

Concentrated vorticities in the incompressible Euler equations

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A classical problem that traces back to Helmholtz and Kirchhoff is the understanding of the dynamics of solutions to the Euler equations of an inviscid incompressible fluid when the vorticity of the solution is initially concentrated near isolated points in $2d$ or vortex lines in $3d$. We discuss some recent results on the existence and asymptotic behaviour of these solutions. We describe, with precise asymptotics, interacting vortices, and travelling helices. We rigorously establish the law of motion of leapfrogging vortex rings, originally conjectured by Helmholtz in 1858