Math Colloquium

Small scale and singularity formation in fluid mechanics

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Thursday February 21st

4:30 PM LeConte 412

The Euler equation describing motion of ideal fluid goes back to 1755. The analysis of the equation is challenging since it is nonlinear and nonlocal. Its solutions are often unstable and spontaneously generate small scales. The fundamental question of global regularity vs finite time singularity formation remains open for the Euler equation in three spatial dimensions. I will review the history of this question and its connection with the arguably greatest unsolved problem of classical physics, turbulence. Recent results on small scale and singularity formation in two dimensions and for a number of related models will also be presented.

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