Global existence of solutions with non-decaying initial data 2D(3D)-Navier-Stokes IBVP in half-plane(space)

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Abstract

In paper [1], we investigate on the global (time) solution to the Navier-Stokes initial boundary value problem in the half-plane $\mathbb{R}^2_+$ with initial data $u_0 \in L^\infty(\mathbb{R}^2_+) \cap J_0^2(\mathbb{R}^2_+)$ or with non decaying initial data $u_0 \in L^\infty(\mathbb{R}^2_+) \cap J_0^p(\mathbb{R}^2_+)$, $p > 2$. We introduce a technique that allows us to solve the two-dimesional problem, further, but not least, it is also employed to obtain weak solutions, as regards the non decaying initial data, to the three-dimensional Navier-Stokes Cauchy problem and IBVP in the half-space. The two-dimensional result is in the wake of a recent literature (see e.g.[2]-[4]). Instead, apart from the particular result in [5], the three-dimensional one has only some recent contributes as [6]-[7]

Keywords: Navier-Stokes, nondecaying solutions, global solutions,

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