A TRANSMISSION PROBLEM FOR EULER-BERNOULLI BEAM WITH KELVIN-VOIGT DAMPING

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Abstract. In this work we consider a transmission problem for the longitudinal displacement of a Euler-Bernoulli beam, where one small part of the beam is made of a viscoelastic material with Kelvin-Voigt constitutive relation. We use semigroup theory to prove existence and uniqueness of solutions. We apply a general results due to L. Gearhart \cite{5} and J. Pruss \cite{10} in the study of asymptotic behavior of solutions and prove that the semigroup associated to the system is exponentially stable. A numerical scheme is presented.

References

\begin{enumerate}
\item K. Liu, Z. Liu, Exponential decay of the energy of the Euler-Bernoulli beam with locally distributed Kelvin-Voigt damping. \textit{SIAM J. Control Optim.} \textbf{36}(3) (1998), 1086-1098.
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