연세대학교 수학계산학부

Partial Differential Equations Seminar

Title Stability of monotone radial solutions of 2d Euler equations

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Date February 14th , 11:00 ~ 12:00

Location Zoom 강연

Abstract

It is an elementary talk introducing a variational method to obtain Lyapunov stability of some stationary solutions of incompressible Euler equations. We consider the incompressible Euler equations in R^2 when the initial vorticity is bounded, radially symmetric and non-increasing in the radial direction. Such a radial distribution is stationary, and we show that the monotonicity produces stability in some weighted norm related to the angular impulse. For instance, it covers the cases of circular vortex patches and Gaussian distributions. Our stability does not depend on L^\infty-bound or support size of perturbations. The proof is based on the fact that such a radial monotone distribution minimizes the impulse of functions having the same level set measure. This is joint work with Deokwoo Lim(UNIST)

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