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One-dimensional model describing the non-linear viscoelastic response of materials

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Abstract: In this paper we consider a model of a one-dimensional body where strain depends on the history of stress. We show local existence for large data and global existence for small data of classical solutions and convergence of the displacement, strain and stress to zero for time going to infinity.

Keywords: viscoelasticity; integrodifferential equation; classical solution; global existence; implicit constitutive relations
AMS Subject Classification: 45K05, 45G10, 74D10

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