

SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

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Solvability of the thermoviscoelastic model of polymer solutions motion

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Abstract

The initial-boundary value problem under consideration describes the weakly concentrated water polymer solutions motion. This mathematical model also is called the Kelvin-Voigt model. This problem is considered with the constitutive law which is frame indifferent, i.e. that do not change under the Galilean transformation. Also in this mathematical model, the viscosity depends on a temperature, which leads to the emergence of additional heat balance equation (it is a parabolic equation with nonsmooth coefficients and with the right part from $L_1(0, T; L_1(\Omega))$). For the initial-boundary value problem under consideration, the existence theorem of weak solutions is proved. For this, the topological approximation approach for hydrodynamic problems is used.

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