

Abstract Submitted
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Experimental characterization of piezoelectric THUNDER actuator shape PAUL HARRIS — A new type of piezoelectric composite actuator called THUNDER, which was originally developed by NASA, has potential applications in micro robotics, aeronautics, acoustics and hydraulics. The manufacturing process produces internal stresses with accompanying structural deformation. It is the aim of this research to characterize these deformations. Detailed measurements were taken by a motion control LabView data acquisition system and measured with a laser micrometer on several different types of actuators. Several functional forms were used in an attempt to fit the data. The data was best fit by a circular segment function. We also used a transcendental equation to be able to compare to other single point published values. We found the range of dome heights to be between 10.15 mm and 1.45 mm. For one particular model, the manufacturing difference was found to be 16% with an experimental error of 0.5%. The robust experimental data is vital to the development of our finite elements models. Preliminary experimental results of voltage induced deformations will be presented.

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