Further Observations of Dust/Gas Stratification in the Disks of Young Stellar Objects

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The distribution of gas compared to dust in the circumstellar discs of young stellar objects (YSO's) is crucial to our understanding of the early evolution of planetary bodies in young stellar systems. Planetary formation models indicate that dust density in the mid-plane of a protoplanetary disk is critical to the formation timescale of planetary bodies, but turbulent mixing may act to distribute dust to higher scale heights. Observations of gas/dust stratification provide a good measure of internal disc dynamics and potential formation of planetesimals. Rettig et al. (2006) reported observational evidence of stratification in the discs of four class II TTauri stars utilizing NIRSPEC observations of ^{12}CO,^{13}CO and $C^{18}O$ fundamental and ^{12}CO overtone absorption lines to measure the column density of gas along the line of sight. This project aims to expand the scope of this work by studying the extent of this effect for a larger sample of T Tauri stars. Since our sample consists of low mass stars that often exhibit photospheric CO absorption at K-band, we have expanded our analysis to incorporate synthetic photospheric spectra derived from the ATLAS advanced stellar photosphere models (Sbordone et.al 2004). Photospheric features may then be extracted from the target spectrum using custom written algorithms. These methods will allow the gas/dust ratio as a function of inclination to be derived for a greater range of sources. We present our initial results and discuss the correlation of gas/dust ratio with disk inclination presented in Rettig et al. (2006).