PUTTING TOGETHER LINE AND CONTINUUM OBSERVATIONS OF THERMAL ACTIVE GALACTIC NUCLEI: A UNIFIED PICTURE OF THE ACCRETION DISC AND BROAD-LINE REGION

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I will demonstrate that the radial structure of the accretion disc in thermal active galactic nuclei (AGNs) is well constrained by observations of the UV–optical spectral energy distribution. The observed optical flux therefore gives the scale of the accretion disc. The scale factor is consistent with the outer edge of the disc being the dust sublimation radius measured by near IR reverberation mapping. Since reverberation mapping observations also show that the dust sublimation radius is the outer edge of the broad-line region (BLR), the accretion disc and the BLR must occupy the same radius. All observations of the BLR are consistent with it being a turbulent disc. The covering factor and vertical component of velocity are well constrained. Observations of continuum and line variability require continuum variations in thermal AGNs to be highly non-axisymmetric. A unified picture of the accretion disc and BLR is sketched where a significant fraction of the gravitational potential energy released by accretion is stored in the magnetic field and released in magnetic reconnection events. These produce the observed, strong, off-axis flares, expel broad-absorption-line clouds, and provide the particle acceleration needed for the corona. Furthermore, magnetic loops offer the possibility of explaining the confinement, vertical velocities, height, filling factor, and survival of the broad-line region.