Milla Miranda, M.; **Medeiros, L. A.**

On a boundary value problem for wave equations: Existence uniqueness-asymptotic behavior. (English) Zbl 0859.35070

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Summary: We consider the non-homogeneous boundary value problem:

$$u''(x,t) - \mu(t)\Delta u(x,t) = 0 \quad \text{in } \Omega\times]0,\infty[, \tag{$*$}$$

$$u = 0 \quad \text{on } \Gamma_0\times]0,\infty[, \quad \mu(t)\frac{\partial u}{\partial \nu} + \delta(x)u'(x,t) = 0 \quad \text{on } \Gamma_1\times]0,\infty[,$$

$$u(x,0) = u^0(x),\ u'(x,0) = u^1(x) \quad \text{in } \Omega.$$

With restrictions on μ and δ we prove existence and uniqueness of strong and weak solutions for problem $(*)$. We use the Galerkin method. We also prove exponential decay for the solutions of $(*)$.

MSC:

35L20 Initial-boundary value problems for second-order hyperbolic equations
35B40 Asymptotic behavior of solutions to PDEs

Keywords:

Galerkin method; exponential decay