

Chemically reacting mixtures in terms of degenerated parabolic setting

Ewelina Zatorska

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

e.zatorska@mimuw.edu.pl

We will present a model of motion of compressible mixture of arbitrary large number of species [2]. Mathematical description of the flow leads to a hyperbolic deviation in the species mass conservation equations. The thermodynamics implies that the diffusion terms are non-symmetric, non positively defined, and cross-diffusion effects must be strongly marked. Moreover, we consider a special form of density-dependent viscosity coefficients and a singular behavior of the cold component of the internal pressure near vacuum [1]. Under these hypotheses we prove global-in-time existence of weak solutions.

This result is based on several joint papers with P. B. Mucha and M. Pokorný.

References

- [1] *D. Bresch, B. Desjardins*: On the existence of global weak solutions to the Navier-Stokes equations for viscous compressible and heat conducting fluids. *J. Math. Pures Appl.* (9) *87* (2007), 57–90.
- [2] *V. Giovangigli*: Multicomponent flow modeling. *Modeling and Simulation in Science, Engineering and Technology*. Birkhäuser Boston Inc., Boston, MA, 1999.