Abstract Submitted
for the TS4CF08 Meeting of
The American Physical Society

Characterization and Design of Two-Axis Bi-Directional Microstages[1] JAMES MATTHEWS, Angelo State University Department of Physics, TIM DALLAS, GANAPATHY SIVAKUMAR, Texas Tech University Deptarment of Electrical Engineering — Micro Electro Mechanical Systems (MEMS) are critical components of many cutting edge technologies. We are developing novel microstages for positioning and scanning applications. The microdevices are fabricated using Sandia National Laboratory's SUMMiT V MEMS foundry process. We present the tested performance of a two-axis, bi-directional stage system that is actuated using electrostatic forces. The stage has a maximum travel of ∼40 microns in both axes and is capable of simultaneous actuation in both X and Y directions. Other characterizations focus on stiction and friction forces within the device and operating the device at high frequencies. Based on the results of these tests, we have made some major design changes to increase the maximum travel of the stages. A new design for a long distance travel stage is also presented. This design provides two-axis, bi-directional motion with a maximum displacement of ∼1000 microns in both axes. Other design changes are also presented which will improve the overall functionality of the device.

[1]This work was supported by NSF REU grant number0648761.

Toni Sauncy
Angelo State University

Date submitted: 15 Oct 2008 Electronic form version 1.4