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Ozkan A Ozer* (ozkan.ozer@wku.edu), 1906 College Heights Hill Blvd, Ogden College of Science, Bowling Green, KY 42101. *Investigating the stabilizability issues for a smart piezoelectric composite*. Preliminary report.

In this talk, we present coupled infinite dimensional PDE models characterizing the vibration profile of a smart piezoelectric composite involving charge or voltage-driven piezoelectric layers. The non-dynamic (electro-static and quasi-static) electromagnetic field approaches due to the Maxwell's equations are adopted to model the piezoelectric layers. The vibration interaction of layers assumes the so-called Rao-Nakra sandwich beam theory. These PDE models consist of several wave equations and a single Kirchhoff (Rayleigh) beam equation with cantilevered (clamped-free) boundary conditions. We prove a uniform stability result with the minimal number of B^* -type feedback controllers by using a compact perturbation argument and the spectral multipliers. The results are compared to the ones corresponding to the models using the fully dynamic electromagnetic field approach. These models lack even asymptotic stability. (Received January 09, 2017)