

**Shibata, Yoshihiro**

**On the rate of decay of solutions to linear viscoelastic equation.** (English) Zbl 0947.35020  
*Math. Methods Appl. Sci.* 23, No. 3, 203-226 (2000).

The author studies decay rates of solutions to the Cauchy problem for the equation of linear viscoelasticity in  $\mathbb{R}^n$ :  $v_{tt} - \Delta v - \Delta v_t = 0$ . By using the Fourier analysis, the Marcinkiewicz multiplier theorem and careful estimating low- and high-frequency parts of the solutions, the author obtains the  $L^p - L^q$ -decay estimates ( $1 \leq p \leq 2 \leq q \leq \infty$ ) of the solutions. The dominant asymptotic behavior is given by the convolution of Green functions of the diffusion equation and the wave equation. This paper improves some decay estimates in [*D. Hoff* and *K. Zumbrum*, *Z. Angew. Math. Phys.* 48, 597-614 (1997; [Zbl 0882.76074](#))].

Reviewer: [S.Jiang \(Beijing\)](#)

**MSC:**

- [35B40](#) Asymptotic behavior of solutions to PDEs
- [74D05](#) Linear constitutive equations for materials with memory
- [35E15](#) Initial value problems for PDEs and systems of PDEs with constant coefficients

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**Keywords:**

Fourier analysis; Marcinkiewicz multiplier theorem;  $L^p - L^q$ -decay estimates

**Full Text:** [DOI](#)

**References:**

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