

Bożena Czerny (CFT), Continuum and BLR reverberation mapping of AGN as a tool for cosmology

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As our contribution to LSST through in-kind contribution POL- NCB-S6 we developed a software which can use the delay of the broad emission lines from the Main Survey to constrain the cosmological models. This will mostly require 10-yr data due to the long time delays. Now we concentrate on continuum time delays which can be measured from the first year data from DDFs. Light echo from irradiated accretion disk in active galaxies was proposed as a cosmological tool in 1999, allowing to determine the Hubble constant directly but it was never working. The estimated disk sizes were always too large, and the attempted determination of the Hubble constant in 2007 gave much too low values. Recently, there was a growing understanding that the problem is caused by the contamination of the accretion disk continuum by the continuum produced in the Broad Line Region (BLR). Using our model of the BLR and combining the mean spectrum and the measured time delays from Swift we were able for the first time to disentangle the two effects for the source NGC 5548. Our rough estimate gave the Hubble constant of 69 km/s/Mpc but more more work is needed to fit the data properly and to estimate the error in the claimed value. We now check if the DDF cadence will be suitable for such measurements, and it seems now that only for very massive black holes the measurement can be done.

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