Abstract:

We present development of a telescope for measuring linear X-ray polarization over the 0.2-0.8 keV band. We employ multilayer-coated mirrors as Bragg reflectors at the Brewster angle. By matching to the dispersion of a spectrometer, one may take advantage of high multilayer reflectivities and achieve polarization modulation factors over 90%. We have constructed a source of polarized X-rays that operates at a wide range of energies with a selectable polarization angle. We will present results from development of laterally graded multilayer mirrors and new gratings essential to the design. Finally, we will present a design for a small telescope for suborbital or orbital missions. A suborbital mission could measure the polarization of a blazar such as Mk 421 to 5-10 percent while an orbital version could measure the polarizations of neutron stars, active galactic nuclei, and blazars.