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16. Applications

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On a perturbed two-layer free surface flow down an inclined plane

Mathematical models of multiple-layer coating flows with viscous liquids usually represent free boundary value problems for the stationary Navier-Stokes equations in unbounded two-dimensional domains. In many cases the flow domains have two outlets to infinity. Using methods of nonlinear analysis the solvability of a free boundary value problem for the flow down an inclined plane with a small perturbation can be shown. Part of these results is joint work with K. Pileckas. Reference: K. Pileckas, and J. Socolowsky, Analysis of the NavierStokes equations for some two-layer flows in unbounded domains, in: *Proceedings of the 6th International Conference on Navier-Stokes Equations and related Nonlinear Problems*, eds. H. Amann et al., VSP/TEV (1998), (accepted for publication)