

## **Generation-X Mirror Technology Development Plan and the Development of Adjustable X-ray Optics**

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Generation-X is being studied as an extremely high resolution, very large area grazing incidence x-ray telescope. Under a NASA Advanced Mission Concepts Study, we have developed a technology plan designed to lead to the 0.1 arcsec (HPD) resolution adjustable optics with 50 square meters of effective area necessary to meet Generation-X requirements. We describe our plan in detail.

In addition, we report on our development activities of adjustable grazing incidence optics via the fabrication of bimorph mirrors. We have successfully deposited thin-film piezo-electric material on the back surface of thin glass mirrors. We report on the electrical and mechanical properties of the bimorph mirrors. We also report on initial finite element modeling of adjustable grazing incidence mirrors; in particular, we examine the impact of how the mirrors are supported – the boundary conditions – on the deformations which can be achieved.