KMI Colloquium

"The Next X-ray Mission, ASTRO-H, to Explore the High Energy Universe"



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Abstract:

X-ray observations using space telescopes revealed that the Universe is full of hightemperature phenomena reaching 10 to 100 million degrees, which nobody had imagined before the advent of the X-ray astronomy. Recent studies show that phenomena observed in X-rays are deeply connected to those observed in other wavelengths.

ASTRO-H, the next Japanese X-ray Astronomy Satellite to be launched in 2014, is a powerful satellite for the next generation of X-ray astronomy. ASTRO-H is a combination of wide band X-ray spectroscopy (3 - 80 keV) provided by focusing hard X-ray mirrors and hard X-ray imaging detectors, and high energy-resolution soft X-ray spectroscopy (0.3 - 10 keV) provided by thin-foil X-ray optics and a micro-calorimeter array. The mission will also carry an X-ray CCD camera as a focal plane detector for a soft X-ray telescope and a non-focusing soft gamma-ray detector based on a narrow-FOV semiconductor Compton Camera. With these instruments, ASTRO-H covers very wide energy range from 0.3 keV to 600 keV. The simultaneous broad band pass, coupled with high spectral resolution of <7 eV by the micro-calorimeter will enable a wide variety of important science themes to be pursued. The ASTRO-H mission objectives are to study the evolution of yet-unknown obscured super massive Black Holes in Active Galactic Nuclei; trace the growth history of the largest structures in the Universe; provide insights into the behavior of material in extreme gravitational fields; trace particle acceleration structures in clusters of galaxies and SNRs; and investigate the detailed physics of jets. In this presentation, we will describe the mission, scientific goal and the recent progress of the project.

