

# 구두발표초록

## 초청강연

### [초 IT-01] Status of the Concordance Model of Cosmology

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I review the status of the concordance (standard)  $\Lambda$ CDM model of cosmology in light of current observations discussing about the apparent tensions in estimation of the key cosmological parameters. I will also briefly discuss the future of the field at the era of the next generation of the astronomical/cosmological surveys.

### [초 IT-02] 40 Years of Radio Astronomy Research

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1980년 3월 국립천문대에 들어와 14m 전파망원경 건설사업 준비 단계부터 시작한 전파천문연구는 이제 40년이 되었다. 1985년 일본 동경대에서 일본국립천문대 노베야마 45m 전파망원경을 사용하여 학위를 마친 후 귀국하여 한국천문연구원 대덕 14m 전파망원경의 설치 운영과 이를 활용한 관측연구 및 한국우주전파관측망의 추진, 건설과 그 관측연구에 이르기까지 그 간의 전파천문연구에 대해서 발표하고자 한다.

### [초 IT-03] Large-scale Structure Studies with Mock Galaxy Sample from the Horizon Run 4 & Multiverse Simulations

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Cosmology is a study to understand the origin, fundamental property, and evolution of the universe. Nowadays, many observational data of galaxies have become available, and one needs large-volume numerical simulations with good quality of the spatial distribution for a fair comparison with observation data. On the other hand, since galaxies' evolution is affected by both gravitational and baryonic effects, it is nontrivial to populate galaxies only by N-body simulations. However, full hydrodynamic simulations with large

volume are computationally costly. Therefore, alternative galaxy assignment methods to N-body simulations are necessary for successful cosmological studies.

In this talk, I would like to introduce the MBP-galaxy abundance matching. This novel galaxy assignment method agrees with the spatial distribution of observed galaxies between 0.1Mpc ~ 100Mpc scales. I also would like to introduce mock galaxy catalogs of the Horizon Run 4 and Multiverse simulations, large-volume cosmological N-body simulations done by the Korean community. Finally, I would like to introduce some recent works with those mock galaxies used to understand our universe better.

## 외부은하 / 은하단

### [구 GC-01] nfrared Weak-lensing Detection of an Emerging Galaxy Cluster SpARCSJ1049+56 at $z=1.71$

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Structure in the universe forms hierarchically with the small scales forming first and merging into larger scales. Galaxy clusters are at the pinnacle of the formation process. Peering far into the universe, we can observe galaxy clusters early in their evolution. SpARCSJ1049+56 is a galaxy cluster located at a redshift of 1.71. It has been shown to be rich in cluster galaxies, to have intense star formation, and to have a significant amount of molecular gas. Through careful control of systematics, we detected the weak-lensing signal from this distant galaxy cluster. I will present our *HST* infrared weak-lensing detection of the cluster with a focus on the method. Our lensing analysis found that the cluster is massive and is rare in a  $\Lambda$ CDM universe. I will also present the *Chandra* X-ray discovery of cold gas coincident with the intense star formation and discuss the implications of the detection.

### [구 GC-02] An Improved Weak-Lensing Analysis of the Galaxy Cluster ACT-CL J0102-4915 with New Wide-Field HST Imaging Data

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