Article

MR968416 (90k:35199) 35Q10 (35D05 76D05)

Calderón, Calixto P. (1-ILCC)

Existence of weak solutions for the Navier-Stokes equations with initial data in L^p.

Trans. Amer. Math. Soc. **318** (1990), *no. 1,* 179–200.

Summary: "The existence of weak solutions to the Navier-Stokes equations for an infinite cylinder with initial data in L^p is considered in this paper. We study the case of initial data in $L^p(\mathbf{R}^n)$, $2 < p < n$, and $n = 3, 4$. An existence theorem is proved covering these important cases and, therefore, the 'gap' between the Hopf-Leray theory $(p = 2)$ and that of Fabes-Jones-Rivière $(p > n)$ is bridged. The existence theorem gives a new method of constructing global solutions. The cases $p = n$ are treated at the end of the paper."

{For an addendum see the following review.}

Reviewed by *Jean Leray*