Type I PlanetMigration in aMagnetized Disk. II. Effect of Vertical Angular Momentum Transport

Alissa Bans

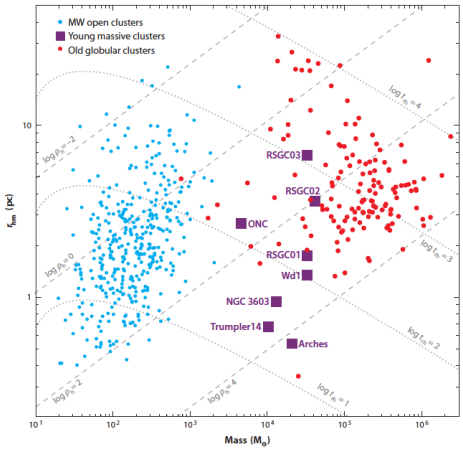
リンク1501.02707.pdf

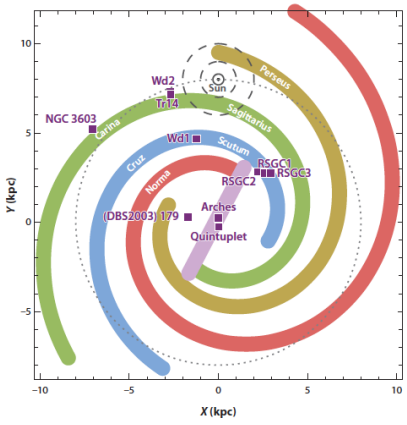
A FIRST LOOK AT THE X-RAY POPULATION OF THE YOUNG MASSIVE CLUSTER VVV CL077 by ARASH BODAGHEE +

Multi-wavelength analysis of the young massive cluster VVV CL077 is presented for the first time. Our *Chandra* survey of this region enabled the detection of three X-ray emitting stellar members of the cluster, as well as a possible diffuse X-ray component that extends a few arcseconds from the cluster core with an intrinsic flux of $(9\pm3)\times10^{-14}$ erg cm^{-2} s^{-1} in the 0.5–10 keV band. Infrared spectra we obtained for two of these X-ray point sources show absorption lines typical of the atmospheres of massive O stars. The X-ray spectrum from the visible extent of VVV CL077 i.e., a 15″-radius around the cluster, can be modeled with an absorbed power law with $N_{\rm H} = (6^{+4}_{-3}) \times 10^{22}$ cm^{-2} and $\Gamma = 2\pm1$. In addition, the X-ray core of VVV CL077 coincides with diffuse emission seen in the infrared band and with a local maximum in the radio continuum map. A possible association with a neighboring H II region would place VVV CL077 at a distance of around 11 kpc; on the far side of the Norma Arm. At this distance, the cluster is 0.8 pc wide with a mass density of $(1–4)\times10^3$ $M_\odot$ pc^{-3}.

Subject headings: X-rays: stars; infrared: stars; stars: early-type; open clusters and associations: individual (VVV CL077)

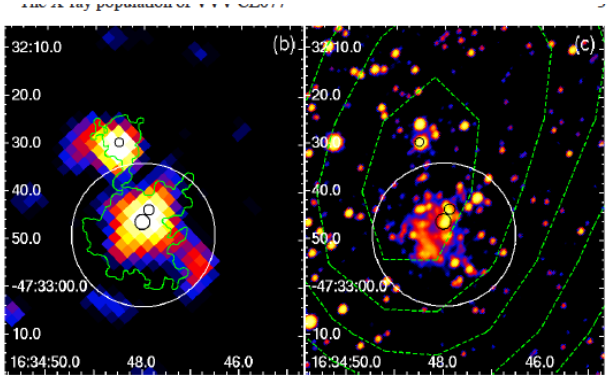
Young Massive Clusters (YMCs)

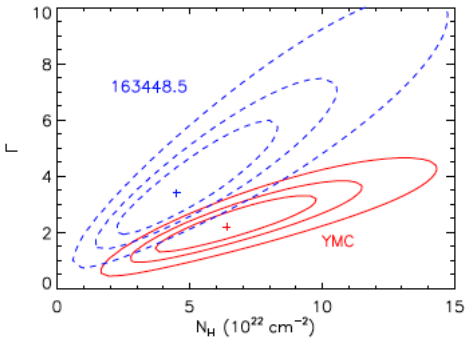




Portegies Zwart+ 2010 ARA&A

Chandra X-線　　K バンド　$N_H \sim 6\times10^{22}$ cm^{-2}　$\Gamma \sim 2$





リンク [1501.00496.pdf]

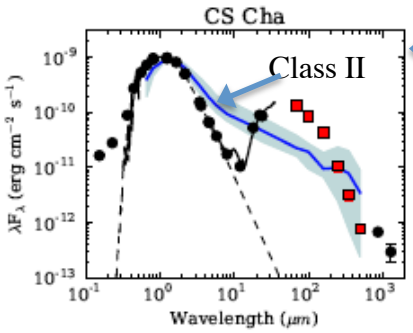
Identification of new transitional disk candidates in Lupus with Herschel

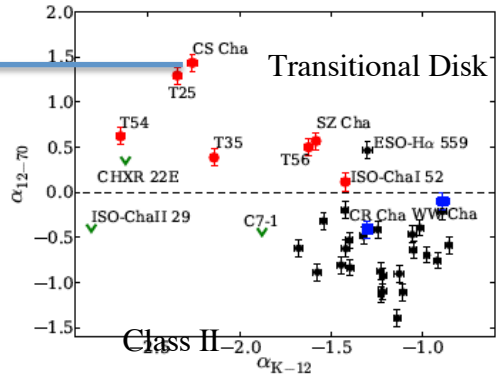
Bustamante et al. AAp

Context. New data from the *Herschel* Space Observatory are broadening our understanding of the physics and evolution of the outer regions of protoplanetary disks in star forming regions. In particular they prove to be useful to identify transitional disk candidates.
Aims. The goals of this work are to complement the detections of disks and the identification of transitional disk candidates in the Lupus clouds with data from the *Herschel* Gould Belt Survey.
Methods. We extracted photometry at 70, 100, 160, 250, 350 and 500 μm of all spectroscopically confirmed Class II members previously identified in the Lupus regions and analyzed their updated spectral energy distributions.
Results. We have detected 34 young disks in Lupus in at least one *Herschel* band, from an initial sample of 123 known members in the observed fields. Using the criteria defined in Ribas et al. (2013) we have identified five transitional disk candidates in the region. Three of them are new to the literature. Their PACS-70 μm fluxes are systematically higher than those of normal T Tauri stars in the same associations, as already found in T Cha and in the transitional disks in the Chamaeleon molecular cloud.
Conclusions. Herschel efficiently complements mid-infrared surveys for identifying transitional disk candidates and confirms that these objects seem to have substantially different outer disks than the T Tauri stars in the same molecular clouds.

Ribas+2013 aa20960-12.pdf

Á. Ribas et al.: Identification of transitio

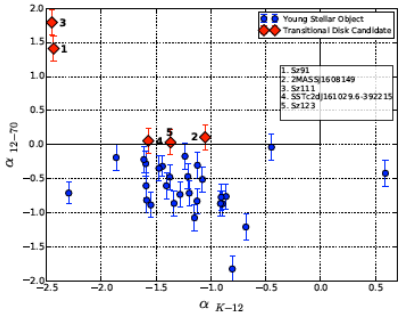




$$\alpha_{\lambda_1-\lambda_2} = \frac{log(\lambda_1 F_{\lambda_1}) - log(\lambda_2 F_{\lambda_2})}{log(\lambda_1) - log(\lambda_2)},$$

(1) identified five transitional disk candidates in the region.

(2) Their PACS-70 μ m fluxes are systematically higher than s those of normal T Tauri stars in the same associations, as



リンク 1501.05204.pdf

Discovery of two embedded clusters withWISE in the high Galactic latitude cloud HRK 81.4−77.8

D. Camargo + MNRAS

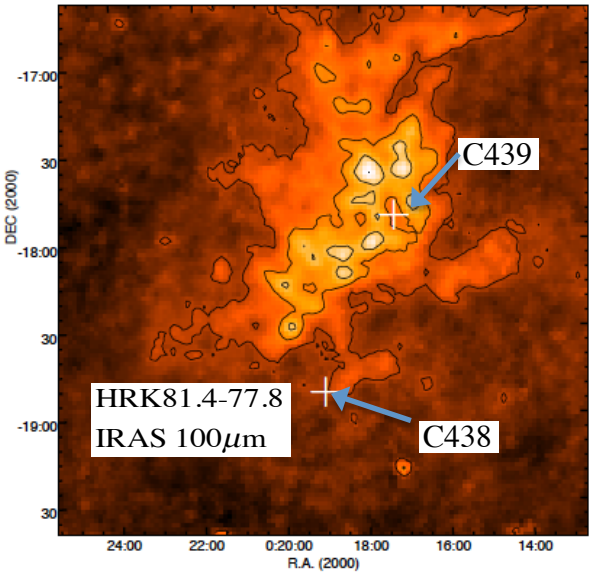
Molecular clouds at very high latitude ($b > 60°$) away from the Galactic plane are rare and in general are expected to be non-star-forming. However, we report the discovery of two embedded clusters (Camargo 438 and Camargo 439) within the high-latitude molecular cloud HRK 81.4-77.8 using WISE. Camargo 439 with Galactic coordinates $\ell = 81.11°$ and $b = -77.84°$ is an ~ 2 Myr embedded cluster (EC) located at a distance from the Sun of $d_\odot = 5.09 \pm 0.47$ kpc. Adopting the distance of the Sun to the Galactic centre $R_\odot = 7.2$ kpc we derive for Camargo 439 a Galactocentric distance of $R_{GC} = 8.70 \pm 0.26$ kpc and a vertical distance from the plane of -4.97 ± 0.46 kpc. Camargo 438 at $\ell = 79.66°$ and $b = -78.86°$ presents similar values. The derived parameters for these two ECs put HRK 81.4-77.8 in the halo at a distance from the Galactic centre of ~ 8.7 kpc and ~ 5.0 kpc from the disc. Star clusters provide the only direct means to determine the high latitude molecular cloud distances. The present study shows that the molecular cloud HRK 81.4-77.8 is currently forming stars, apparently an unprecedented event detected so far among high latitude clouds. We carried out a preliminary orbit analysis. It shows that this ECs are the most distant known embedded clusters from the plane and both cloud and clusters are probably falling ballistically from the halo onto the Galactic disc, or performing a flyby.

High Latitude Molecular Cloud (HLC):

Star formation low

Origin:

(1) galactic fountain, (2) extragalactic origin



Embedded cluster

WISE 色等級図から年齢 τ =2Myr

距離を推定　D=5.1kpc

銀河中心から8.7kpc、銀画面から5kpc

リンク1501.03707.pdf

Gemini-IFU Spectroscopy of HH 111

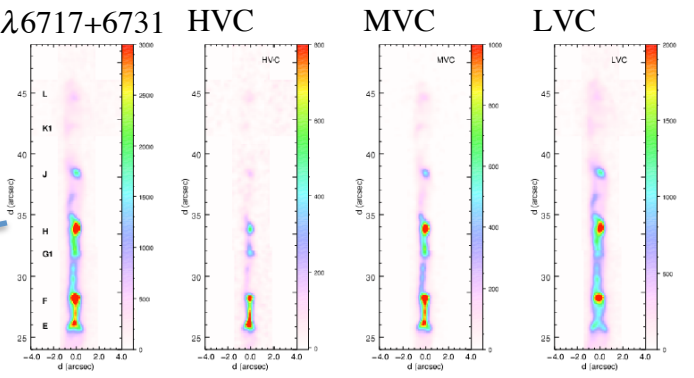
Cerqueira1　AJ

We present new optical observations of the HH 111 Herbig-Haro jet using the Gemini Multi Object Spectrograph in its Integral Field Unit mode. Eight fields of 5″ x 3.5″ have been positioned along and across the HH 111 jet, covering the spatial region from knot E to L in HH 111 (namely, knots E, F, G, H, J, K and L). We present images and velocity channel maps for the [O I] 6300+6360, Hα, [N II] 6548+6583 and [S II] 6716+6730 lines, as well as for the [S II]6716/6730 line ratio. We find that the HH 111 jet has an inner region with lower excitation and higher radial velocity, surrounded by a broader region of higher excitation and lower radial velocity. Also, we find higher electron densities at lower radial velocities. These results imply that the HH 111 jet has a fast, axial region with lower velocity shocks surrounded by a lower velocity sheath with higher velocity shocks.

HVC: v_r < -100 km/s

MVC: -100 km/s < v_r < -70 km/s

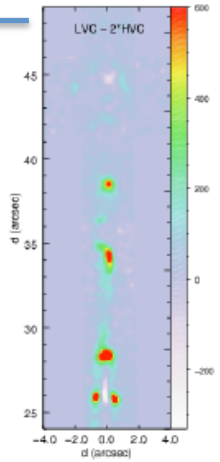
LVC: v_r>-70 km/s



(1) increasing jet width as a function of decreasing velocity

整合的velocities decreases away from the outow axis (Riera+2001)

LVC-2HVCでLVCが強い部分はジェットの外側。



(2) 低い励起の方が幅が狭い。

リンク1501.03036.pdf