

Stabilization of a weak viscoelastic wave equation with variable coefficients and an interior delay under nonlinear boundary dissipation

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In this paper, we investigate the stabilization of a weak viscoelastic wave equation with variable coefficients and an interior delay, which is also subject to a nonlinear boundary dissipation. The existence of weak solution is demonstrated by means of nonlinear semigroup theory. It is noteworthy that the system is non-dissipative. The exponential decay for energy, contingent upon the behavior of viscoelastic effects and strength of delay is achieved subject to sufficiently strong mechanical boundary damping. The precise ranges of admissible parameters ensuring the stability are provided. The methods of proofs are routed in Riemannian geometry.

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