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Feedback process is one of the most important topics in the study of AGNs since it plays a key role in linking the SMBHs and their host galaxies. In order to further understand the co-evolution of SMBHs and their host galaxies, we probe the feedback process in local type-2 AGNs with a series of integral-field-spectroscopy observations.

In the first part of my talk, I will introduce our GMOS observations of luminous type-2 AGNs at z < 0.1, which are selected using the integrated [O III] kinematics. Based on the dedicated emission-line diagnostics and kinematic studies, we identify the signatures of AGN-driven outflows and quantify the outflow size in the targets with extreme [O III] kinematics. For the targets without extreme [O III] kinematics, we find the presence of weak AGN-driven outflows, which are indicated by the significant differences between the kinematics of gas and stars.

Then, I will present our recent study of 40 type-2 AGNs based on the SNIFS IFU. By comparing the radial profile of velocity dispersion of gas and stars, we measure the size of AGN-driven outflows in these targets and extend the outflow size-AGN luminosity relation in our previous GMOS studies. We also discuss the feedback effect of AGN-driven outflows by connecting the outflow velocity and host galaxy properties. These results highlight the importance of spatially-resolved observation in investigating gas kinematics and identifying the signatures of AGN-driven outflows.

[구 GC-12] The Infrared Medium-deep Survey. VI. Discovery of Faint Quasars at z ~ 5 with a Medium-band-based Approach

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The faint quasars with M1450 > -24 mag are known to hold the key to the determination of the ultraviolet emissivity for the cosmic reionization. But only a few have been identified so far because of the limitations on the survey data. Here we present the first results of the z ~ 5 faint quasar survey with the Infrared Medium-deep Survey (IMS), which covers ~100 deg^2 areas in J band to the depths of J_{AB} ~ 23 mag. To improve selection methods, the medium-band follow-up imaging has been carried out using the SED camera for QUasars in Early uNiverse (SQUEAN) on the Otto Struve 2.1 m Telescope. The optical spectra of the candidates were obtained with 8 m class telescopes. We newly discovered 10 quasars with $-25 < M_{1450} < -23$ at z ~ 5, among which three have been missed in a previous survey using the same optical data over the same area, implying the necessity for improvements in high-redshift faint quasar selection. We derived photometric redshifts from the medium-band data and found that they have high accuracies of $\langle|\Delta z|/(1+z)\rangle = 0.016$. The medium-band-based approach allows us to rule out many of the interlopers that contaminate $\gtrsim$ 20% of the broadband-selected quasar candidates. These results suggest that the medium-band-based approach is a powerful way to identify z ~ 5 quasars and measure their redshifts at high accuracy (1%-2%). It is also a cost-effective way to understand the contribution of quasars to the cosmic reionization history.

[구 GC-13] Assembling the bulge from globular clusters: Evidence from sodium bimodality

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Recent investigations of the double red clump in the color-magnitude diagram of the Milky Way bulge cast serious doubts on the structure and formation origin of the outer bulge. Unlike previous interpretation based on an X-shaped bulge, stellar evolution models and CN-band observations have suggested that this feature is another manifestation of the multiple stellar population phenomenon observed in globular clusters (GCs). This new scenario requires a significant fraction of the outer bulge stars with chemical patterns uniquely observed in GCs. Here we show from homogeneous high-quality spectroscopic data that the red giant branch stars in the outer bulge (>5.5° from the Galactic center) are clearly divided into two groups according to Na abundance in the [Na/Fe] - [Fe/H] plane. The Na-rich stars are also enhanced in Al, while the differences in O and Mg are not observed between the two Na groups. The population ratio and the Na and Al differences between the two groups are also comparable with those observed in metal-rich GCs. Since these chemical patterns and characteristics are only explained by stars originated in GCs, this is compelling evidence that the outer bulge was mostly assembled from