Original Articles

On Boundary Stability of Wave Equations with Variable Coefficients

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摘要　　In this paper, we consider the boundary stabilization of the wave equation with variable coefficients by Riemannian geometry method subject to a different geometric condition which is motivated by the geometric multiplier identities. Several (multiplier) identities (inequalities) which have been built for constant wave equation by Kormornik and Zuazua~([2]) are generalized to the variable coefficient case by some computational techniques in Riemannian geometry, so that the precise estimates on the exponential decay rate are derived from those inequalities. Also, the exponential decay for the solutions of semilinear wave equation with variable coefficients is obtained under natural growth and sign assumptions on the nonlinearity. Our method is rather general and can be adapted to other evolution systems with variable coefficients (e.g. elasticity plates) as well.

关键词　　wave equation　exponential decay　boundary stabilization

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