

# High-z Quasars Black Hole Mass Estimation via Photometric Reverberation Mapping

*Thursday 9 June 2016 11:30 (15 minutes)*

The mass of supermassive black holes (SMBHs) of high redshift ( $z$ ) quasars is crucial for understanding SMBH-galaxy co-evolution. The traditional method, spectroscopic reverberation mapping (SRM), would fail for most high- $z$  quasars and is inefficient for a large quasar sample. Photometric reverberation mapping (PRM) has been recently proposed in order to utilise the up-coming high cadence, large sky coverage and deep photometric survey of the next generation large telescopes such as LSST. Such method is akin to the well established photometric redshift technique employed by cosmological community. In this talk, I will give a brief review of the PRM and highlight our on-going work of observational campaign at the 2.4m Thai National Telescope (TNT) to provide a proof-of-concept for such a technique. Our campaign aims to determine the size of Broad Line Region (BLR) around 10-15 high- $z$  quasars which is essential to determine the central SMBH mass. The quasar sample used in our study was selected from SDSS-III BOSS in the sky regions accessible by the TNT during Thai dry season (November - April). The SDSS spectra were used to select spectroscopically confirmed quasars with redshift  $0.8 \leq z \leq 1.2$ . Furthermore, we used the spectral Radius-Luminosity (R-L) relation calibrated from low- $z$  AGNs to select quasars with BLR size  $\leq 60$  light-day suitable for the the length of TNT observing season. We are completing the second observing season this April. The data are now being analysed and we will report the results of our study in the talk.

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**Session Classification:** Session XIX

**Track Classification:** Astronomy, Astrophysics and Cosmology