Abstract Submitted
for the APR14 Meeting of
The American Physical Society

Mid-infrared Variability of the Low Mass Stellar Binary TWA 30 A and B AISHWARYA IYER, ADAM BURGASSER, Department of Physics, University of California, San Diego — T Tauri stars represent the initial stages of stellar birth, characterized by jets, accretion, outflows and circumstellar disks. TWA 30 AB is one of the nearest ($\sim$ 42 pc) low mass (both masses $\sim$ 0.12 Solar masses) binary T Tauris known, a well-separated (80" on the sky) pair of mid-type M dwarfs in the $\sim$ 10 Myr TW Hydrae Association.[1] Both sources exhibit strong spectral signatures of accretion, jets and stellar winds, and mid-infrared excess indicating the presence of circumstellar disks.[2] These disks are nearly edge-on but with slightly different geometries; TWA 30A, an optical transient, exhibits strong variable optical extinction ($A_V \approx$ 1-8) from outer disk absorption, while TWA 30B is seen in reflection with an additional (variable) thermal component likely from the inner disk. The existing optical and near-infrared data predicts low variability for TWA 30A and high variability for TWA 30B in the mid-infrared. However, a single day of Wide-field Infrared Survey Explorer (WISE) mid-infrared monitoring reveals the opposite behavior. To investigate this contradiction, we have observed this system over a 40-day period with the Spitzer Space Telescope's Infrared Array Camera at 3.6 and 4.5 microns. We present preliminary analysis of the imaging data and examine their physical implications in the context of disk geometries and evolution in these two sources.

[1]D. L. Looper et al. AJ, 140, 1486, (2010)
[2]A. Schneider et al. ApJ, 757, 163 (2012)

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Date submitted: 10 Jan 2014 Electronic form version 1.4