

PIEZOELECTRIC BEAMS WITH MAGNETIC EFFECT AND NONLINEAR DAMPING

ABSTRACT. In this work, we consider a dissipative system of piezoelectric beams with a magnetic effect and nonlinear damping mechanism acting in one of the equations. Our main interest is to analyze the issues relating to uniqueness and exponential stability. The uniqueness is proved using of nonlinear semigroups methods and exponential stability is proved using the energy method.

$$\rho v_{tt} - \alpha v_{xx} + \gamma \beta p_{xx} + g(v_t) = 0, \quad (0, L) \times (0, \infty) \quad (1)$$

$$\mu p_{tt} - \beta p_{xx} + \gamma \beta v_{xx} = 0, \quad (0, L) \times (0, \infty) \quad (2)$$

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