7. Impact of Size-dependent Grain Temperature on Gas-Grain Chemistry in Protoplanetary Disks: the case of low mass star disks, S. Gavino et al., A&Ap
8. K-band GRAVITY/VLTI interferometry of "extreme" Herbig Be stars. The size-luminosity relation revisited, P. Marcos-Arenal et al., A&Ap
9. Hot Molecular Core Candidates in the Galactic Center 50 km/s Molecular Cloud, R. Miyawaki, PASJ
10. The Core Mass Function Across Galactic Environments. III. Massive Protoclusters, T.J. O'Neill
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花輪　知幸 (千葉大)

7. Impact of Size-dependent Grain Temperature on Gas-Grain Chemistry in Protoplanetary Disks: the case of low mass star disks, S. Gavino et al., A&Ap

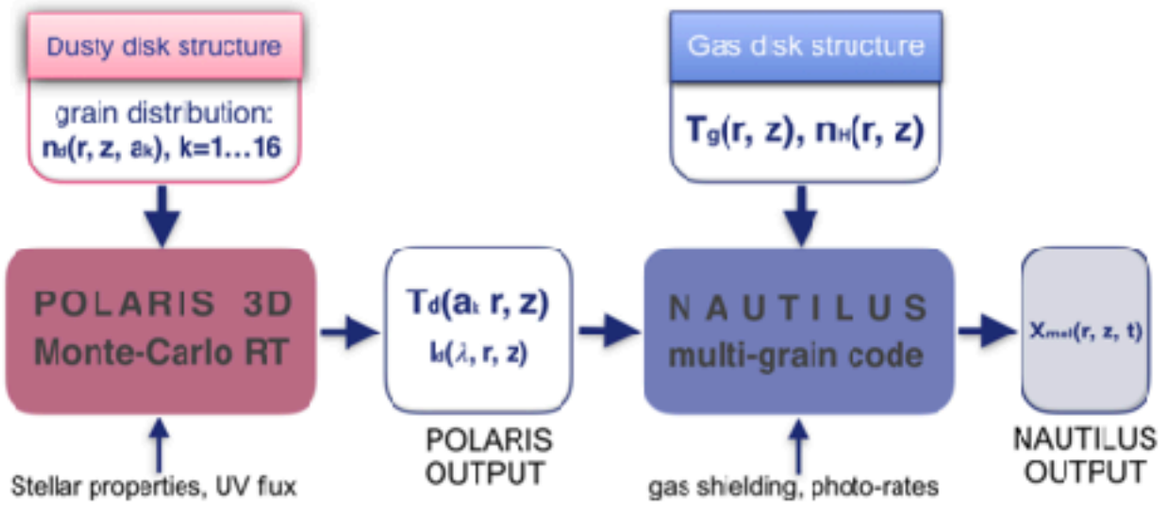
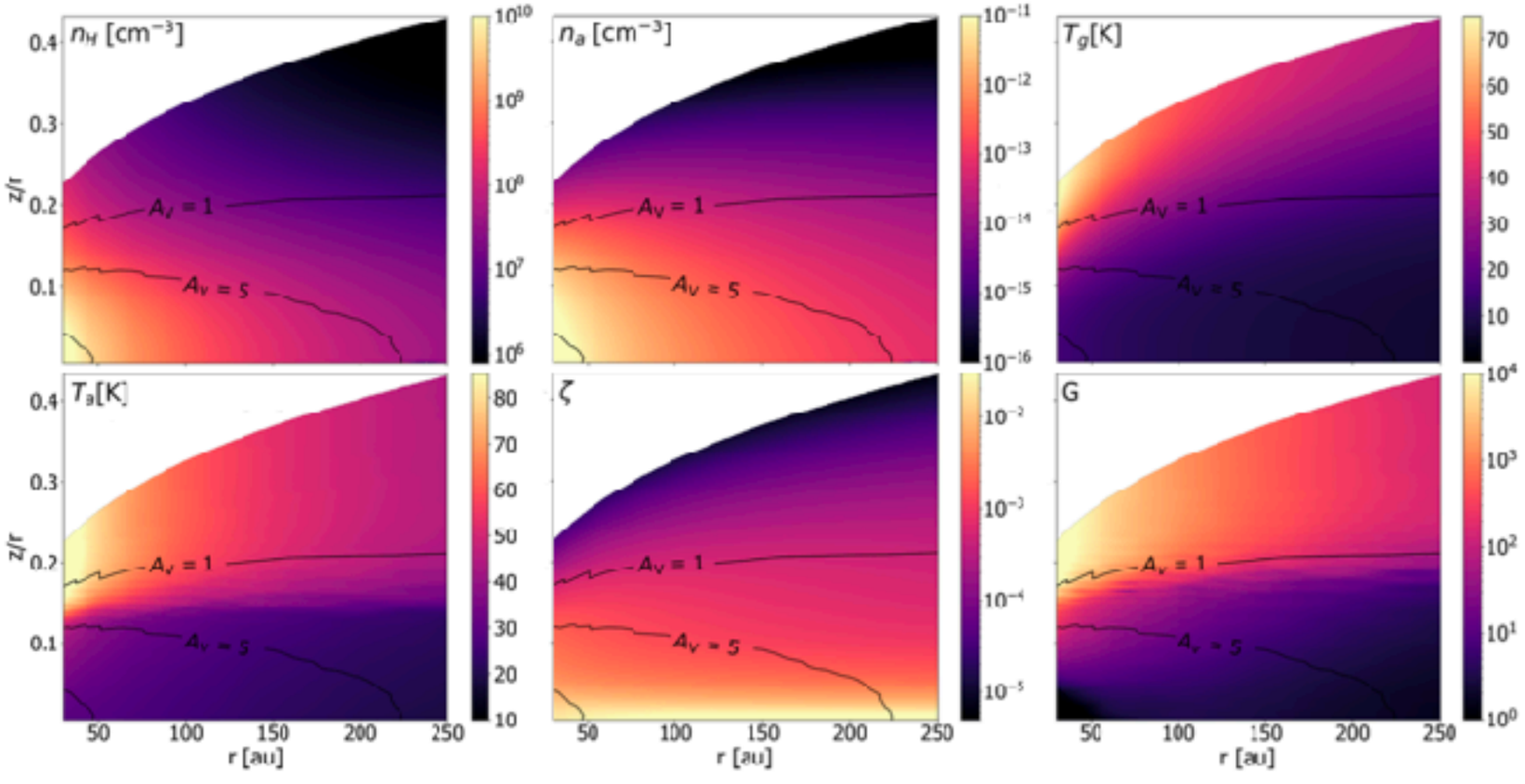


Fig. 1: Multi-grain model: Coupling scheme between NAUTILUS and POLARIS.



小さくて温度の高いダストと大きくて温度の低いダストが共存している効果を調べる。

円盤モデルやダストの沈殿は標準的なものを採用
(整合性は追求しない)

Table 3: Description of models

	bins	sizes (μm)	T_d	HUV	LUV	H_2 formation
HUV-LH-T_g	1	0.1	T_g	✓		LH
HUV-LH-T_a	1	0.1	T_a	✓		LH
HUV-B14-T_a	1	0.1	T_a	✓		B14
LUV-LH-T_g	1	0.1	T_g		✓	LH
LUV-LH-T_a	1	0.1	T_a		✓	LH
LUV-B14-T_a	1	0.1	T_a		✓	B14
M-HUV-LH	16	$[5.10^{-3} - 10^3]$	$T_{i\ \{i=1...16\}}$	✓		LH
M-HUV-B14	16	$[5.10^{-3} - 10^3]$	$T_{i\ \{i=1...16\}}$	✓		B14
M-LUV-LH	16	$[5.10^{-3} - 10^3]$	$T_{i\ \{i=1...16\}}$		✓	LH
M-LUV-B14	16	$[5.10^{-3} - 10^3]$	$T_{i\ \{i=1...16\}}$		✓	B14
Set-HUV-LH-T_a	1	See appendix C	T_a	✓		LH
Set-HUV-B14-T_a	1	See Appendix C	T_a	✓		B14

T_g ガス温度, T_a 表面積で平均したダスト温度

HUV = UV excess , LUV = without UV excess
LH = ラングミュア-ヒンシェルウッド機構

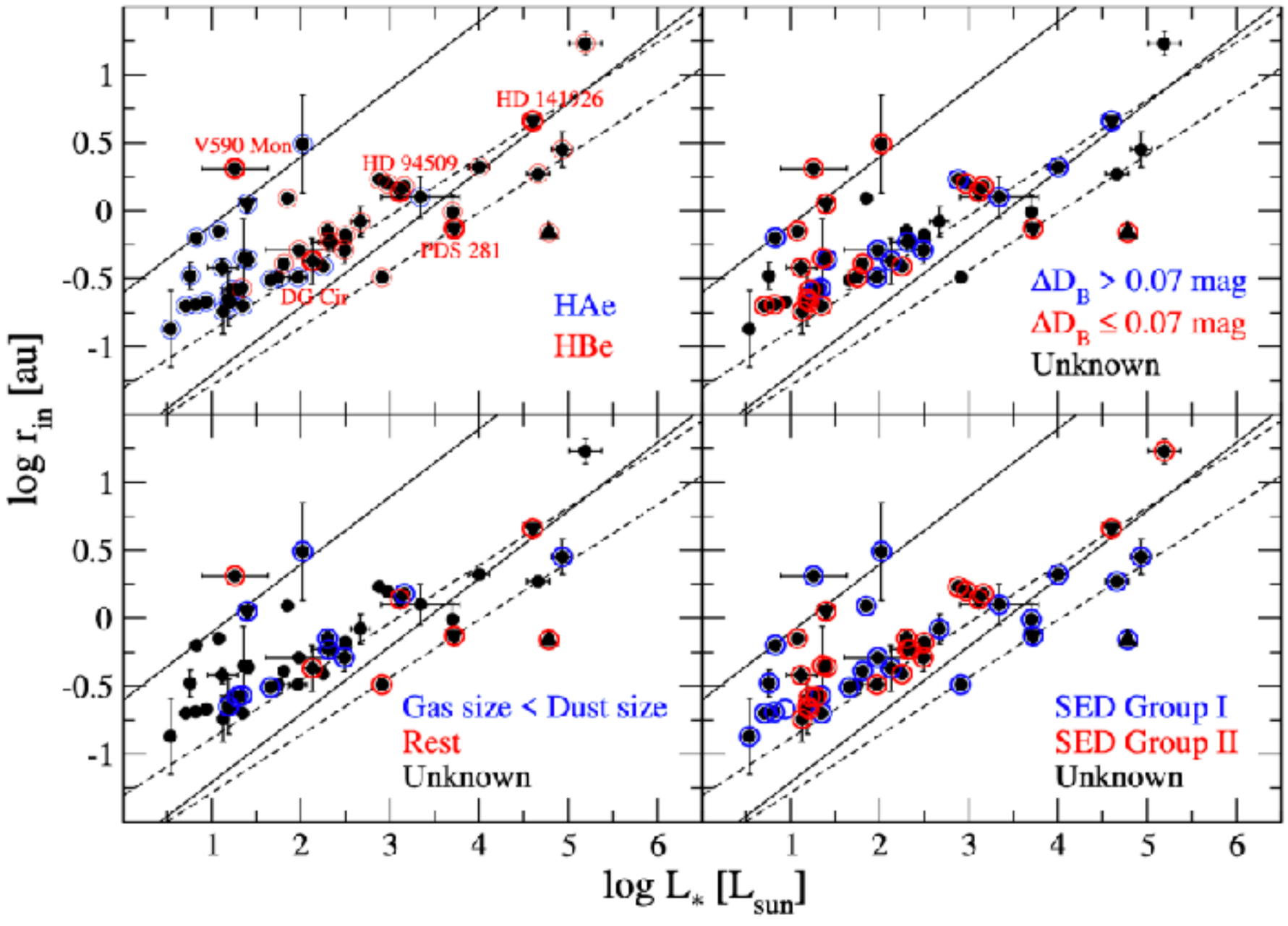
B14 = Bron+14　小さいダストが一時的に高温になる効果を考える

	H	H_2	CO	CS	CN	H_2 formation	0 to 1.5H	1.5 to 2.5H
HUV-LH-T_g	$1.48.10^{21}$	$8.19.10^{22}$	$3.24.10^{17}$	$4.40.10^{12}$	$3.79.10^{13}$	"cold" grains	0%	25%
HUV-LH-T_a	$9.80.10^{21}$	$7.78.10^{22}$	$1.01.10^{18}$	$3.38.10^{12}$	$3.08.10^{12}$	more H	100%	100%
HUV-B14-T_a	$3.20.10^{20}$	$8.25.10^{22}$	$1.46.10^{18}$	$1.35.10^{11}$	$1.34.10^{13}$	less H	100%	100%
M-HUV-LH	$8.26.10^{21}$	$7.86.10^{22}$	$7.46.10^{16}$	$6.69.10^{13}$	$4.62.10^{13}$	more H	96%	99%
M-HUV-B14	$1.31.10^{20}$	$8.26.10^{22}$	$9.02.10^{17}$	$1.92.10^{14}$	$3.49.10^{14}$	less H	96%	99%
Set-HUV-B14-T_a	$3.65.10^{20}$	$8.25.10^{22}$	$1.58.10^{18}$	$3.96.10^{12}$	$3.96.10^{13}$	less H	100%	100%

8. K-band GRAVITY/VLTI interferometry of "extreme" Herbig Be stars. The size-luminosity relation revisited, P. Marcos-Arenal et al., A&Ap

Brγ 付近(～2μm)の visibility から放射領域の大きさを測る

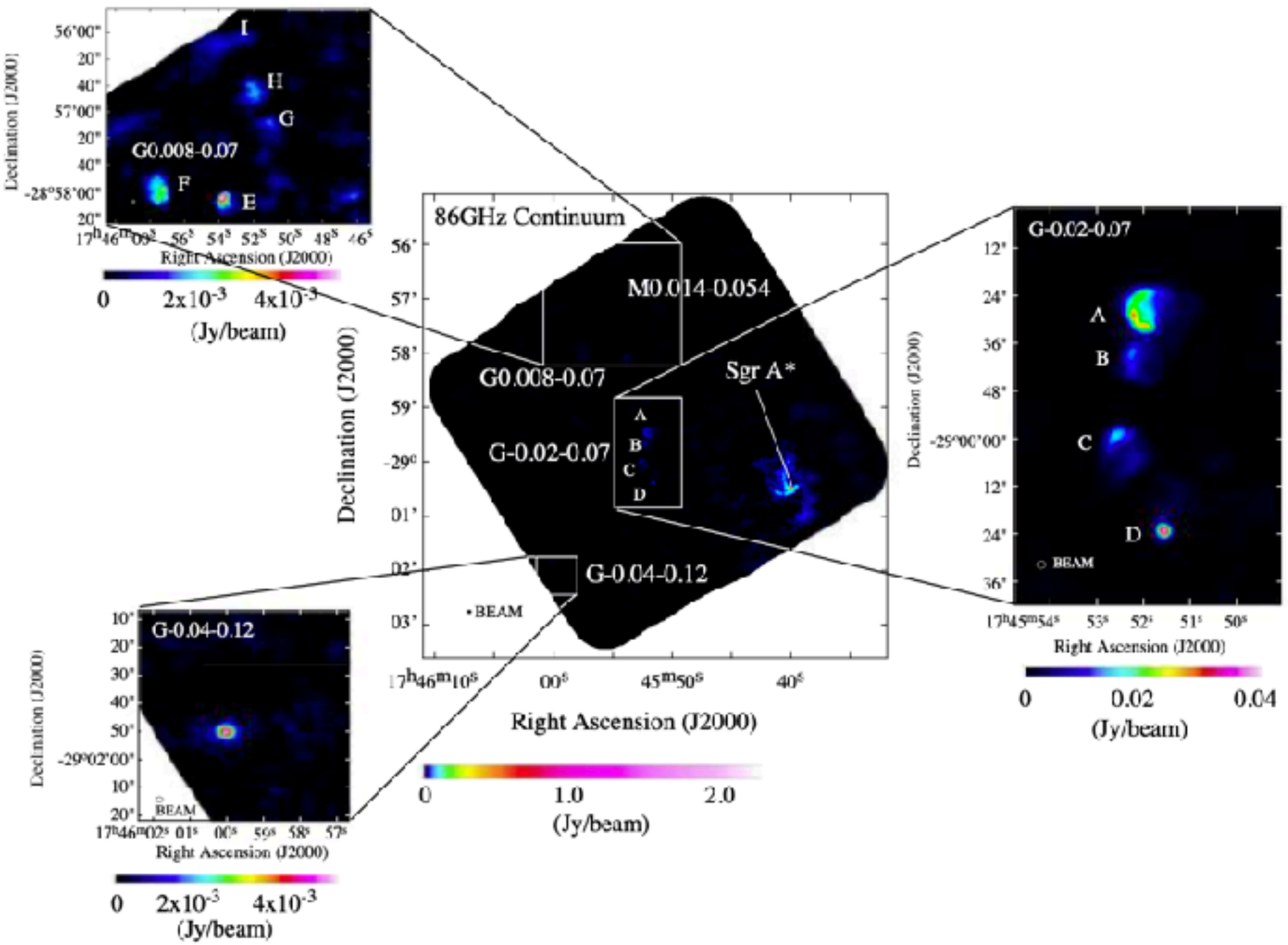
Near UV Balmer no V590 Mon, PDS 281, HD94509
Strong near UV Balmer DG Cir, HD141926

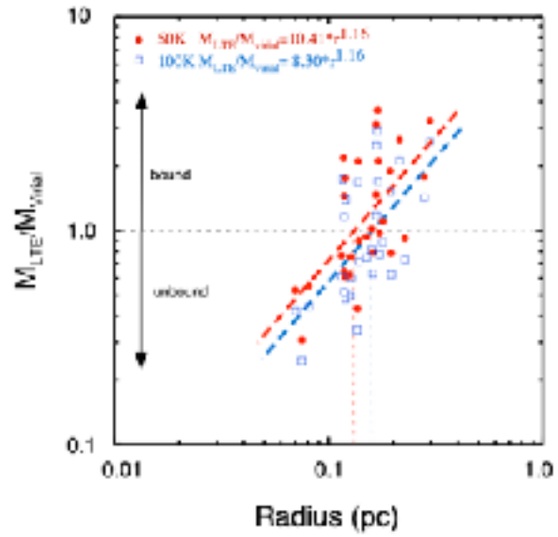


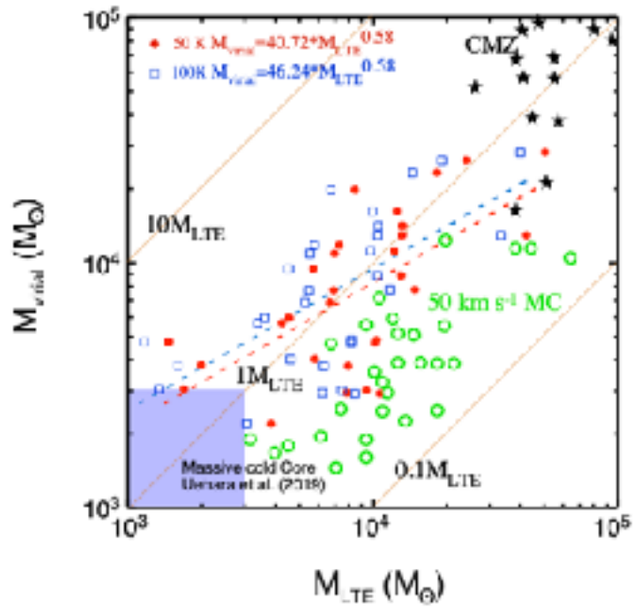
著者の主張:

No correlation

9. Hot Molecular Core Candidates in the Galactic Center 50 km/s Molecular Cloud, R. Miyawaki, PASJ

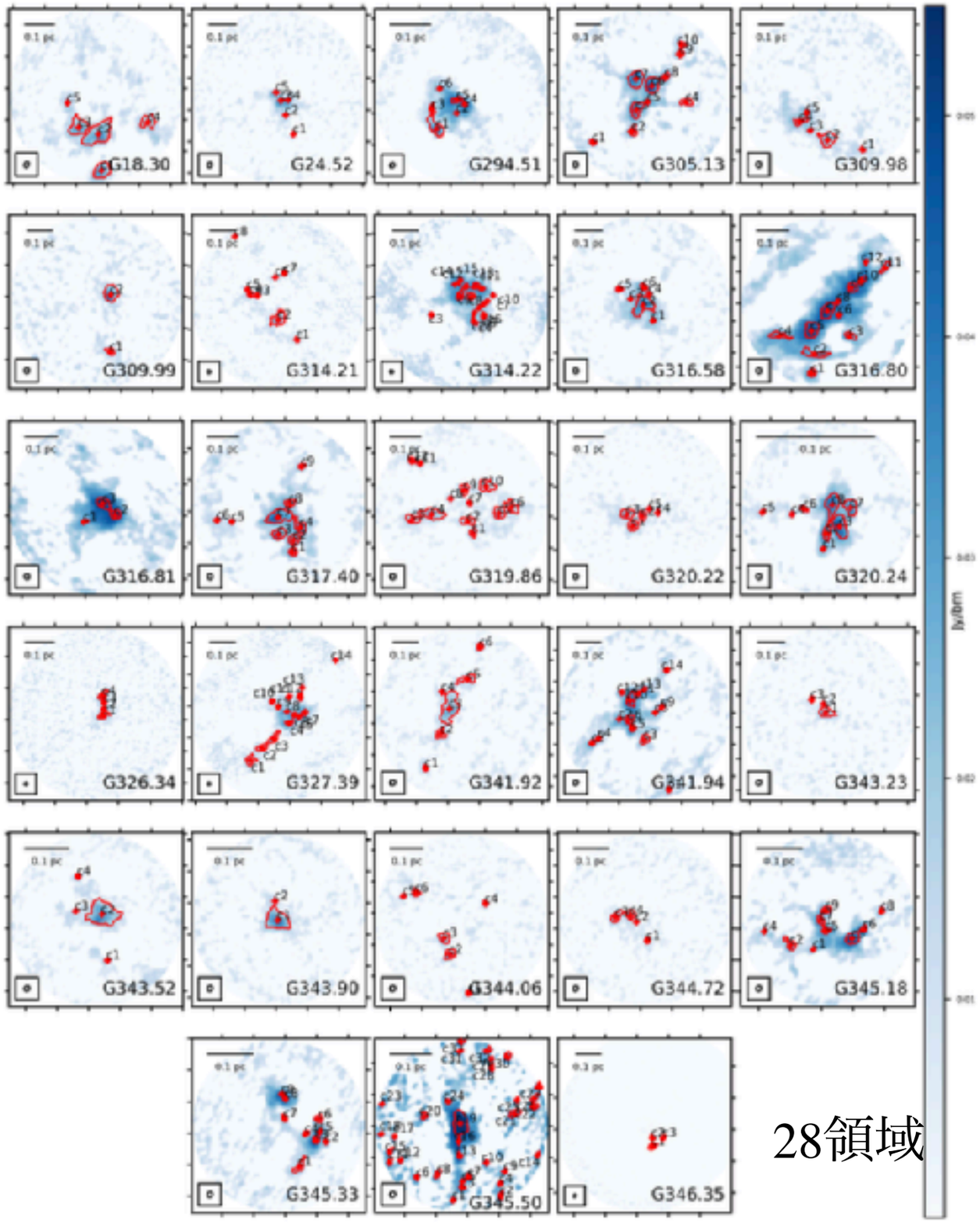




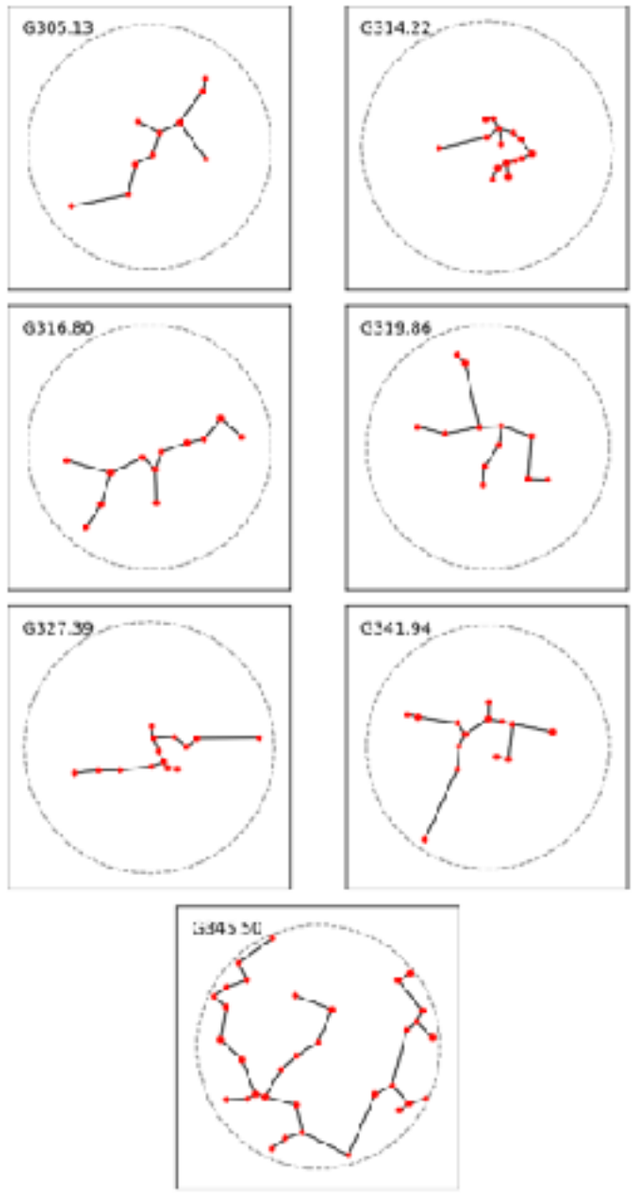


ALMA Cycle 1

10. The Core Mass Function Across Galactic Environments. III. Massive Protoclusters, T.J. O'Neill ApJ　ALMAGAL　(Cycle 7 Large Program), $d < 3.5$ kpc



28領域

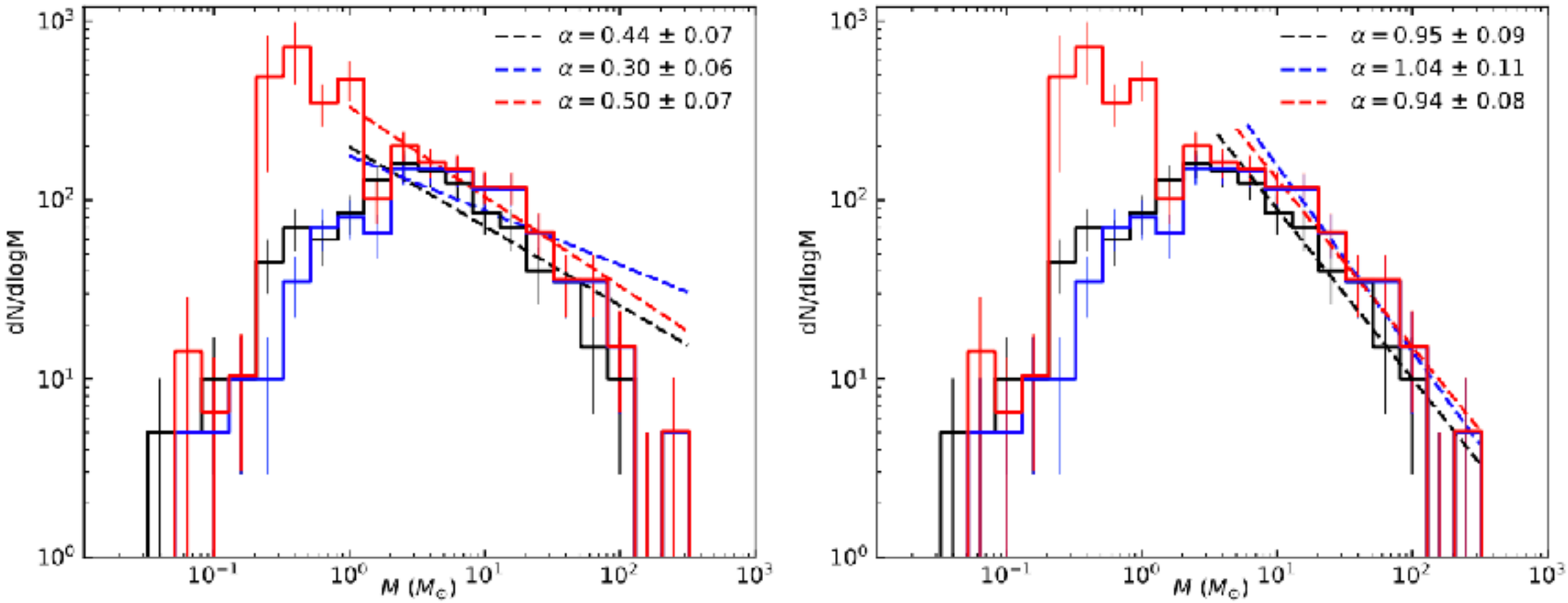


Dendrogram → CMF (core mass function)

$$M = \Sigma_{\rm mm} A = 0.113 \frac{\Sigma_{\rm mm}}{\rm g\ cm^{-2}} \frac{\Omega}{(1'')^2} \left(\frac{d}{1\ {\rm kpc}}\right)^2 M_\odot \quad (3)$$

$$\rightarrow 0.192 \frac{F_\nu}{\rm mJy} \left(\frac{d}{2.5\ {\rm kpc}}\right)^2 M_\odot,$$

黒: 生データ，青: 明るさ補正 $f_{\rm flux}$，赤: 見失いう可能性への補正 $f_{\rm num}$



However, we find evidence of a break in this power-law behavior between ~ 5 and 15 M⊙

Break = 折れ曲がりの統計的有意性を検証

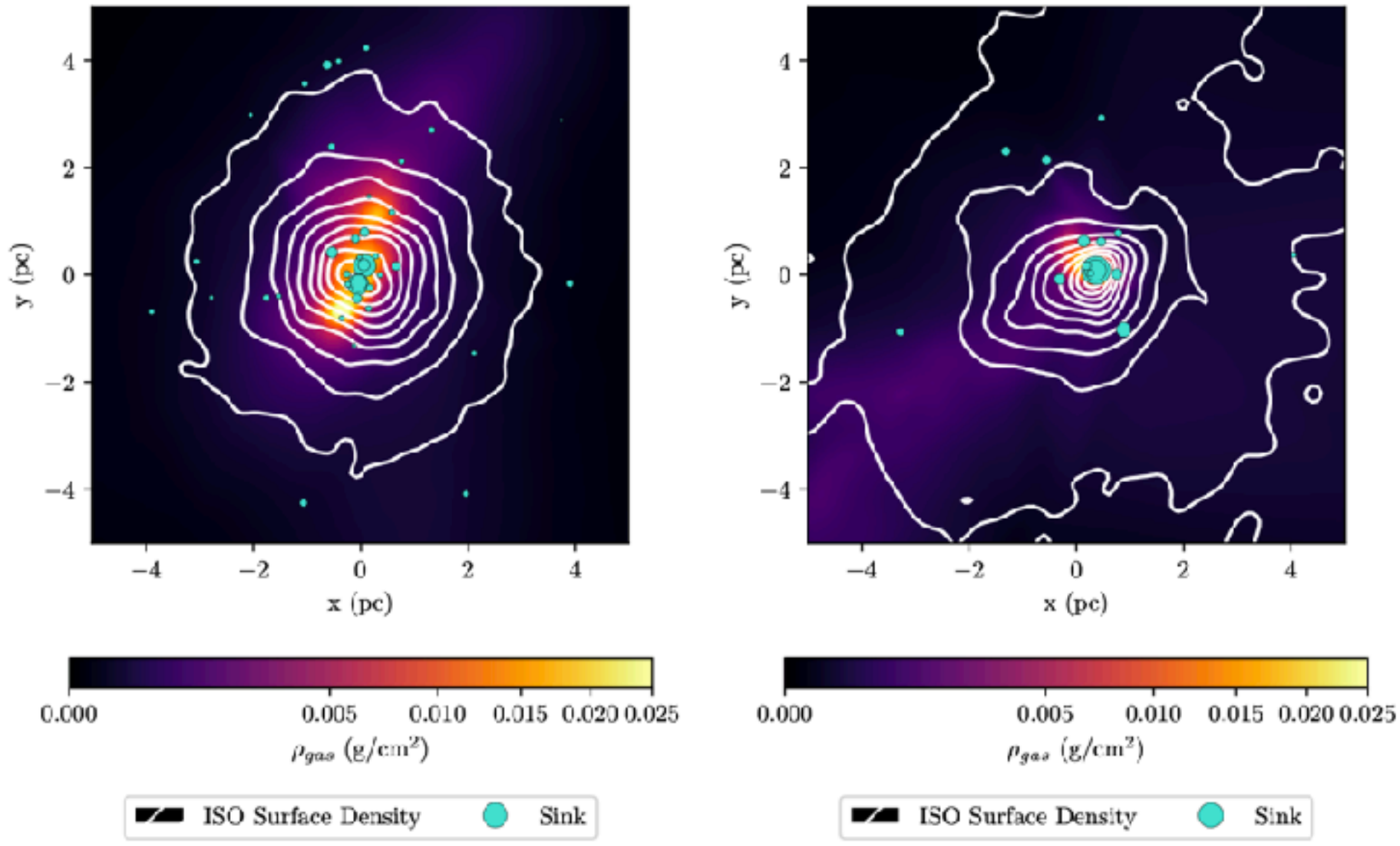
Ohashi+16，Shimajiri+19 がpositive に引用されている

11. Interstellar objects follow the collapse of molecular clouds,
S. Pfalzner et al., ApJ

ISO = 1I/‘Oumuamuaのようなもの

テスト粒子として星形成中のコアの中で運動を追う

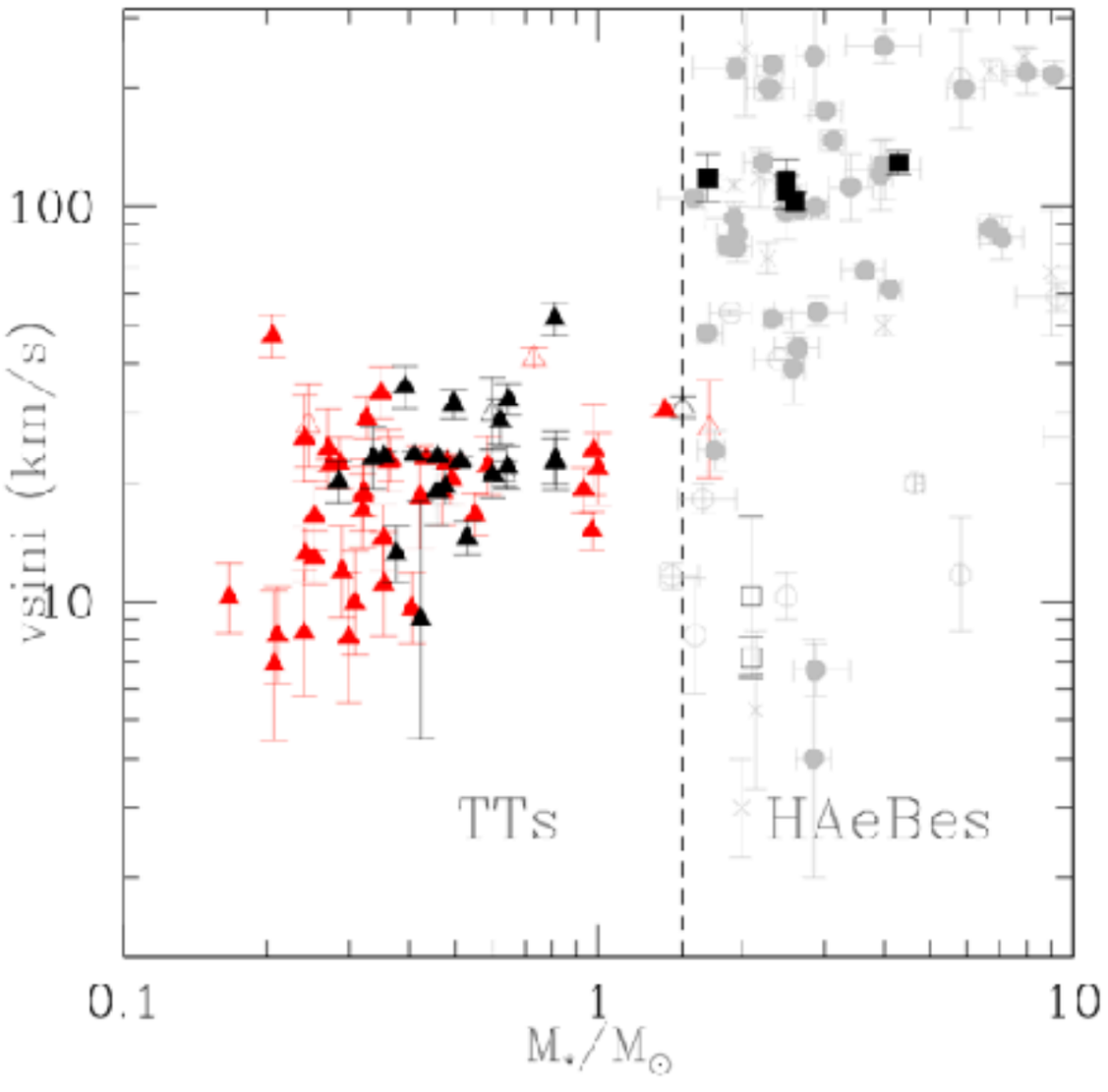
sink = 星に捉われる



12. Understanding the angular momentum evolution of T Tauri and Herbig Ae/Be stars, G. Pinzon et al., AJ

Herbig Ae/Be: Orion OB1 10 Myr < Nordic Opt. Tel. 2.5 m FIES
T Tauri: σ Ori cluster 3-5 Myr MMT 6.5 m Hectoechelle

吸収線の広がりから回転 ($v \sin i$) を求める



灰色　Alecian+13, Fairlam+15

全てのHerbig Ae/Be
Balmer ジャンプの短波長側で超過
= ガス降着が盛ん (active accretion)

PCygni profile HIP26955, HIP26752

▲ active accretion (Hernandez+16)

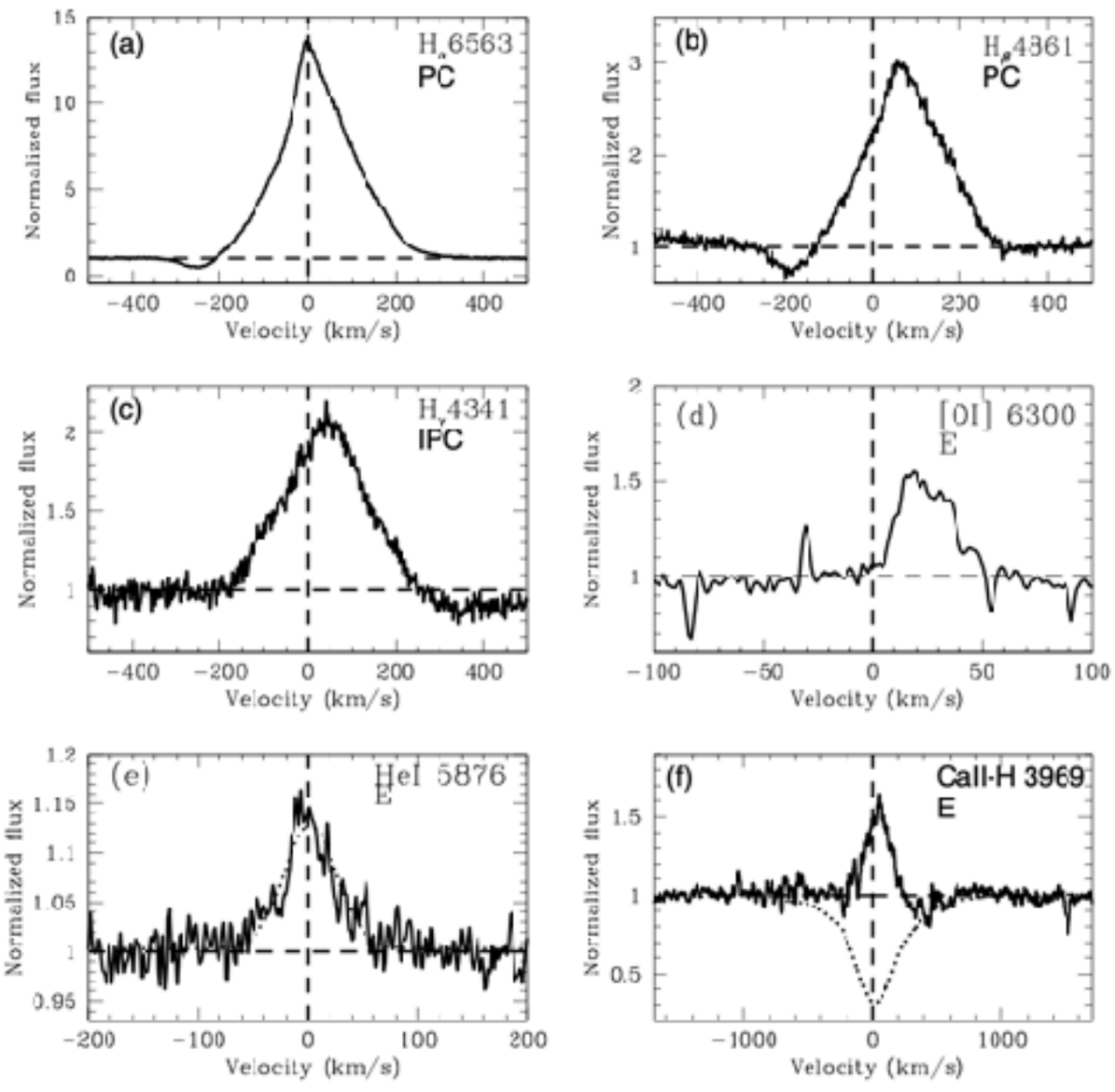
平均回転速度

Herbig Ae/Be: 115±9 km/s
TTs Non-accreter: 24±9 km/s
TTs accreter: 19±8 km/s

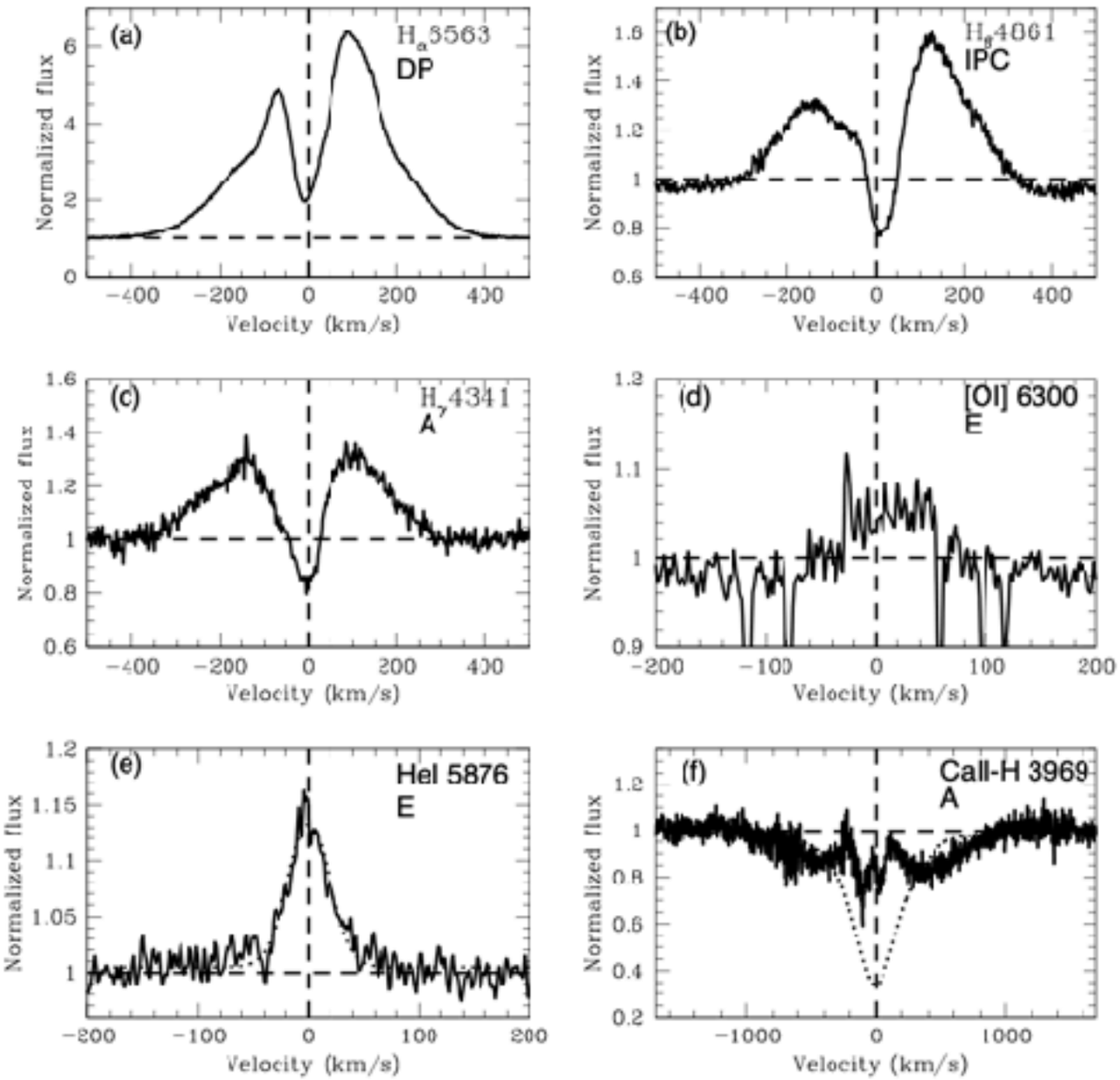
ガス降着は回転を抑える?

角運動量進化モデル (省略)

HIP 26955



HIP 26752



PC = P Cyg, IPC = Inverse P Cyg, E = Emission, A = Absorption, DP = Double Peak