Electromagnetic Spectrum & Great Observatories

Chandra X-ray Observatory
Introduction to Chandra

• The Chandra X-ray Observatory is the third of NASA's "Great Observatories"
• Launched July 23, 1999 by Space Shuttle and boosted to high Earth orbit for initial 5 year mission; mission extended to 10 years
• Orbits Earth every 64 hours, ranging as far as 140,000 km (87,000 mi) – about 1/3 the way to the moon
• Chandra detects astronomical x-rays by focusing them onto detectors by means of nested grazing-incidence mirrors
• Chandra's resolving power is 10 times greater than any previous x-ray telescope equivalent to the ability to read a stop sign at a distance of twelve miles
• Science instruments 2 imaging cameras, Advanced CCD Imaging Spectrometer (ACIS) and High Resolution Camera (HRC); 2 insertable gratings for more detailed x-ray energy analysis (spectroscopy)

Instruments were developed by Penn State University, MIT, Smithsonian Astrophysical Observatory, and Utrecht
Focusing X-rays

Grazing incidence mirrors
(differ from optical reflectors)

Field of View ±.5 Deg
Focal Surface

4 Nested Hyperboloids
4 Nested Paraboloids
Doubly Reflected X-rays
X-rays
X-rays

Mirror elements are 0.8 m long and from 0.6 m to 1.2 m diameter

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