

Active Vibration Control Undergraduate Design Competition 2008

Organized by Smart Materials and Structures Laboratory, University of Houston

The undergraduate student teams' objective of the Active Vibration Control Competition was to design a controller which would effectively and efficiently dampen the oscillations of a flexible beam with a piezoceramic sensor and a piezoceramic actuator. The flexible beam setup was made possible by an NSF award (DUE 0442991). The students were given access to the flexible beam, a TREK amplifier, a



PC with Matlab/Simulink and a dSPACE data acquisition and real time control system to implement their controllers. The students' controller signal was sent to the piezoceramic actuators in order to counteract the beam's induced vibration. Each team was given one hour on the first day to obtain and analyze data from the piezoceramic sensor for system identification. The teams were given one hour on the second day to verify their controller design performance. On the third day, the teams were allowed 30 minutes to make final adjustments to their controllers before a committee of professors and researchers specialized in vibration control and smart

structures evaluated the controller's performance. For this competition, the controllers were primarily graded on the settling time (5% of the initial value), chattering effect, and overshoot. NSF provided student travel assistance. Thanks go to TREK and dSPACE for donating the student awards. The awards were as follows:

First Prize: Michelle Holt and Michael Fernandez (University of Houston)

Second Prize: Eastman Landry (Rice University)

Christiana Chang and Athar Razvi (University of Houston)

Third Prize: Allyson Washington and Cahullia Whiaside (Prairie View A&M)

William Yeh and Bryan (UC Berkley)

Jeremy and Mike (University of Akron)



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