

SCGP Weekly Talk: Tarek Elgindi

Tuesday, December 5 • 1:15 – 2:15pm

Location: 102

Title: On the Formation of Coherent Structures in Ideal Fluids

Abstract: We will discuss recent ideas and results related to the formation and dynamics of coherent structures in ideal fluids. The study of such structures has had a profound impact on many fundamental problems in the study of the incompressible Euler equation. As a first example, we will discuss self-similar solutions; these are three-dimensional flows that exactly self-enhance all the way to a finite-time singularity. Self-similar solutions have been shown to attract nearby solutions to become singular as well. We will also discuss coherent structures in two dimensions, which play an important role in the infinite-time relaxation of solutions despite the conservative nature of the equations.