1135-65-264 **Harbir Antil** and **Thomas S Brown*** (tsbrown@udel.edu), Department of Mathematical Sciences, 112 Ewing Hall, Newark, DE 19716, and **Francisco -Javier Sayas**. *Transient Waves in Piezoelectric Media: Analysis, Simulation, and Control.*

We study an initial-boundary value problem involving elastic waves propagating in piezoelectric materials, such as can be found in cigarette lighters, humidifiers, speakers, and many other everyday objects. Using a Finite Element scheme to discretize the problem in space, we use the tools of semigroup theory to provide stability analysis and estimates on the error due to semidiscretization. This requires using a non-standard first order form of the problem where the unknowns are the elastic displacement, accumulated stress, and accumulated electric field. Additionally, we use the problem as a state equation in the setting of optimal control to study control of the elastic displacement using a boundary condition on the electric flux. (Received August 16, 2017)