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Numerical Analysis for a Laminated Thermoelastic Beam System with Microtemperature Effects

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Abstract

The laminated beam model, widely used in industry, is studied numerically for a thermoelastic system with microtemperature effects in one dimension [5]. A variational formulation and finite element discretization with an implicit Euler scheme ensure a stable numerical treatment [2,3]. The discrete energy is shown to decay, confirming stability of the fully discrete system [1]. An error estimate provides convergence with respect to discretization parameters [4]. Numerical simulations validate the theoretical results and demonstrate energy dissipation and microtemperature influence [2]. Thus, the study offers a reliable numerical framework for thermoelastic laminated beams [5].

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