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Ozkan A Ozer* (ozkan.ozerkwku.edu), Department of Mathematics, Western Kentucky University, Bowling Green, KY 42101. *Dynamic modeling of some smart composites and the lack of controllability/stabilizability*. Preliminary report.

Traditionally, piezoelectric materials have been modeled by the electrostatic assumption and actuated by a voltage source. Recent studies show that different types of actuation (charge or current) are also possible, and they have their own pros and cons over voltage actuation. Due to the electrostatic approach in each type of actuation, the corresponding models can be stabilized by appropriate "mechanical" feedback controllers. In this talk, a smart composite involving piezoelectric layers is modeled through the variational approach with/without magnetic effects (electrostatic vs. dynamic). All types of actuation are considered. For each case, unlike the existing results in the literature, we show different types of stability failures. (Received September 14, 2016)