구 두 발 표 초 록

초 청 강 연

[초 IT-01] Galaxy formation in the 21st century

Sukyoung Yi
Yonsei University

With their complex structure that includes a thin disc, spiral arms, and often a bar, galaxies have been regarded as something beyond the human perceptions. Hence, the studies on galaxy formation in the 20th century have almost exclusively based on schematic scenarios. With markedly improved knowledge on cosmology over the last couple of decades, we have finally acquired a base from which galaxy formation can be studied from the first principles of physics. I review the modern history of the study of galaxy formation and present some preliminary results from the most recent numerical simulations that provide more realistic pictures of galaxy formation than was available ever before. In terms of galaxy formation, the age of scenarios is fading away, while the age of physical understanding is rising over the horizon.

[초 IT-02-1] Overview of the Korean Neutrino Observatory

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Korean Neutrino Observatory (KNO) aims to make important discoveries in particle physics and astronomy by building a gigantic neutrino telescope consisting of 260 kiloton water and 40,000 20 inch photomultiplier tubes.
Using J-PARC neutrino beam, leptonic CP violation (CPV) could be discovered if the CP is maximally violated, and neutrino mass ordering is guaranteed to be determined with more than 6 sigma for any CPV value.

As a neutrino telescope, solar and Supernova burst/relic neutrinos could be studied very precisely.

Indirect dark matter search sensitivity is improved by 3 to 4 times than that of Super Kamiokande.

There are several candidate sites in Korea and especially Mt. Bisul and Mt. Bohyun are very promising according to our site survey.
In this talk, an overview of the KNO is presented.

[초 IT-02-2] Neutrino Astronomy with Korean Neutrino Observatory

Kyujin Kwak
Ulsan National Institute of Science and Technology

Neutrino astronomy is now possible as the technology to detect neutrinos has been advancing. Current and planned neutrino-detecting facilities can be operated as a conventional telescope because they can measure the direction toward the celestial sources as well as their physical properties like energy. Together with gravitational wave, neutrino astronomy opens a new field of astronomy, often called, multi-messenger astronomy, which also involves “traditional” electro-magnetic-wave-detection-based astronomy. Expecting that Korean Neutrino Observatory (KNO) will be one of the best neutrino observatories when it is constructed, a group of Korean astronomers and astrophysicists formed a working group and began to investigate possible astronomical neutrino sources that could be detected by KNO and other neutrino observatories. This talk presents the recent activities of the working group and introduces the list of possible neutrino sources.

[초 IT-03] What Gemini Can Do for You

Scot Kleinman
Gemini Observatory

Welcome to Gemini! In this overview, I’ll describe the governance, operations, and capabilities of the Gemini telescopes. I’ll also describe Gemini’s vision and plans for the future. Gemini is very adaptable and has multiple ways to apply for time, multiple ways to collect your data, and multiple instrument capabilities ready for your observations. Gemini also runs a wide-reaching program to develop and improve our instrumentation capabilities. We run an upgrade program for our existing instruments that includes an annual public call for proposals, a visitor instrument program that brings instruments like IGRINS to our telescopes for short to semi-permanent runs, and a facility program that provides entirely new instruments like GHOST and SCORPIO to Gemini for full public use. Through