

On the vortex sheet problem for 2D incompressible fluid flow

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Abstract:

Vortex sheets are an idealized model for flows with strong shears concentrated in a thin region, such as what occurs in the flow trailing an airfoil. There are two distinct approaches to the problem of modeling vortex sheet evolution: the so-called explicit approach, leading to the Birkhoff-Rott equations, and the implicit approach, involving weak solutions with vorticity being a measure. In these lectures we will make a tour of the progress achieved over the past 30 years, focusing on weak solutions, and we will discuss recent results comparing these two approaches.