

Focus Week on the Epoch of Reionization

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“Focus Week on the Epoch of Reionization” was held at IPMU on November 30 - December 3, 2009. The first one billion years after the Big Bang remains the final frontier in astronomy and cosmology. Observations using large ground-based telescopes and radio telescope arrays are just beginning to detect light from the mysterious cosmic Dark Ages. During this focus week, researchers from more than ten countries gathered together to discuss the prospects for ongoing and future observations.

There were more than forty attendants, including graduate students. The morning review talks were often followed by lively discussion. On the last day of the meeting, astronomers from the Low-Frequency Arrays Project met those working on the high redshift galaxy search using the Subaru Telescope, to exchange information on their plans for the near future. The combination of the two observations will be a powerful probe in the reionization epoch.



Focus Week on Indirect Dark Matter Search

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The presence of dark matter has been firmly established by numerous observations, but its composition is unknown. Of the many possibilities proposed to date, it seems plausible to assume that dark matter consists of unknown particles, which may be related to new physics at the electroweak scale. The topic of the focus week held on December 7 - December 11, 2009 was the indirect search for dark matter; the dark matter signature may be found as an excess with characteristic features in the cosmic-ray spectra. To claim excess due to dark matter, one has to understand the astrophysical background of the cosmic rays. It is therefore very important to provide an opportunity for astrophysicists and particle physicists to discuss the current understanding of cosmic-ray physics and dark matter, especially after the discovery of the steep rise in the positron fraction by the PAMELA satellite, which attracted great attention particularly from the particle physics community. We invited experts on cosmic-ray propagation and acceleration,



electron-positron production in the pulsar magnetosphere, cosmic-ray electron, gamma-ray and neutrino experiments, and dark matter models. The total number of participants was 61 (with 18 from outside Japan). After each presentation we had a long discussion session. I believe that, through the presentations and discussions, the participants were able to update their knowledge about cosmic-ray observation and theory, and I hope that this focus week will be useful for future activities in the dark matter search.