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国台学术报告 NAOC COLLOQUIUM

Time: Wednesday 2:30 PM, Sep.16 Location: A601 NAOC

Probing black hole-galaxy coevolution and calibrating single-epoch virial black hole mass estimators

Daeseong Park

National Astronomical Observatories, Chinese Academy of Sciences

Dr. Daeseong Park is a postdoctoral researcher at the NAOC as an EACOA fellow. He obtained his Ph.D. in Astronomy from the Seoul National University, South Korea in 2013. After he worked as a postdoctoral researcher at the University of California, Irvine, USA, he received the EACOA fellowship at 2014 and moved to the NAOC, China. His main research interests include black hole mass measurement, active galactic nuclei, black hole-galaxy coevolution, and astrostatistics.

Abstract

Understanding the cosmic growth of supermassive black hole (BH) population and coevolution with their host galaxies is now one of the essential ingredients for a complete picture of galaxy formation and evolution. This talk will show you the results of the related two observational research projects. (1) To directly map the BH-galaxy coevolution, we investigate the cosmic evolution of the BH mass-bulge luminosity scaling relationship using a sample of 52 AGNs at z~0.36 and z~0.57. By employing multi-component spectral and structural decomposition methods to the obtained high-quality Keck spectra and high-resolution HST images, BH masses and bulge luminosities are measured uniformly and consistently. Using Monte Carlo simulations to take into account selection effects, we find the observational evidence that BH growth precedes that of the host galaxies. This indicates that black holes grow first and then the host galaxies follow up in the framework of the BH-galaxy coevolution. (2) To probe the high-redshift BH population and scaling relations, measuring BH masses accurately is the first crucial step. The rest-frame UV CIV broad emission line is usually used for BH mass estimates in high-redshift AGNs (i.e., 2<z<5) when single-epoch (SE) optical spectra are available. Thus, achieving correct and accurate calibration for CIV-based SE virial BH mass estimators is practically important and still useful. In this work, we provide the most consistent and accurate calibration of CIV-based BH mass estimators using a Bayesian approach in the extended mass dynamic range with new six low-mass AGNs, observed with HST STIS.

All are welcome! Tea, coffee, biscuits will be served at 2:15 PM.