

The restless nature of AGN: 10 years later



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Determining the inner geometry of AGN - i.e. the size and location of the central X-ray emitting corona relative to the accretion disc, the shape, size and structure of the disc, the location of the broad line region and its possible connection with disc winds, the location and structure of obscuring material - remains one of the main challenges of astrophysical research. Apart from M87 and SgrA*, whose very inner regions have been imaged by millimetre global VLBI, these inner structures are far too small for direct X-ray or optical imaging. We therefore use the technique of 'reverberation mapping'. Here the time lag between direct X-ray emission and lower energy (UV/optical) emission, produced by reprocessing of X-rays by the surrounding material, gives us the distance from the central X-ray source to the surrounding material. By measuring that lag in multiple wavebands, corresponding to material at a range of temperatures, we are able to map out at least the temperature structure of the surround material. We can then compare our observed structure with the structure that we expect based on theoretical models of these structures and hence determine whether the models are correct. I will review the observations that have been carried out and their implications for our understanding of the inner geometries of AGN.

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