

[7GC-09] Constraining the uncertainties in single-epoch virial black hole masses

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Utilizing single-epoch spectra and the empirical relation between the size of the broad-line region and AGN continuum luminosity, the so-called single-epoch method has been widely used for estimating AGN black hole masses. However, the systematic uncertainties and the potential biases of this method are not well examined. Taking the full advantage of the high-quality homogeneous spectra from the Lick AGN Monitoring Project (LAMP), we investigate in detail the uncertainties of single-epoch mass estimates by comparing with the reverberation-mapping results. We find that the uncertainty due to AGN variability is less than 0.1 dex, while there is a systematic offset between single-epoch masses and reverberation masses. Particularly, narrow-line Seyfert 1 galaxies show that the H β line widths measured from single-epoch (or mean) spectra are systematically larger than those from rms spectra, indicating a potential bias of single-epoch masses. We will present the detailed measurement method, the test of virial assumption, and the systematic uncertainties.

[7GC-10] Investigating the accretion disk properties of young radio galaxies using the narrow-emission line diagnostics

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To investigate whether radio galaxies have systematically different accretion disk compared to radio-quiet AGN, we obtained high quality optical spectra for a sample of 22 young radio galaxies, using the KAST Double Spectrograph at the Lick 3-m telescope. Young radio galaxies are particularly useful since the age of the radio phenomena is comparable to that of accretion disk. Based on the optical emission-line diagnostics of narrow line region, which is thought to be photoionized by the nuclear radiation, we constrain the states of the accretion disk. In addition to strong emission lines, i.e., [O I], [O II], [O III], and [Ne III], we use the [Ar III] line to break the degeneracy between the ionization parameter and the SED shape. We find that young radio galaxies show systematically different emission line ratios compared to radio-quiet Type II AGN, suggesting that young radio galaxies probably have the power-law SED without a strong big blue bump. We will present the main results of the emission-line diagnostics.