

## **Improved Control and Characterization of Adjustable X-ray Optics**

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We report on improvements in our efforts to control and characterize piezoelectrically adjustable, thin glass optics. In the past, an optical profilometer and a Shack-Hartmann wavefront sensor have been used to measure influence functions for an adjustable mirror. An electronics system has since been developed to control > 100 actuator cells and has been used in a full calibration of a high-yield adjustable mirror. The calibrated influence functions have been used to induce a pre-determined figure change to the mirror, representing our first attempt at figure control of a full mirror. Furthermore, we have adapted our metrology systems for cylindrical optics, allowing characterization of Wolter-type mirrors. We plan to use this metrology to perform the first piezoelectric figure correction of a cylindrical mirror over the next year.