

Technology Requirements for a Square-meter, Arcsecond-resolution Telescope for X-rays: The SMART-X Mission

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Addressing the astrophysical problems of the 2020's requires sub-arcsecond x-ray imaging with square meter effective area. Such requirements can be derived, for example, by considering deep x-ray surveys to find the young black holes in the early universe (large redshifts) which will grow into the first supermassive black holes. We have envisioned a mission based on adjustable x-ray optics technology, in order to achieve the required reduction of mass to collecting area for the mirrors. We are pursuing technology which effects this adjustment via thin film piezoelectric "cells" deposited directly on the non-reflecting sides of thin, slumped glass. While SMART-X will also incorporate state-of-the-art x-ray cameras, the remaining spacecraft systems have no more stringent requirements than those which are well understood and proven on the current Chandra X-ray Observatory.