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Abstract framework for the theory of statistical solutions

In this talk we will present an abstract framework for the theory of statistical solutions for general evolution equations. This theory extends the notion of statistical solutions initially developed for the 3D incompressible Navier–Stokes equations to other evolution equations that have global solutions which are not known to be unique. The main results are the existence of statistical solution for the initial value problem and the convergence of statistical solutions of regularized equations to statistical solutions of the original one. The wide applicability of the theory will be illustrated with the very 3D incompressible Navier–Stokes equations, a reaction–diffusion equation, a nonlinear wave equation and the 2D inviscid limit of statistical solutions of the Navier-Stokes to the Euler equations.

This is a joint work with Cecilia Mondaini and Ricardo Rosa.