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Geometric properties and nonblowup of 3D incompressible Euler flow. (English)

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Summary: By exploring a local geometric property of the vorticity field along a vortex filament, we establish a sharp relationship between the geometric properties of the vorticity field and the maximum vortex stretching. This new understanding leads to an improved result of the global existence of the 3D Euler equation under mild assumptions.

MSC:

35Q35 PDEs in connection with fluid mechanics

35L60 First-order nonlinear hyperbolic equations

76B03 Existence, uniqueness, and regularity theory for incompressible inviscid fluids

Cited in **3** Reviews
Cited in **41** Documents

Keywords:

3D Euler equations; finite time blow-up; geometric properties; global existence

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