OPTIMAL FEEDBACK CONTROL
FOR A THERMOVISCOELASTIC MODEL OF
THE MOTION OF WATER POLYMER SOLUTIONS

V. G. Zvyagin and A. V. Zvyagin

We study an optimal feedback control problem for an initial boundary value problem of a thermoviscoelastic model describing the motion of weakly concentrated water polymer solutions in the presence of dependence of the viscosity on the temperature. We prove the existence of an optimal solution minimizing to a given bounded lower semicontinuous quality functional. For proving the existence of an optimal solution, we use the topological approximation method for studying problems in hydrodynamics.

Key words and phrases: optimal feedback control, existence theorem, thermoviscoelasticity, non-Newtonian hydrodynamics.

Zvyagin Viktor Grigor'evich
Voronezh State University,
Voronezh, 394018 Russia.
E-mail: zvg_vsu@mail.ru

Zvyagin Andrej Viktorovich
Voronezh State University,
Voronezh, 394018 Russia.
E-mail: zvyagin.a@mail.ru