

Strong solutions to the stationary compressible Navier-Stokes-Fourier system

Tomasz Piasecki

Institute of Applied Mathematics and Mechanics, University of Warsaw, Poland

tpiasecki@mimuw.edu.pl

We investigate the issue of existence of stationary solutions to the Navier-Stokes-Fourier system describing the flow of a compressible fluid in a finite cylindrical domain. On the boundary we prescribe inhomogeneous slip conditions on the velocity. Due to the hyperbolic character of the continuity equation we have to prescribe the density on the inflow part of the boundary. We show the existence of a solution in a vicinity of a given laminar flow with variable temperature.

The main problem to face in the proof is the lack of compactness in the continuity equation. In order to overcome this problem we construct a sequence of approximations and apply the maximal regularity estimates for the linearization of our equations. This is a joint work with Milan Pokorný.

References

- [1] *T. Piasecki, M. Pokorný*: Strong solutions to the Navier-Stokes-Fourier system with slip-inflow boundary conditions. Accepted to ZAMM, arXiv: 1211.7303.