

The Navier–Stokes equations on expanding periodic domains

James C. Robinson
Mathematics Institute, University of Warwick

Coventry CV4 7AL. (UK) j.c.robinson@warwick.ac.uk

Abstract

Given a compactly supported initial velocity or initial vorticity, we show that the solutions of the Navier–Stokes equations on the periodic domains $[-L, L]^3$ converge strongly to the solution on the whole space \mathbb{R}^3 with the same initial data. This has implication for the ‘transfer of regularity’ from solutions on the whole space to solutions on large enough periodic domains.