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New Vision of Universe with Subaru Telescope

Since the first telescopic observations of universe by Galileo Galilei the telescopes have been developed to higher and higher level guided by the strong desire of humankind to understand the universe further and in more detail. The 8m to 10m aperture optical and infrared telescopes realized recently are among the highest technological achievements in the 20th century. Those telescopes achieved millions of times of sensitivity for faint objects compared with Galileo's hand-made small telescope. The wavelength coverage, spectroscopic capability, long-time integration of light, etc. are also the powerful modern tools to reveal the manifold and dynamic cosmic phenomena.

The Subaru telescope constructed by NAOJ atop 4,200m altitude Mauna Kea, Hawaii is an 8.2m aperture optical and infrared telescope with very high imaging performance and equipped with a variety of observing instruments covering visual and infrared wavelengths. It started the open operation in 2000 as one of the series of 8m class monolithic mirror telescopes like European VLT and US/UK Gemini. Those new technology telescopes, together with the 10-m aperture combined mirror KEK telescopes, are now providing tremendous amount of new observing data, and it is an exciting opening towards the new century's vision of universe.

This talk is to introduce the Subaru telescope and to report observational highlights from it covering various cosmic phenomena from objects in the Solar system to those at cosmological distant. The talk will be extended to the instruments and technological achievements of the Subaru telescope.

One of the new and extremely important subjects in the astronomy of 21th century is observations of signature of life in the universe. Status of the observations of extra-solar planets, one of the highest-ranked programs for the Subaru telescope, will be mentioned as well as the perspective towards the possible observations of extra-solar planets with life being discussed by various groups in the world.