STABILIZATION OF A WAVE EQUATION WITH LOCALIZED INTERNAL KELVIN-VOIGT TYPE DAMPING

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ABSTRACT. In this talk, we study the stability of a wave equation with locally internal Kelvin-Voigt type damping. First, we consider the mono-dimensional case. We take the transmission problem of a wave equation with viscoelastic damping where the damping mechanism is localized internally and not in any neighborhood of the boundary. We establish a polynomial decay rate of the energy of type t^{-4} and this decay is in some sense optimal. Second, we consider the stabilization of a multidimensional wave equation where the Kelvin-Voigt damping is interior and satisfies some geometric situations richer than those considered in "L. Tebou, A constructive method for the stabilization of the wave equation with localized KelvinVoigt damping, C. R. Acad. Sci. Paris, Ser. I 350 (11) (2012) 603–608; Q. Zhang, Polynomial decay of an elastic/viscoelastic waves interaction system, Z. Angew. Math. Phys. 69 (4) (2018) 88 and K. Liu, B. Rao, Exponential stability for the wave equations with local KelvinVoigt damping, Z. Angew. Math. Phys. 57 (3) (2006) 419–432". We also prove a polynomial stability of our system and we get an energy decay rate of type t^{-1}.

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