

Energy conservation for inhomogeneous Navier-Stokes equations

Jiaqi Yang¹

¹Northwestern Polytechnical University

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Abstract

In this paper, we focus on the energy conservation for the weak solutions of inhomogeneous Navier-Stokes equations. It is proved that if the function of density belongs to $L^\infty(0, T; L^\infty(\mathbb{T}^N)) \cap L^p(0, T; W^{1,p}(\mathbb{T}^N))$, and the function of velocity belongs to $L^s(0, T; L^r(\mathbb{T}^N))$ with $\frac{2s}{r} + \frac{2r}{r} = 1$, then the energy equality holds. This result can be seen as a inhomogeneous version for Shinbrot's criterion.

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