

1068-93-79

**Ahmet Ozkan Ozer\*** (oozer@iastate.edu), 403 Carver Hall Department of Mathematics, Iowa State University, Ames, IA 50011. *Exact boundary controllability results for a multi-layer Rao-Nakra Beam.*

The boundary controllability problem for a multi-layer Rao-Nakra sandwich beam is considered. This beam system consists of a Rayleigh beam coupled with a number of wave equations. All combinations of clamped and hinged boundary conditions with the control applied to either the moment or the rotation angle at an end of the Rayleigh beam are considered. One control is also applied for each wave equation. It is proved that exact controllability holds provided the damping parameters are sufficiently small. In the undamped case, exact controllability is shown to hold generically for almost every choice of parameters in the system. The standard multiplier technique with results from nonharmonic Fourier series due to Komornik and Haraux are combined to prove the results. (Received January 13, 2011)