975	B.A. and M.S., Physics, University of Chicago, Chicago, Illinois

SUMMARY OF RESEARCH

The primary emphasis of my research has been understanding turbulent flows through direct simulations. As a visiting graduate student at the National Center for Atmospheric Research (NCAR) and at the National Aeronautical and Space Administration (NASA), I developed a large three–dimensional spectral code for studying small–scale intermittency in isotropic turbulence advecting temperature. This led to further work on the structure of turbulence, including recent calculations providing strong evidence for a singularity of the three-dimensional incompressible Euler equations in a finite time and how this singularity is related to the structure of turbulence. I have also developed codes to study three–dimensional geophysical boundary layers and a vortex code to study the Rayleigh–Taylor instability, the gravitational instability at the interface between two fluids. The boundary layer code has been used to study helicity effects in convection, zero Prandtl number convection, stratified turbulence, and most recently to confirm a transition to a non-classical heat flux law in Rayleigh-Benard convection.

PUBLICATIONS (Significant or recent)

Kerr, R. M., 1985: Higher order derivative correlations and the alignment of small–scale structures in isotropic numerical turbulence. *J. Fluid Mech.*, **153**, 31.

Kerr, R. M. 1993: Evidence for a singularity of the three-dimensional incompressible Euler equations. *Phys. Fluids A*5, 1725.

Herring, J.R., & R. M. Kerr 1993: Development of enstrophy and spectra in numerical turbulence. *Phys. Fluids A* **5**, 2792.

Herring, J.R., R. M. Kerr, & R. Rotunno 1994: Ertel's potential vorticity in unstratified turbulence. *J. Atmos. Sci.* **51**, 35.

Kerr, R. M. 1994: Rayleigh Number Scaling in Numerical Convection. Submitted to *J. Fluid Mech.*

Kerr, R. M., J.A. Domaradzki, & G. Barbier 1994: Small-scale properties of nonlinear interactions and subgrid-scale energy transfer in isotropic turbulence. Submitted to *Phys. Fluids.*