

HOW LARGE ARE QUASAR BROAD-LINE-REGIONS? RESULTS FROM A PROGRAM TO MONITOR THE PG QUASARS

DAN MAOZ and BUELL T. JANNUZI
Institute for Advanced Study, Princeton, NJ, 08540, USA

PAUL S. SMITH
Steward Observatory, University of Arizona, Tucson, AZ 85721, USA

and

SHAI KASPI and HAGAI NETZER
Wise Observatory, Tel-Aviv University, Tel-Aviv 69978, Israel

We have monitored spectrophotometrically a subsample (28) of the Palomar-Green Bright Quasar Sample for two years in order to measure the sizes of the broad-line regions of high-luminosity AGNs. Half of the quasars showed optical continuum variations with amplitudes in the range 20-75%. In most objects with continuum variations, we detect correlated variations in the broad $H\alpha$ and $H\beta$ emission lines. The amplitude of the line variations is usually 2-4 times smaller than the optical continuum fluctuations. The lines respond to the continuum variations with a lag that is smaller than or comparable to our typical sampling interval (a few months). This suggests that the quasars have broad-line regions smaller than about 1 lt-year. The figures below show spectra and light curves for one of the quasars. Two of the quasars monitored show no detectable line variations despite relatively large-amplitude continuum changes. This could be a stronger manifestation of the low-amplitude line-response phenomenon we observe in the other quasars. Further details appear in Maoz et al. (1994, ApJ, Jan 20, in press).

