

THE PASCHEN BROAD LINE REGION AND TORUS IN Mrk 509

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We have carried out one of the first spectroscopic dust reverberation mapping programs in the near-infrared on an active galactic nuclei (AGN). Reverberation mapping is a powerful technique which allows constraints to be placed on the spatial extent of structures within AGN which cannot be imaged. These components include the inner region of dust heated by the continuum source, which re-radiates in the infrared. We have obtained 17 medium resolution near-IR spectra of the type 1 Seyfert galaxy Mrk 509 between May and November 2019 using the 3-m IRTF in Hawaii combined with high cadence optical photometry. Using these data we aim to obtain near-IR lag times and therefore place constraints on the spatial extent of the inner obscuring material. Our spectra enable measurements of dust flux, temperatures and covering factor with a greater precision than is possible by photometric means, allowing for investigation into the astrochemistry and geometry of the inner obscuring material. Simultaneously we measure the first Paschen line lags allowing for direct comparison of spatial extent between the broad line region (BLR) and the inner obscuring material. In addition we present preliminary results from a near-IR spectroscopic campaign on Mrk 817 with an average cadence of 3 days taken over 7 months as part of the STORM2 collaboration.