

## PROBING THE CONNECTION BETWEEN BLACK HOLES AND GALAXIES

**J.-H. Woo**

*Seoul National University, Seoul, Republic of Korea*

*E-mail: woo@astro.snu.ac.kr*

The correlation of central black hole masses ( $M_{\text{BH}}$ ) with the properties of their host galaxies indicates a fundamental connection between black hole growth and the history of galaxy assembly. To investigate the origin of the correlation, it is important to reliably determine black hole masses and investigate cosmic evolution of the black hole-galaxy correlations. In this talk, I will review 1) the recent developments of the  $M_{\text{BH}}$ - stellar velocity dispersion ( $\sigma_*$ ) relation of quiescent and active galaxies, based on the kinematic measurements from spatially resolved spectra, probing whether quiescent and active galaxies have different  $M_{\text{BH}}$ - $\sigma_*$  relation; 2) the recent efforts to determine black hole masses based on reverberation mapping results and single-epoch spectra; and 3) cosmic evolution of the correlations between  $M_{\text{BH}}$  and host galaxy properties, based on the local calibration of single-epoch mass estimates and the local  $M_{\text{BH}}$ - $\sigma_*$  relation.

## ON THE ROLE OF DENSITY AND EDDINGTON RATIO IN THE CORRELATION SPACE OF NLS1 GALAXIES

**D. Xu<sup>1</sup> and S. Komossa<sup>2</sup>**

*<sup>1</sup>National Astronomical Observatories, Chinese Academy of Sciences,  
Beijing 100012, China*

*<sup>2</sup>Max-Planck-Institut für Radioastronomie, Auf dem Hügel 69,  
D-53121 Bonn, Germany  
E-mail: dwxu@nao.cas.cn*

Narrow-line Seyfert 1 (NLS1) galaxies are an important sub-class of active galactic nuclei, characterized by extreme and remarkable properties. We have carried out an analysis of the correlation space of NLS1 galaxies, in comparison to broad-line Seyfert 1 galaxies. Our main focus was to identify the underlying drivers of their exceptional emission-line and continuum properties. We have done a principal component analysis. We find that the density of the narrow-line region is a significant parameter of the Eigenvector 1 space of our sample, as important as the Eddington ratio. A major implication of our findings is a close link between the properties of the central engine and the host galaxy.