[구GC-13] AKARI Spectroscopic Study of the Rest-frame Optical Spectra of Quasars at 3 < z < 5

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We present the initial results of rest-frame optical spectroscopy of quasars at 3 < z < 5 from the AKARI space telescope mission program QSONG (Quasar Spectroscopic Observation with NIR Grism). QSONG is an AKARI phase-3 mission program which utilizes the unique capability of spectroscopy at 2.5-5 microns, and is adequate for detecting redshifted Balmer lines. We focus on how to overcome the noise induced from instrumental degradation, and report our measurements of supermassive black hole (SMBH) masses with well calibrated optical mass estimators.

This work was supported by the National Research Foundation of Korea(NRF) grant funded by the Korean government(MEST), No. 2009-0063616.

[구GC-14] Toward a Self-Consistent Simulation of the Cosmic Reionization

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Ionization of hydrogen occurs globally in our universe. The epoch of this cosmic reionization may be probed by various observations, among which the 21cm observation of neutral hydrogen at high redshift is the most promising candidate. In order to provide a mock data, we have performed the first, self-consistent simulation of cosmic reionization. We account for all possible UV-radiating sources which reside in halos ranging from minihalos to atomically-cooling halos. In order to simulate the contribution from Pop III objects, we also calculate the radiative transfer of Lyman-Werner radiation and apply a suppression criterion for Pop III objects. Our priliminary result indicates that Pop III objects ionize the universe at very high redshift and create rich, small-scale bubble structure, while sources in atomically-cooling halos ionize the universe at relatively low redshift and create large-scale bubble structure. We discuss how these two different scales and epoch may be probed by future 21cm observations.