Weak solvability of one model of dynamics of thermovicoelastic continuous medium with regularized objective Jaumann derivative

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In the talk, we establish the weak solvability of the initial–boundary value problem for the model of dynamics of thermoviscoelastic continuous medium which rheological relations (constitutive laws) contains regularized objective Jaumann's derivative. The investigation is carried out by means of decoupling of the system and reducing to the operator equation in suitable Banach space.

Our goal is to investigate one thermoviscoelastic model which rheological relation contains objective derivatives. The weak solvability for such model of viscoelasticity, namely for Jeffreys model of multidimensional nonlinear viscoelastic mediums with regularized objective Jaumann's derivative was established before in *Zvyagin V. G. and Vorotnikov D. A. // Fix. Point Theor. and Appl. 2008.* **3** *№1. pp. 23–29.*

In order to take into account a heat transfer in this model we add non-dissipative term in the stress tensor and complete the model by the energy balance equation.