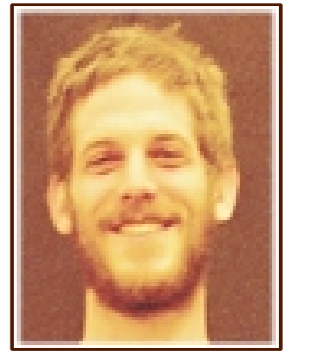


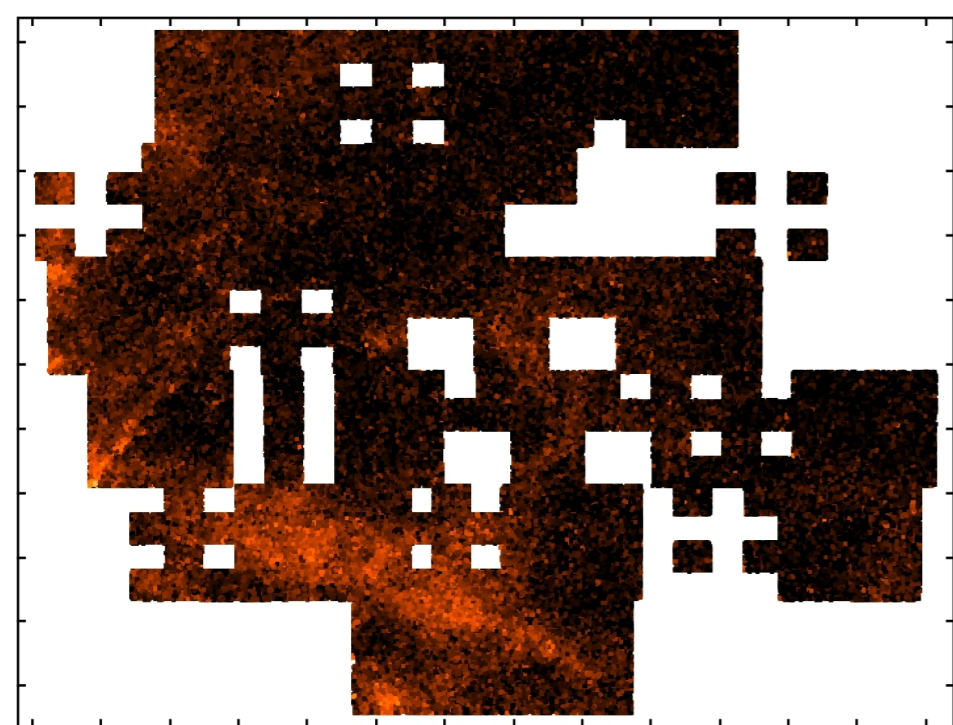


A UKIDSS-based search for new low-mass members of Taurus-Auriga

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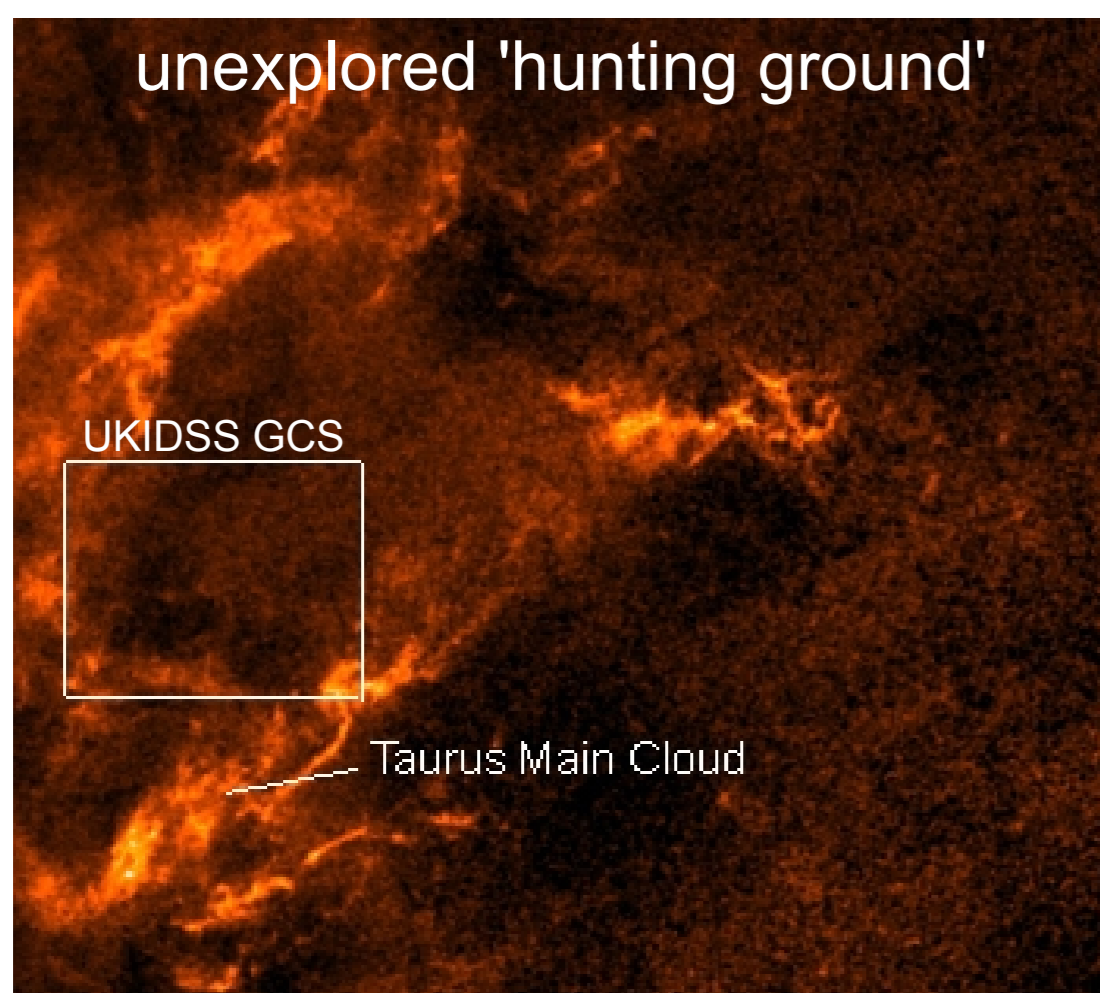
UKIDSS GCS coverage in Taurus-Auriga



NIR extinction map in UKIDSS GCS area calculated via NICE techniques, $R=1.5'$

UKIRT Infrared Deep Sky Survey Galactic Cluster Survey

- NIR ZYJHK photometry
- $J < 19.3$ mag ($M \sim 25-30 M_{Jup}$)
- 500000 sources in 15 sqdeg
- distance to Taurus main cloud ~ 5 deg
- small SPITZER/IRAC overlap
- no optical SDSS overlap
- 2MASS NIR JHK filters ($J < 15.8$ mag)
- proper motions for



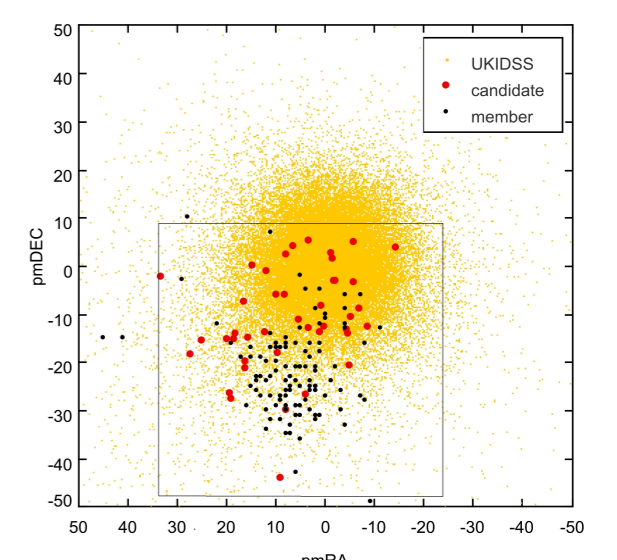
A_v extinction map, Dobashi et al. (2005), $R=6.0'$

characteristics of Taurus-Auriga

- star-forming region
- young 1-3 Myr
- nearby 140 pc
- widely spread ~ 300 sqdeg
- low-density
- > 300 confirmed members
- mass function peak is unusually high with $\sim 1 M_{\odot}$, a possible death of low-mass stars?

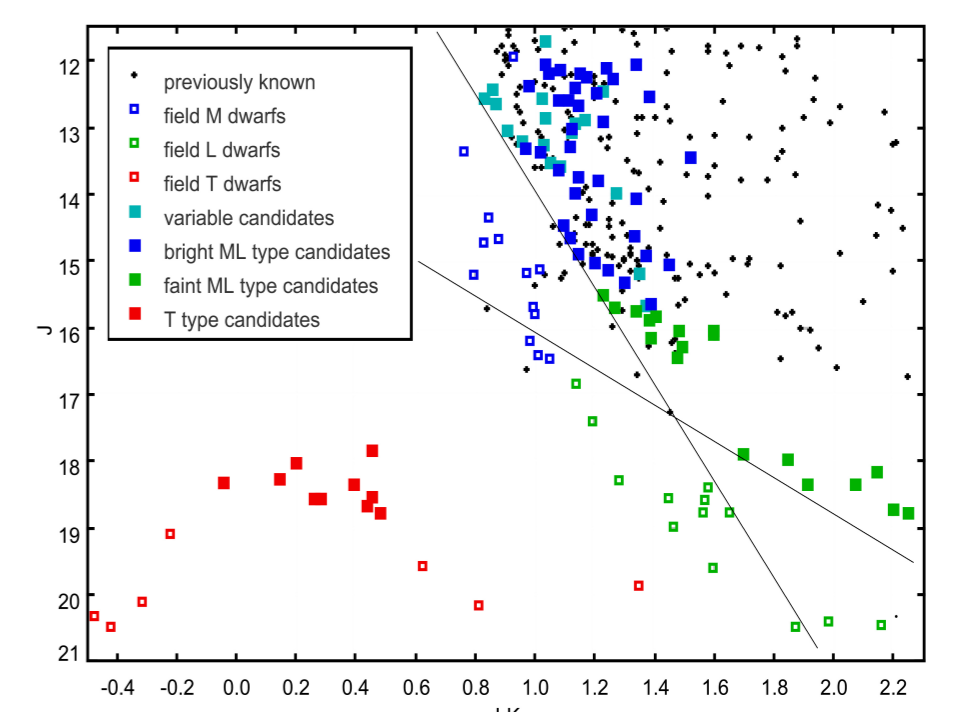
Search criteria

(1) search for membership via proper motions



(2) search for young objects/disk accretion via long-term variability (2MASS & UKIDSS) and infrared excess (IRAC)

(3) search for low-mass stars & Brown Dwarfs via location in various color-magnitude and color-color diagrams for both observed and dereddened photometry



selection of ~ 150 sources

Contribution to general topics

- form and universality of mass function
- relation between form of IMF and stellar density
- disk- and binary fraction
- contribution to formation scenarios

Preliminary results for low-mass candidates

Observations

optical spectra $\sim 6000-10000$ Angstrom
low resolution $R \sim 1500-3500$

GTC/OSIRIS	2009
CAHA2.2/CAFOS	2009
NOT/ALFOSC	2009
WHT/ISIS	2008/2009
CAHA2.2/CAFOS	2007
CAHA3.5/TWIN	2005,2006

- 25 field dwarfs (type G0-M8)
- 44 Taurus members
- 46 new member candidate

Measurements

spectral type via spectral indices
equivalent widths,
membership for strong $H\alpha$ & weak KI , NaI
model data calculated via VOSA (L_{bol} , T_{eff} , age)

- Of 46 sources
- 29 are M0 to M5 type
- 10 show $EW(H\alpha) > 4$ Angstrom
- $EW(KI) = 2-18$ Angstrom
- $EW(NaI) = 3-7.5$ Angstrom

Future- and ongoing work

reduction and analysis of the data observed for the variability-, infrared excess-, and T dwarf candidates.
contaminations, statistics
new UKIDSS data release 8 (september 2010)

