

**[XGC-14] The Environments of the Most Massive Galaxies  
and Black Holes**

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We study the environment of the most massive galaxies and the most massive black holes. We use SDSS DR7 data, the catalog from Simard et al. (2011), Mendel et al. (2014), and KIAS value-added galaxy catalog (Choi et al. 2011). Currently, we investigate the number density as an environment around each galaxy. Number densities are measured by 5<sup>th</sup> and 10<sup>th</sup> nearest photometric galaxies within 7000km/s from the spectroscopic galaxies. The most massive galaxies ( $M > 10^{12} M_{\odot}$ ) or black holes ( $M \sim 10^{10} M_{\odot}$ ) tend to reside in very dense regions in comparison with less massive ones. We also present the research plan and future work.

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**[XGC-15] Size measurements of galaxies in the nearby clusters ( $z < 0.2$ )  
using the GALAPAGOS**

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The size evolution of galaxies is one of the fascinating issues in these days. It is known that the size of a galaxy is closely related to other galactic properties, such as the central surface brightness, stellar mass, and redshift. However, we need to measure the sizes of galaxies precisely to understand those relations. We determine the sizes of early-type galaxies in the nearby clusters ( $z < 0.2$ ) using the GALAPAGOS. The GALAPAGOS is a tool which provides surface photometry for multiple sources, which make it fast and convenient to deal with huge image data. We run the GALAPAGOS individually to the Subaru/Suprime-Cam and the HST/ACS images for the same targets. We present and discuss the result of our size measurements for further applications.