



materials



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Modelling of Viscoelastic Materials and Mechanical Behavior

Guest Editor:

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Message from the Guest Editor

This Special Issue is devoted to recent advances in the modeling of viscoelastic materials, possibly interacting with electromagnetic fields and temperature fields, along with mathematical properties of the solution to associated evolution problems. The following are some topics to be investigated in this issue:

The modeling of viscoelastic materials is developed within the domain of materials with fading memory. The model is based on the classical linear functional for the stress-strain constitutive relation; to account for aging properties the kernel is allowed to depend explicitly on time. The thermodynamic analysis yields a set of properties characterizing the functional for both aging and non-aging materials. Likewise, a rate-type (Maxwell) model is shown to account for hysteresis effects in viscoelasticity.

Interaction of deformation with the temperature field is investigated for a nonlinear viscoelastic beam with different conditions at the boundary; existence and uniqueness of the solution are proved along with an exponential decay property.

More involved models of viscoelastic materials are considered by accounting for the effects of magnetic or electric fields.



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Special Issue



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Message from the Editor-in-Chief

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