

Spectral stability of inviscid columnar vortices

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Columnar vortices are stationary solutions of the three-dimensional Euler equations with axial symmetry, where the velocity field only depends on the distance to the axis and has no component in the axial direction. Stability of such flows was first investigated by Lord Kelvin in 1880, but the only analytical results available so far provide necessary conditions for instability under either planar or axisymmetric perturbations. In this talk I will discuss a recent work with Thierry Gallay in which we show that columnar vortices are spectrally stable with respect to three-dimensional perturbations with no particular symmetry.

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