

## Finite time singularities for incompressible fluids

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### Resumen

The search for singularities in incompressible flows has become a major challenge in the area of non-linear partial differential equations and is relevant in applied mathematics, physics and engineering. The basic fluid dynamics systems that we consider in this lecture are Euler equations, Darcy's law and the surface quasi-geostrophic equations. The fundamental questions to address are local existence, uniqueness, global-existence of solutions or on the other hand, formation of singularities. We will review some recent developments on the above topics.