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Invited Lecture

MEASURING THE SIZE OF THE BROAD LINE REGION IN QUASARS WITH MICROLENSING-AIDED REVERBERATION MAPPING

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Owing to the advent of large area photometric surveys, the possibility to use broad band photometric data, instead of spectra, to measure the size of the broad line region of active galactic nuclei, has raised a large interest. We will describe a new method using time-delay lensed quasars where one (or several) images are affected by microlensing due to stars in the lensing galaxy. Because microlensing decreases (or increases) the flux of the continuum compared to the broad line region, it changes the contrast between these two emission components. We show that this effect can be used to effectively disentangle the intrinsic variability of those two regions, offering the opportunity to perform reverberation mapping based on single band photometric data. Based on simulated light curves, we show that measurement of the size of the broad line region can be achieved using this method, provided one spectrum has been obtained independently during the monitoring. This method is complementary to photometric reverberation mapping and could also be extended to multi-band data.