Calderón-Zygmund Analysis Seminar

Monday, February 20th, 3:45 pm

A path of understanding fluid equations: from Leray to recent breakthroughs

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Abstract. The mathematical theory of incompressible fluids, a classical topic, still poses challenges for us today. The pioneering work of Leray in 1930s built the foundation for the Navier-Stokes equation (NSE), the governing equation of fluid motion. It also raised some important questions. One renowned question is regarding the appearance of singularity of solutions to the 3D NSE in finite time; another one concerns the well-posedness of the Leray-Hopf weak solution. We will talk about some major breakthroughs toward resolving these problems, sparked by empirical laws in physics and techniques from other disciplines of mathematics.