Abstract Submitted
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Nonlinear Theory of Three-Dimensional Separation GEORGE HALLER, MIT — In this talk, I describe a recent theory of steady and unsteady three-dimensional separation. The theory provides analytic criteria for the location and shape of separation surfaces emanating from a no-slip boundary of a three-dimensional flow. We construct these surfaces as nonhyperbolic unstable manifolds using nonlinear dynamical systems methods. I show applications of the theory to direct numerical simulations of a backward-facing step flow and of a lid-driven cavity flow. I also mention related two-dimensional experiments and applications to separation control.

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