Asymptotic Behavior of Solutions for Dissipative Wave Equations in Inhomogeneous Media

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The wave equation is an important partial differential equation in mathematical physics which generally describes wave propagation and vibration phenomena in nature. In the past years, the long-time behavior of solutions for constant coefficient wave equations has been extensively studied. In this talk, we are concerned with the variable coefficients dissipative wave equation. Such a model arises from the vibrations of an inhomogeneous string and the propagation of seismic waves in nonisotropic media subject to a viscous damping. Meanwhile, it is also a natural reduction model for the n-dimensional wave equation in inhomogeneous radially symmetric media. By using the multiplier method, we establish the power decay estimates for the energy and the L2-norm of solutions.

Keywords: Wave equation, Inhomogeneous media, Decay estimate