



UNIVERSITY OF ROCHESTER

Mathematics and Physics Colloquium Series

ABSTRACT

It is still not known whether solutions to the 3D Navier-Stokes equations for incompressible flows in a finite periodic box can become singular in finite time. (This question is the subject of one of the \$1 million Clay Prize problems.) It is known that a solution remains smooth as long as the enstrophy, i.e., the mean-square vorticity, of the solution is finite. The generation rate of enstrophy is given by a functional that can be bounded using elementary functional estimates. Those estimates establish short-time regularity but do not rule out finite-time singularities in the solutions.

Charles R. Doering

Professor of Mathematics, Physics, and Complex Systems

University of Michigan, Ann Arbor

***Twist & Shout:
Maximal enstrophy production in
the 3D Navier-Stokes equations***

Thursday, November 12, 3:30–4:30 p.m.

Computer Studies Building, Room 209