

Applied Mathematics Seminar

L^2 asymptotic stability of mild solutions to the Navier-Stokes system

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Abstract: We consider the initial value problem for the Navier-Stokes equations modeling an incompressible fluid in three dimensions: $u_t + u \cdot \nabla u + \nabla p = \Delta u + F$, $(x, t) \in \mathbb{R}^3 \times (0, \infty)$, $\operatorname{div} u = 0$, $u(x, 0) = u_0(x)$.

It is well-known that this problem has a unique global-in-time mild solution for a sufficiently small initial condition u_0 and for a small external force F in suitable scaling invariant spaces. We show that these global-in-time mild solutions are asymptotically stable under every (arbitrary large) L^2 -perturbation of their initial conditions.

Monday, April 21 at 4:00 PM in SEO 636