Multiplicity in Star Formation Toronto

Close Binaries in Cha I and Taurus

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Outline

CHA

SMC ♦ Our Program Extension **Current Results** MEN **+**Stellar Companions VOL Double-line Spectroscopic Binaries ERI. +Cha I vs Taurus LMC Mass Dependence?
 Binarity vs Inner Disks (CTTS vs WTTS)
 +Summary

TUC

Program Extension

- Over 200 targets in Cha I and Tau-Aur star forming regions (~2Myr)
- 4 epochs per target fiducially
- Over 850 high-resolution optical spectra (R~60 000) with Magellan/MIKE echelle from Feb 2006 through Dec 2006



Baselines Cha I: 50-300 days Tau-Aur: 30 days



Current Results

RV Standard Deviation vs. RV Standard Error







Binary Fraction (Stellar) Cha I: $1/58 \rightarrow 2^{+4}_{-1}\%$ Taurus: $13/119 \rightarrow 11^{+4}_{-3}\%$

for overlapping SpT range Cha I: $0/29 \rightarrow 0^{+4}_{0}\%$ Taurus: $3/56 \rightarrow 5^{+5}_{-3}\%$





Mass Dependence?

Close Binary Fraction



Binarity vs Inner Disks



Quillen et al. 2004, ApJ, 612, L137

← Taurus WTTS:
 $11/73 \rightarrow 15^{+5}_{-4}\%$

Cha I binary is WTTS

 Following-up on candidate lower mass companions

Summary and Work-in-Progress

- We observed a higher fraction of close stellar binaries in Taurus vs Cha I
- Binary Fraction increases with primary mass
- Non-accretors show a somewhat larger close binary fraction down to the substellar limit than accretors
- Follow-up candidate low mass companions, e.g. stellar activity indicators: line bisector analysis
 Expand stellar age range: Upp Sco and ρ Oph