구 두 발 표 초 록

초 청 강 연

[초 IT-01] SDSS-V: Pioneering Panoptic Spectroscopy

Juna A. Kollmeier
Carnegie Institution for Science

I will describe the current progress within the Fifth Generation of SDSS. SDSS-V is an unprecedented all-sky spectroscopic survey of over six million objects. It is designed to decode the history of the Milky Way galaxy, trace the emergence of the chemical elements, reveal the inner workings of stars, and investigate the origin of planets. It will provide the most comprehensive all-sky spectroscopy to multiply the science from the Gaia, TESS and eROSITA missions. SDSS will also create a contiguous spectroscopic map of the interstellar gas in the Milky Way and nearby galaxies that is 1,000 times larger than the state of the art, uncovering the self-regulation mechanisms of galactic ecosystems. It will pioneer systematic, spectroscopic monitoring across the whole sky, revealing changes on timescales from 20 minutes to 20 years. I will highlight key areas of current scientific and technical development as well as opportunities to participate in the survey underway.

[초 IT-02] Infrared Space Missions in Korea for the Astronomical Research

Woong-Seob Jeong[1,2]
[1]*Korea Astronomy and Space Science Institute, Korea,* [2]*University of Science and Technology, Korea*

The unknown excess emission in the near-infrared is thought to be related to the evolution of galaxies in the early epoch of Universe. Due to its extremely faint brightness, it can be observed only in space. Many infrared space missions have been tried to trace the origin of the Cosmic Infrared Background through the measurement of its absolute brightness and its spatial fluctuation. In addition, the infrared observations can address questions ranging from the origin of first galaxies in the Universe to the formation of stars. I will overview the Korean infrared space missions and introduce the status of the recent international collaboration mission, SPHEREx.

[초 IT-03] Evidence for a decelerating cosmic expansion from supernova cosmology

Young-Wook Lee
Department of Astronomy, Yonsei University, Seoul, Korea

Supernova (SN) cosmology is based on the assumption that the width-luminosity relation (WLR) in the type Ia SN luminosity standardization would not vary with progenitor age. Unlike this expectation, recent age datings of stellar populations in host galaxies have shown significant correlations between progenitor age and Hubble residual (HR). It was not clear, however, how this correlation arises from the SN luminosity standardization process, and how this would impact the cosmological result. Here we show that this correlation originates from a strong progenitor age dependence of the WLR and color-luminosity relation (CLR), in the sense that SNe from younger progenitors are fainter each at given light-curve parameters x1 and c. This is reminiscent of Baade's discovery of two Cepheid period-luminosity relations, and, as such, causes a serious systematic bias with redshift in SN cosmology. We illustrate that the differences between the high-z and low-z SNe in the WLR and CLR, and in HR after the standardization, are fully comparable to those between the correspondingly young and old SNe at intermediate redshift, indicating that the observed dimming of SNe with redshift is most likely an artifact of over-correction in the luminosity standardization. When this systematic bias with redshift is properly taken into account, there is no evidence left for an accelerating universe, and the SN data now support a decelerating cosmic expansion. Since the SN cosmology has long been considered as the most direct evidence for an accelerating universe with dark energy, this finding poses a serious question to one of the cornerstones of the concordance model.

[초 IT-04] Prospects of the gravitational wave astronomy

Hyung Mok Lee
Seoul National University

Since the first direct detection of the gravitational waves in 2015, more than 50 events coming from the merging of compact binaries composed of black holes and neutron stars have been observed. The simultaneous detection of