ON THE KELVIN-VOIGT VISCOELASTIC SOLID MODEL WITH THE IMPLICITE DISSIPATIVE PART

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Abstract

The classical Kelvin-Voigt viscoelastic solid can be viewed as a mixture of a linearized elastic solid and a linearly viscous fluid that co-exist. We consider some generalizations of this model where the elastic part of the Cauchy stress depends non-linearly on the linearized strain and the dissipative part of the Cauchy stress is an implicit function of the symmetric part of the velocity gradient. Our goal is the investigation of the long-time and large data existence, uniqueness and regularity property of the weak solutions for the various initial boundary problems (including non-homogeneous and mixed boundary value problems).