

Cauchy Problem for a Model of Combustion in a Porous Medium with Several Parallel Layers

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In this work, we discuss the existence and uniqueness of the Cauchy problem for a model of combustion in a porous medium. The medium consists of n parallel layers with distinct physical properties. For two layers the problem was solved in [2]. Here we consider $n \geq 3$. The model consists of a system of n non-linear reaction-diffusion-convection equations and n autonomous EDOs. The model includes heat transfer between two neighboring layers and a reaction rate of combustion in each layer. Considering that concentrations are known functions in all layers, we show that the Cauchy problem has a unique classical solution, defined globally in time. The techniques used are strongly based on the iterative method of upper and lower solutions (see [6]). The main references are listed below.

References

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