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非线性二阶边界阻尼的粘弹性方程解的能量衰减估计

陆 军¹, 张宏伟²

1. 郑州师范学院--数学系, 郑州 450044;
2. 河南工业大学--数学系, 郑州 450001

Energy decay estimation for the nonlinear viscoelastic equation with nonlinear second-order boundary damping

LU Jun¹, ZHANG Hong-wei²

1. Department of Mathematics, Zhengzhou Normal University, Zhengzhou 450044, China;
2. Department of Mathematics, Henan University of Technology, Zhengzhou 450001, China

- 摘要
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全文: PDF (249 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 讨论了具有非线性二阶边界阻尼的粘弹性方程混合问题. 利用 Nakao 的不等式在阻尼项为一般情况时得到了能量的指数衰减估计; 在阻尼项为多项式时得到了能量的代数衰减估计.

关键词: 能量衰减 粘弹性方程 非线性二阶边界阻尼 Nakao 的不等式

Abstract: The exponential decay estimation of the energy for the nonlinear viscoelastic equation with general damped term was obtained by using Nakao's inequality, and the algebra decay estimation of the energy for the equation with polynomial damped term was given by the same inequality.

Key words: energy decay nonlinear viscoelastic nonlinear second-order boundary damping equation Nakao's inequality

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. Energy decay estimation for the nonlinear viscoelastic equation with nonlinear second-order boundary damping[J]. Journal of East China Normal University(Natural Sc, 2012, 2012(5): 63-68.

- [1] {1} ANDREWS K T, KUTTLER K L, SHILLOR M. Second order evolution equations with dynamic boundary conditions[J]. Journal of Mathematical Analysis and Applications, 1996, 197: 781-795.
- [2] {2} KUTTLER K L. Velocity dependent boundary conditions for the displacement in one dimensional viscoelastic material[J]. Rocky Mountain J Math, 1994, 24: 579-613.
- [3] {3} LEE H P. Vibration of an axially moving beam with a tip mass[J]. Mech Res Comm, 1993, 20: 391-397.
- [4] {4} COUSIN A T, FROTA C L, LAR'KIN N A. Regular solutions and energy decay for the equations of viscoelasticity with nonlinear damping on the boundary[J]. Journal of Mathematical Analysis and Applications, 1998, 224: 273-276.

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- [13] {5} LARKIN N A, NOVIKOV V A, YANENKO N N.
[14] Nonlinear Equations of Variable Type[M]. Norosibirsk: Nauka, 1983.
- [15] {6} GREENBERG G M, LI T T. The effect of
[16] boundary damping for the wave equation[J]. J Differential Equations,
[17] 84, 52: 66-75.
- [18] {7} 呼青英, 张宏伟. 混合Cable-Mass动力系统的一
[19] {8} HU Q Y, ZHU C K, ZHANG X Z. Energy decay
[20] estimates for an Euler-Bernoulli beam with a tip mass[J]. Ann Diff
[21] Eqs, 2009, 25(2): 161-164.
- [22] {9} PELLICER M. Large time dynamics of a
[23] nonlinear spring-mass-damper model[J]. Nonlinear Analysis, 2008, 69:
[24] 10-3127.
- [25] {10} LITTMAN W, MARKUS L. Stabilization of
[26] a hybrid system of elasticity by feedback boundary damping[J]. Ann
[27] Mat Pura Appl, 1988, 152: 281-330.
- [28] {11} AUTUORI G, PUCCI P. Kirchhoff systems
[29] with dynamic boundary conditions[J]. Nonlinear Analysis, 2010, 73:
[30] 52-1965.
- [31] {12} GERBI S, SAID-HOUARI B. Local existence
[32] and exponential growth for a semilinear damped wave equation with
[33] dynamic boundary conditions[J]. Advances in Differential Equations,
[34] 08, 13(11): 1051-1074.
- [35] {13} GERBI S, SAID-HOUARI B. Asymptotic stability and blow up for a
[36] semilinear damped wave equation with dynamic boundary conditions[J].
[37] Nonlinear Analysis, 2011, 74: 7137-7150.
- [38] {14} MASLOV V P, MOSOLOV P P. Nonlinear Wave Equation Perturbed
[39] by Viscousterms[M]. Berlin: Walter de Gruyter, 2000.
- [40] {15} DORONIN G G, LAR'KIN N A, SOUZA A J. A
[41] hyperbolic problem with nonlinear second order boundary damping[J].
[42] Electronic J Diff Equations, (28): 1-10.
- [43] {16} DORONIN G G, LAR'KIN N A. Global solvability
[44] for the quasilinear damped
[45] wave equation with nonlinear second order boundary condition[J].
[46] Nonlinear Analysis, 2002, 50: 1119-1134. 
- [47] {17} NAKAO M. Energy decay for the quasilinear
[48] wave equation with viscosity[J].
[49] Math Zeitscher, 1995, 219: 289-299. 
- [50] {18} LIONS J-L, MAGENES E. Problemes aux Limites Non
[51] Homogenes et Applications[M]. Paris: Dunod, 1968.

- [1] 胡兴凯. 矩阵的 λ -Young λ -型不等式[J]. 华东师范大学学报(自然科学版), 2012, 2012(4): 12-17.
- [2] 王建红. Ricci流下薛定谔方程的Harnack估计[J]. 华东师范大学学报(自然科学版), 2012, 2012(4): 36-42.
- [3] 张宇, 陈桃, 徐阳栋. 向量值映射的极大极小不等式[J]. 华东师范大学学报(自然科学版), 2011, 2011(5): 42-48.
- [4] 邹黎敏, 冯玉明. 关于酉不变范数的几个不等式[J]. 华东师范大学学报(自然科学版), 2011, 2011(5): 1-4.
- [5] 李秀英; 邢伟; 张庆灵. 不确定时滞马尔可夫切换广义系统的鲁棒严格耗散控制[J]. 华东师范大学学报(自然科学版), 2011, 2011(3): 21-28.
- [6] 刘永明;. 准地转运动稳定性的数学方法[J]. 华东师范大学学报(自然科学版), 2008, 2008(1): 1-19.

- [7] 冷翠平;郑毓蕃;张小美. 基于打包的网络化系统的预测控制[J]. 华东师范大学学报(自然科学版), 2007, 2007(3): 82-88.
- [8] 蔡景景;刘永明;. 三维球坐标地转流的非线性稳定性(英) [J]. 华东师范大学学报(自然科学版), 2007, 2007(3): 23-30.
- [9] 张小美;郑毓蕃. 不确定离散时滞随机大系统的鲁棒非脆弱[J]. 华东师范大学学报(自然科学版), 2005, 2005(5/6): 90-96.
- [10] 汤红吉;张小美;陈树中. 一类不确定离散时滞系统的鲁棒状态反馈控制[J]. 华东师范大学学报(自然科学版), 2005, 2005(5/6): 97-102.
- [11] 陈慧玉;冉启康. 拟线性椭圆型方程弱解的拼集问题[J]. 华东师范大学学报(自然科学版), 2004, 2004(4): 1-5.
- [12] 刘永明;李娜. 一个最优的Poincaré不等式[J]. 华东师范大学学报(自然科学版), 2004, 2004(2): 24-30.