

*Department of Mathematics,
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Math 278 - Computational & Applied Math Seminar

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Caltech

Geometric properties and nonblowup of 3D incompressible Euler equations

Abstract:

The global existence/blowup of smooth solutions for the 3D incompressible Euler equations has been one of the most outstanding open problems. By exploring a local geometric property of the vorticity field along one vortex filament, we establish a sharp relationship between the geometric properties of the vorticity field and the maximum vortex stretching. This new understanding reveals new subtleties in the 3D Euler flow, and leads to an improved result of the global existence of the 3D Euler equation under assumptions that are consistent with recent numerical observations.

Host: B. Li

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