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On the localization of symmetric and asymmetric solutions of the Navier-Stokes equations in \mathbb{R}^n . (English. Abridged French version) [Zbl 0973.35149](#)

C. R. Acad. Sci., Paris, Sér. I, Math. 332, No. 2, 125-130 (2001).

Summary: The aim of this note is to present some results on the space-time decay of solutions of the Navier-Stokes equations in \mathbb{R}^n , with data $u(0) = a$. We show that the localization condition $L^1(\mathbb{R}^n, (1 + |x|)dx)$ is instantaneously lost, during the Navier-Stokes evolution, if the data has non-orthogonal components with respect to the L^2 inner product. We also show that some supplementary symmetries of small initial data allow us to obtain global strong solutions of the Navier-Stokes equations with an over-critical decay, both pointwise and of the energy norm.

MSC:

35Q30 Navier-Stokes equations

35B30 Dependence of solutions to PDEs on initial and/or boundary data and/or on parameters of PDEs

76D05 Navier-Stokes equations for incompressible viscous fluids

Cited in **2** Reviews
Cited in **18** Documents

Keywords:

space-time decay of solutions of the Navier-Stokes equations; localization condition; symmetries of small initial data

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