

SPEAKER:

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TITLE:

From Instability to Singularity Formation in Incompressible Fluids

ABSTRACT:

In this talk, I will describe a new mechanism for singularity formation in the 2d Boussinesq system and in the 3d incompressible Euler equations. In the Boussinesq case, the singularity mechanism arises as a second order effect on the classical Rayleigh–Bénard instability, and the initial data we choose is smooth except at one point, where it has Hölder continuous first derivatives. I will then describe how these considerations translate to a singularity formation scenario for the 3d incompressible Euler equations, based on the Taylor–Couette instability. This is joint work with Tarek Elgindi (Duke University).