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Abstract. We present results from a multi-month reverberation mapping campaign undertaken primarily at MDM Observatory with supporting observations from around the world. We measure broad line region (BLR) radii and black hole masses for six objects. A velocity-resolved analysis of the Hβ response shows the presence of diverse kinematic signatures in the BLR.

Reverberation mapping takes advantage of the presence of a time delay or lag, τ, between continuum and emission line flux variations observed through spectroscopic monitoring campaigns to infer the radius of the broad line region (BLR) and, subsequently, the central black hole mass in type 1 AGNs. The primary goal of this campaign was to obtain either new or improved Hβ reverberation lag measurements for several relatively low luminosity AGNs. Using cross correlation techniques to measure the time delay between the mean optical continuum flux density around 5100Å and the integrated Hβ flux, we determine the Hβ lags and black hole mass measurements listed in Columns 2 and 3 of Table 1, respectively. Column 4 tells if this measurement is new, an improvement meant to replace a previous, less reliable measurement, or simply an additional measurement not used to replace a previous value. The complete results from this study are currently being prepared for publication (Denney et al., in preparation). A subsequent velocity-resolved analysis of the Hβ response shows that three of the six primary targets demonstrate kinematic signatures (Column 5) of infall, outflow, and non-radial virialized motions (see Denney et al. 2009).

Table 1. Mean Hβ Lags and Black Hole Masses

Object	$\tau_{\rm cent}$(days)	$M_{\rm BH}(\times 10^6 M_\odot)$	Data Use	Kinematic Signature
NGC 3227	$3.75^{+0.76}_{-0.82}$	$7.63^{+1.62}_{-1.72}$	improvement	infall
NGC 3516	$11.68^{+1.02}_{-1.53}$	$31.7^{+2.8}_{-4.2}$	improvement	outflow
NGC 5548	$12.40^{+2.74}_{-3.85}$	$44.2^{+9.9}_{-13.8}$	add'l measurement	virial
Mrk 290	$8.72^{+1.21}_{-1.02}$	$24.3^{+3.7}_{-3.7}$	new	—
Mrk 817	$14.04^{+3.41}_{-3.47}$	$61.9^{+15.0}_{-15.3}$	add'l measurement	—
NGC 4051	$1.87^{+0.54}_{-0.50}$	$1.73^{+0.55}_{-0.52}$	improvement	—

References

Denney, K. D. *et al.* 2009, *ApJL*, 704, L80