Zhou, Yong

A new regularity criterion for the Navier-Stokes equations in terms of the gradient of one velocity component. (English) Zbl 1166.35359

Methods Appl. Anal. 9, No. 4, 563-578 (2002).

Summary: We consider the regularity criteria for the weak solutions to the Navier-Stokes equations in $\mathbb{R}^3$. It is proved that if the gradient of any one component of the velocity field belongs to $L^{\alpha,\gamma}$ with $2/\alpha + 3/\gamma = 3/2$, $3 \leq \gamma < \infty$, then the weak solution actually is strong.

MSC:

35Q30	Navier-Stokes equations
35B65	Smoothness and regularity of solutions to PDEs
76D03	Existence, uniqueness, and regularity theory for incompressible viscous fluids
76D05	Navier-Stokes equations for incompressible viscous fluids

Full Text: DOI