P112b Stable and Unstable Regimes of Mass Accretion onto RW Aur A

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We present monitoring observations of the active T Tauri star RW Aur, from 2010 October to 2015 January, using optical high-resolution spectroscopy with CFHT-ESPaDOnS (see the other talk for the overall project). Optical photometry in the literature shows bright, stable fluxes over most of this period, with lower fluxes (by 2-3 mag.) in 2010 and 2014. In the bright period our spectra show clear photospheric absorption, complicated variation in the Ca II 8542 A profile shapes, and a large variation in redshifted absorption in the O I 7772 and 8446 A and He I 5876 A lines, suggesting unstable mass accretion during this period. In contrast, these line profiles are relatively uniform during the faint periods, suggesting stable mass accretion. The changes in optical continuum fluxes and line profiles qualitatively agree with the theory of magnetospheric mass accretion with enhanced and suppressed magnetic Rayleigh-Taylor instabilities at high and low mass accretion rates, respectively. However, the large decreases in photometric flux and the weakness or absence of photospheric absorption during the faint periods challenge the existing theories.