the difficulty in automatically identifying bars for bulge-dominated galaxies. In particular, ellipse fitting methods could miss early-type barred galaxies when a large bulge weakens the transition between a bar and disk. The other is caused by the difference in the correlation between the bar types and host morphology for strong bars and weak bars. Strong bars are preponderant in early-type spirals which are red, bulge-dominated and highly concentrated, whereas weak bars are frequent in late-type spirals which are blue, disk-dominate and less-concentrated. Therefore, how much weak bars they contain affects the trend of bar fraction on host galaxy properties. We also discuss the effect of host properties on the formation, evolution, and destruction of bars.

[구 GC-16] How does the gas in a disk galaxy affect the evolution of a stellar bar?

Woo-Young Seo and Woong-Tae Kim
Seoul National University

In barred galaxies, gaseous structures such a nuclear ring and dust lanes are formed by a non-axisymmetric stellar bar potential, and the evolution of the stellar bar is influenced by mass inflows to the center and central star formation. To study how the presence of the gas affects the evolution of the stellar bar, we use the mesh-free hydrodynamics code GIZMO and run fully self-consistent three-dimensional simulations. To explore the evolution with differing initial conditions, we vary the fraction of the gas and stability of initial disks. In cases when the initial disk is stable with Q=1.2, the bar strength in the model with 5% gas is weaker than that in the gas-free model, while the bar with 10% gas does not form a bar. This suggests that the gaseous component is unfavorable to the bar formation dynamically. On the other hand, in models with relatively unstable disk with Q=1.0, the presence of gas helps form a bar: the bar forms more rapidly and strongly as the gas fraction increases. This is because the unable disks form stars vigorously, which in turn cools down the stellar disk by adding newly-created stars with low velocity dispersion. However, the central mass concentration also quickly increases as the bar grows in these unstable models, resulting in fast bar dissolution in gas rich models. We will discuss our results in comparison with previous work.

[구 GC-17] The Most Massive Active Galactic Nuclei at 1<z<2

Hyunsung Jun
Korea Institute for Advanced Study, Seoul, Korea

We obtained near-infrared spectra of 26 SDSS quasars at 0.7<z<2.5 with reported rest-frame ultraviolet black hole mass (MBH)~$10^{10}M_\odot$ to critically examine the systematic effects involved with their mass estimations. We find that active galactic nuclei (AGNs) heavier than $10^{10}M_\odot$ often display double-peaked Hα emission, extremely broad FeII complex emission around MgII, and highly blueshifted and broadened CIV emission. The weight of this evidence, combined with previous studies, cautions against the use of MBH values based on any emission line with a width over 8000 km/s. Also, the MBH estimations are not positively biased along the presence of ionized narrow line outflows, anisotropic radiation, or the use of line FWHM instead of σ for our sample, and unbiased with variability, scatter in broad line equivalent width, or obscuration for general type-1 quasars. Removing the systematically uncertain MBH values, ~$10^{10}M_\odot$ BHs in 1<z<2 AGNs can still be explained by anisotropic motion of the broad line region from ~$10^{9.5}M_\odot$ BHs, although current observations support they are intrinsically most massive, and overmassive to the host's bulge mass.

[구 GC-18] Are Quasars Growing Fast in the Early Universe?: The Lowest Eddington Ratio Quasar at z~6

Yongjung Kim[1,2], Myungshin Im[1,2], Yiseul Jeon[1,3], Minjin Kim[4,5], Minhee Hyun[1,2], Dohyeong Kim[1,2], Jae-Woo Kim[4], Yoon Chan Taak[1,2], and Yongmin Yoon[1,2], Changsu Choi[1,2], Jueun Hong[1,2], Hyunsung David Jun[1,6], Marios Karouzos[7], Duho Kim[1,8], Ji Hoon Kim[9], Seong-Kook Lee[1,2], Soojong Pak[10], and Won-Kee Park[4]
[1]Center fore the Exploration of the Origin of the Universe (CEOU), [2]Astronomy Program, FPRD, Department of Physics & Astronomy, Seoul National University, [3]LOCOOP, Inc., [4]Korea Astronomy and Space Science Institute, [5]University of Science and Technology, [6]Korea Institute for Advanced Study, [7]Nature Astronomy, [8]Arizona State University, School of Earth and Space Exploration, [9]Subaru Telescope, National Astronomical Observatory of Japan, [10]School of Space Research and Institute of Natural Sciences, Kyung Hee University…

To date, luminous quasars at z ~ 6 have been