

Planet Formation Workshop

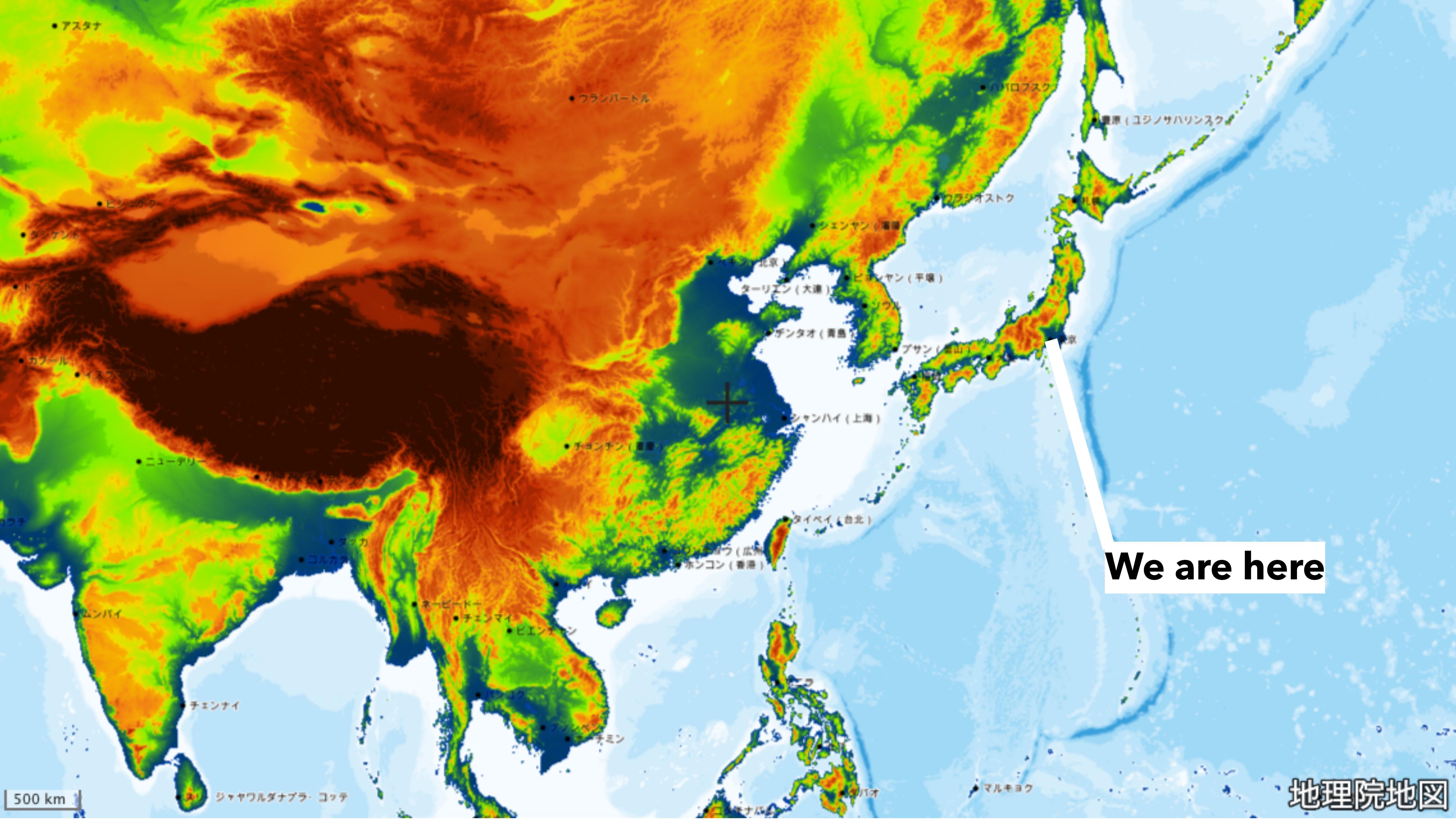
Local information

- **WiFi?** SSID: naoj-open, password: look at the white board
- **Talk minutes?** 30+10min (invited), 15+5 min (contributed)
- **Lunch and Banquet?**
 - Pay by cash at the registration.
 - Check which color of stickers you have.



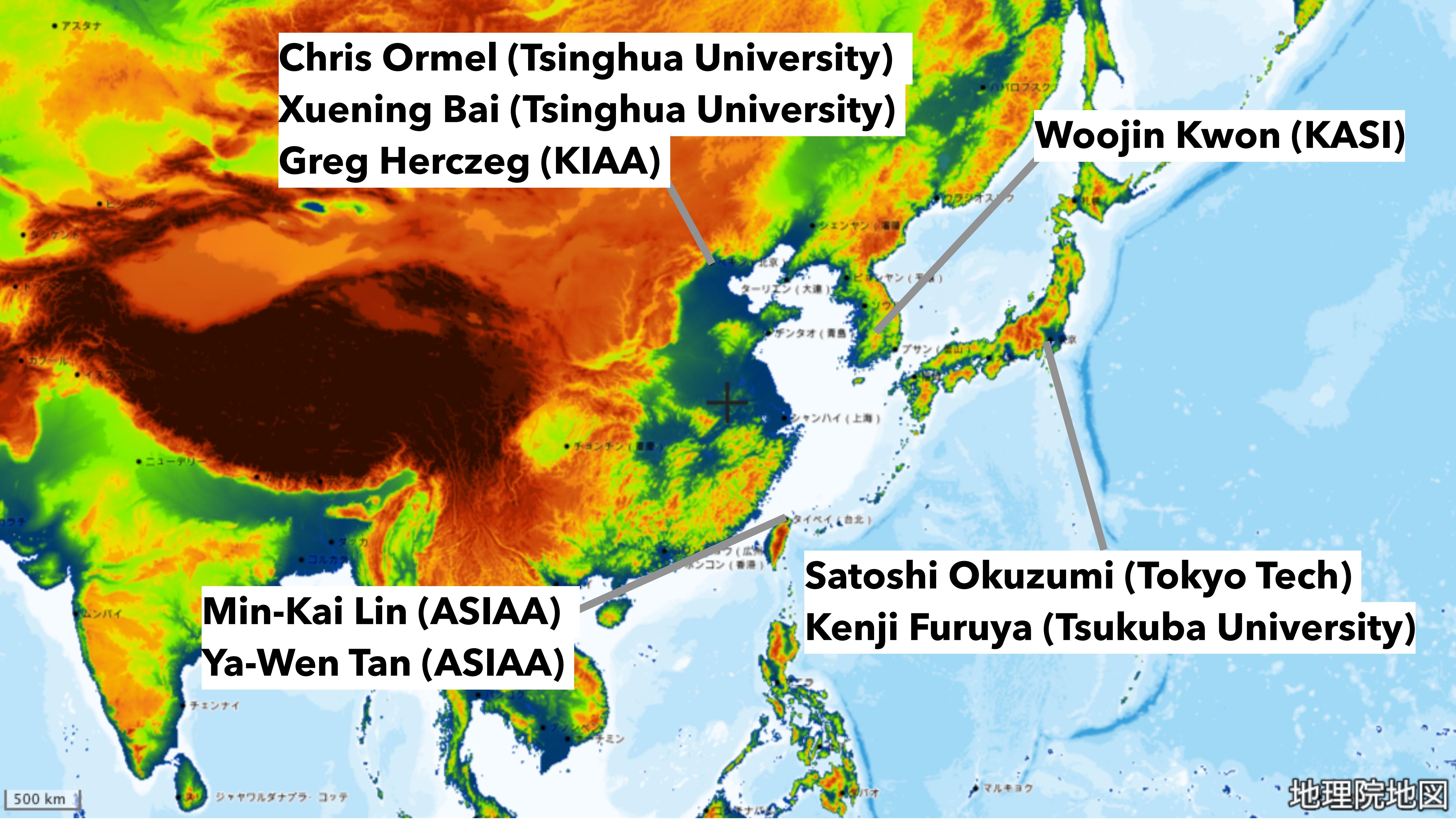
Motivation (non-scientific part)

- Be friends between geographically close institutes.



500 km

地理院地図



Chris Ormel (Tsinghua University)
Xuening Bai (Tsinghua University)
Greg Herczeg (KIAA)

Woojin Kwon (KASI)

Min-Kai Lin (ASIAA)
Ya-Wen Tan (ASIAA)

Satoshi Okuzumi (Tokyo Tech)
Kenji Furuya (Tsukuba University)

Division of Science, NAOJ

- **The sponsor** of this workshop
- 14 faculty staffs, 14 postdocs, and 14 students.
- The organizers cover a wide range of topics in planet formation
 - Akimasa Kataoka, Takahiro Ueda, Misako Tatsuma (**dust theory**)
 - Sanemichi Takahashi (**disk theory**)
 - Hideko Nomura (**chemistry**)
 - Takashi Tsukagoshi (**ALMA observations**)
 - Shinsuke Takasao (**MHD simulations**)



Dear young postdocs and students

- **Make science friends**

- It may influence your career.

- **Cover wide scientific fields**

- Your supervisor must be an expert of specific topic, but not covering all science

(Dear senior people: **talk to new people**)

Language

- **We are here to discuss science.**
- Not to express your fluency in English

- For native English speakers**

- Use simple vocabulary. Make some pauses.

- For European-language speakers**

- Remember that Asian language is more distant to English.

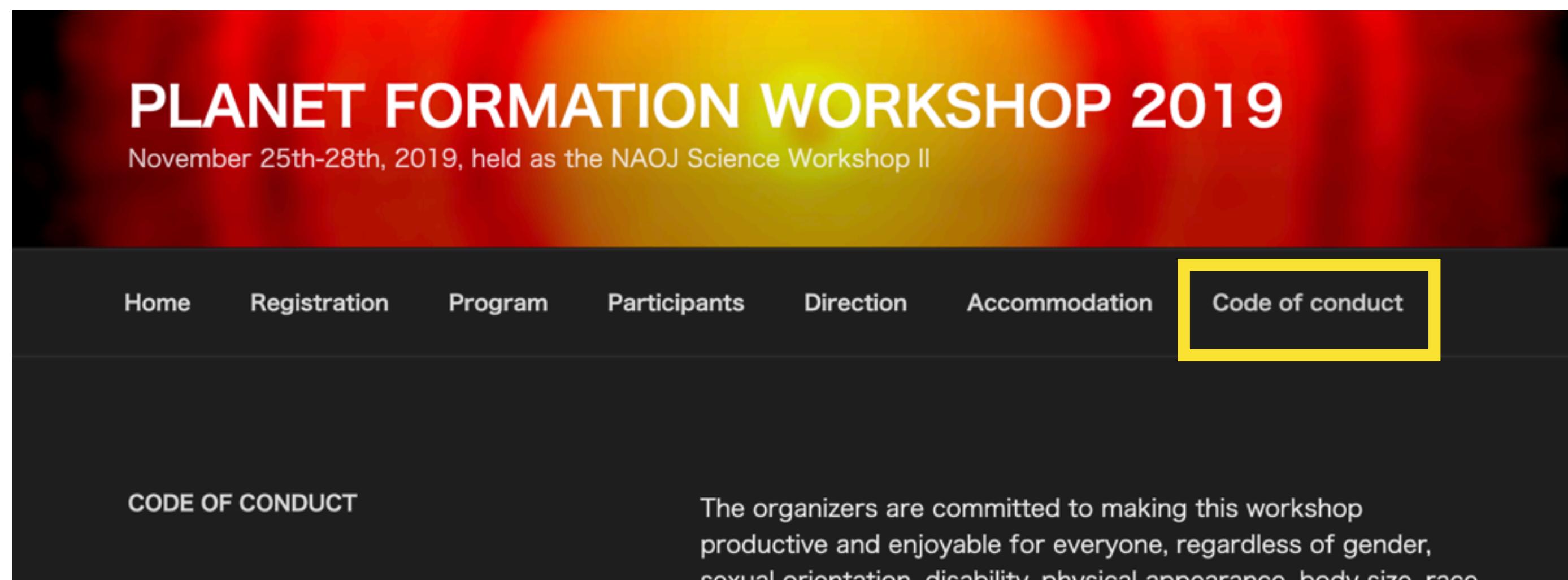
- For Asian language speakers**

- Be confident.

Code of conduct

- Take a look at the webpage:

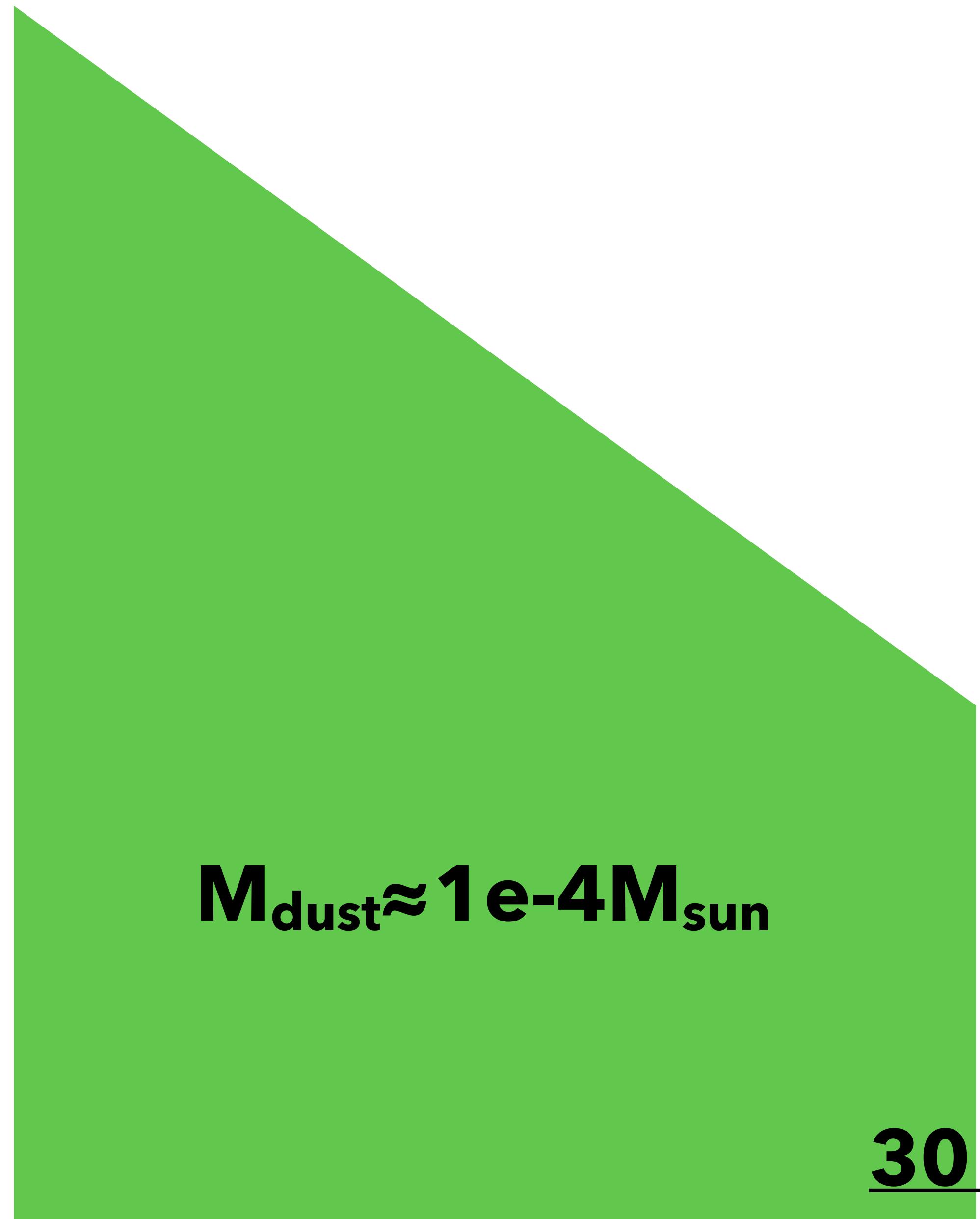
The organizers are committed to making this workshop productive and enjoyable for everyone, regardless of gender, sexual orientation, disability, physical appearance, body size, race, nationality or religion. We will not tolerate harassment of participants in any form.



Motivation (scientific part)

What do we discuss?

Σ_{dust}

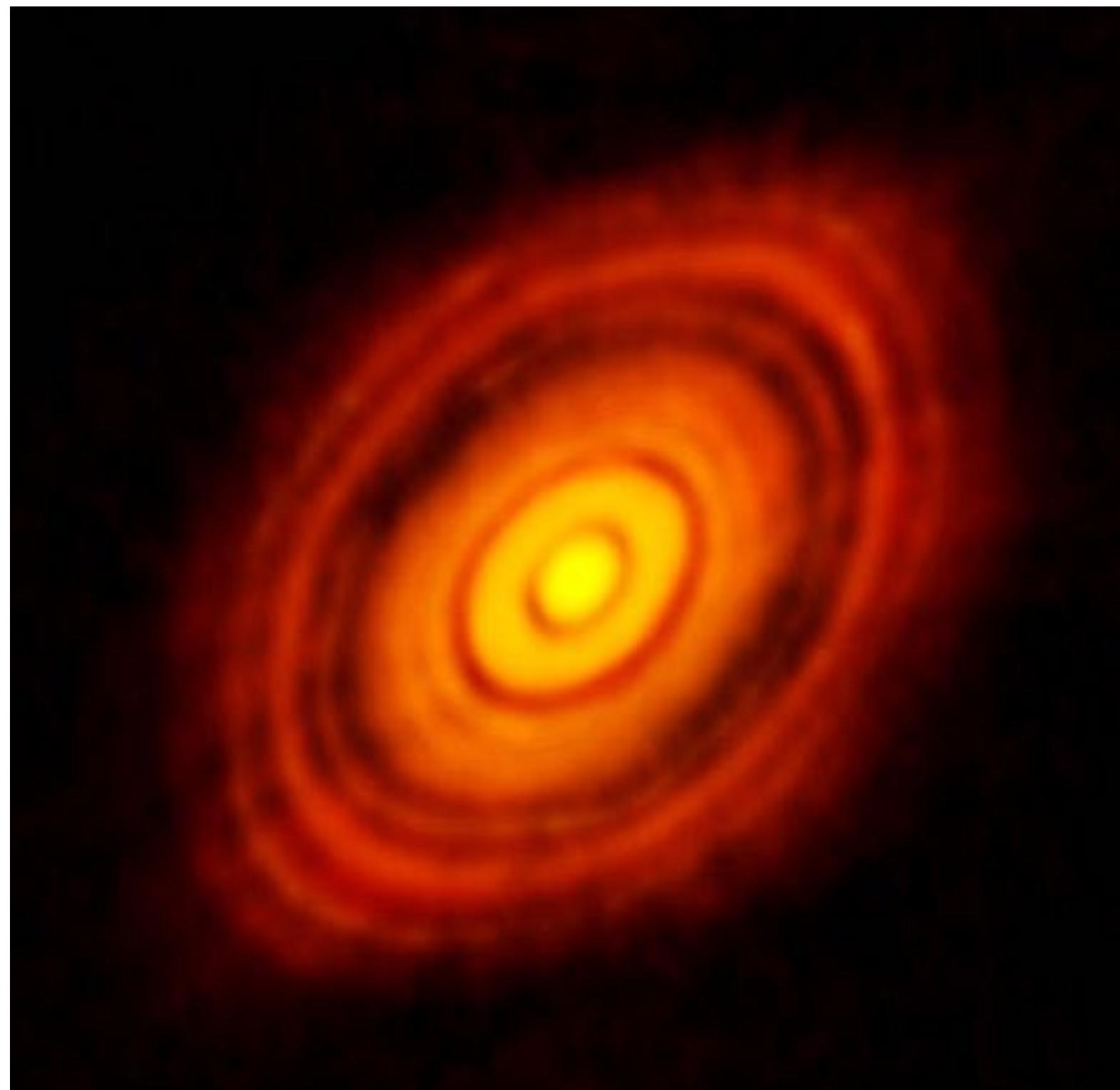


Minimum Mass Solar Nebula

- Hayashi 1981, Weidenschilling 1977
- Dust mass = solid mass of solar system



Recent theorists start from HL Tau...

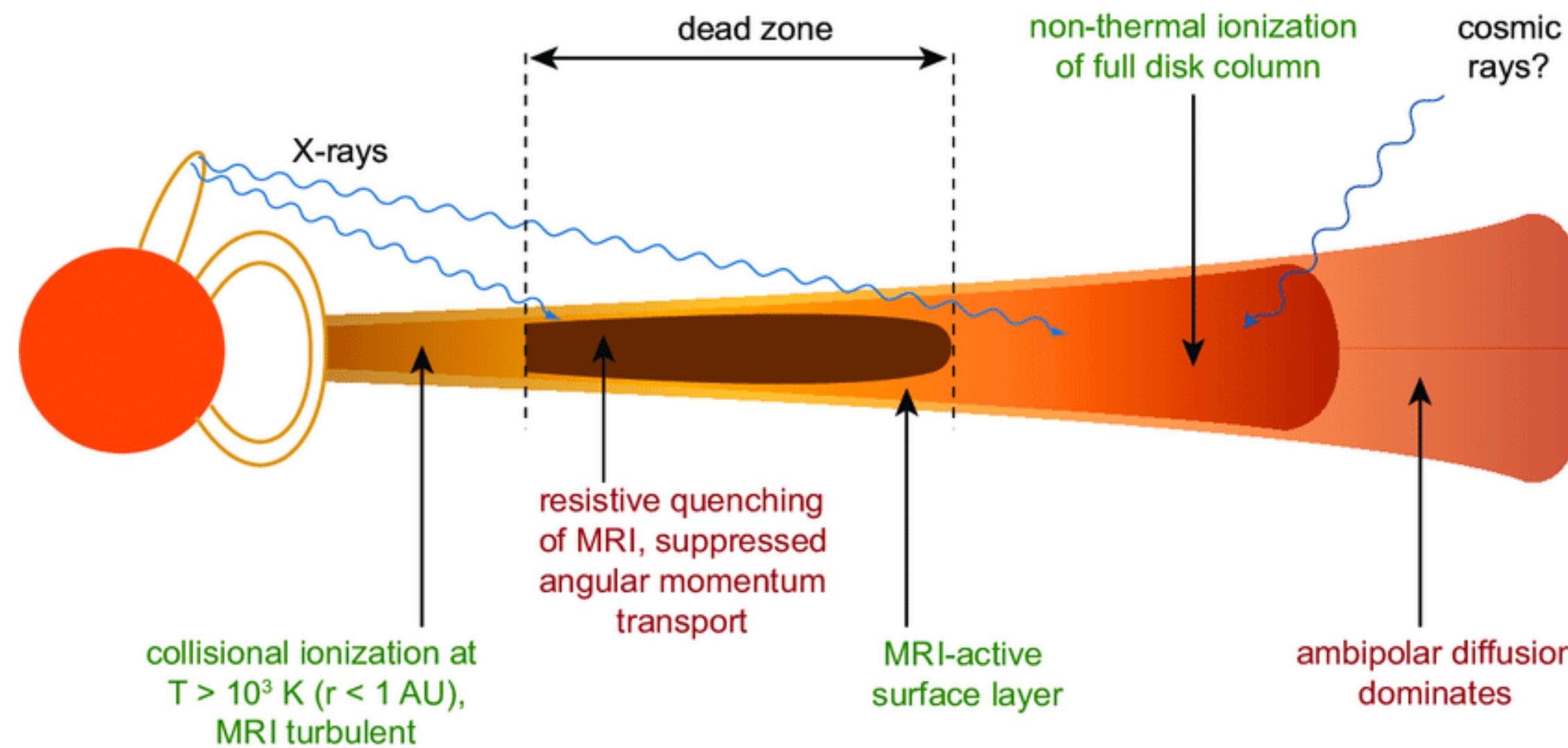


ALMA Partnership 2015

- **Can grain growth explain the HL Tau disk?**
- Is it consistent with experiments and dust simulations?

talk by Satoshi Okuzumi

Disk structure

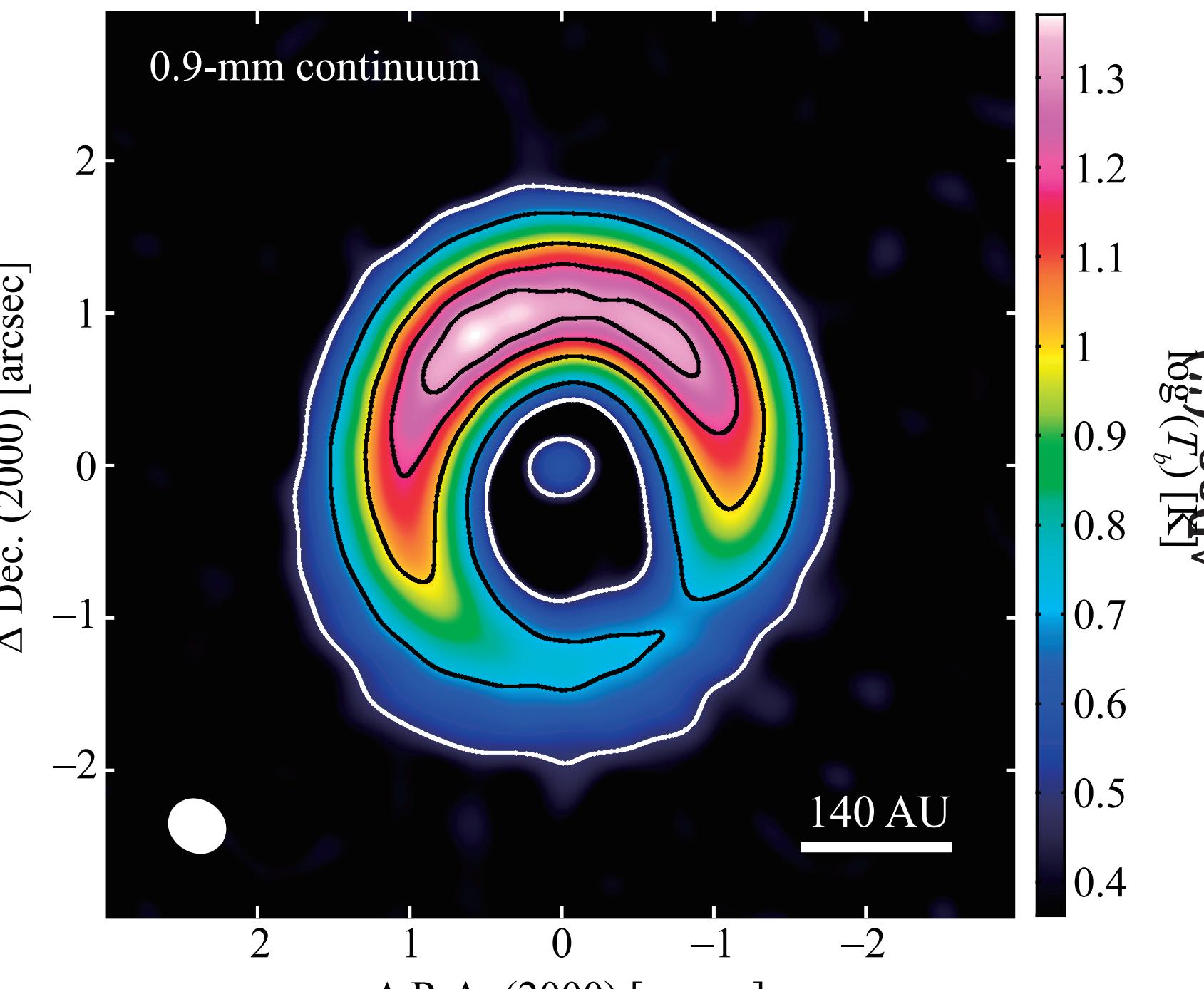


Armitage 2011

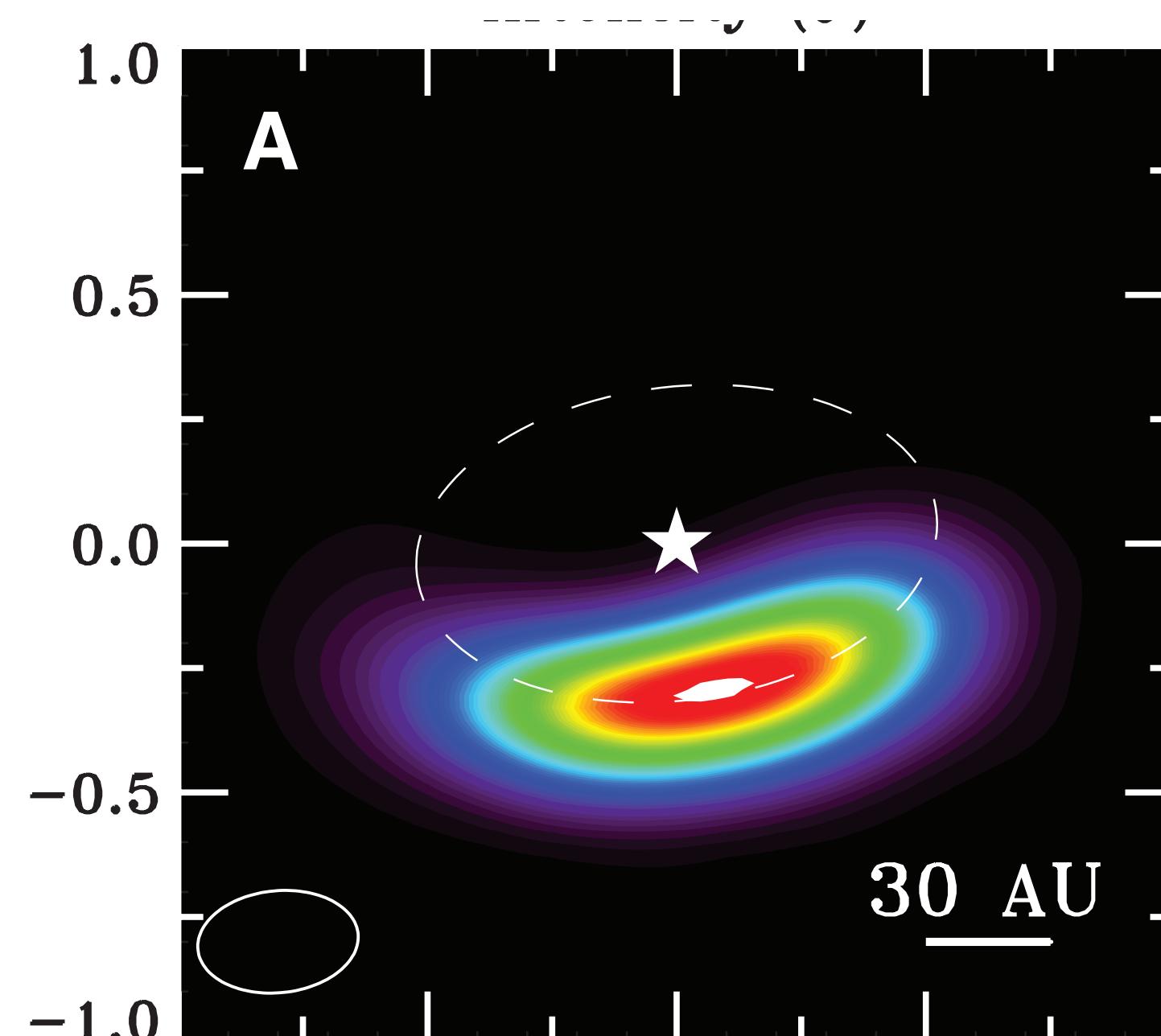
- Is the classical picture still at work?
- Any instabilities?

talk by Xueling Bai
talk by Min-Kai Lin

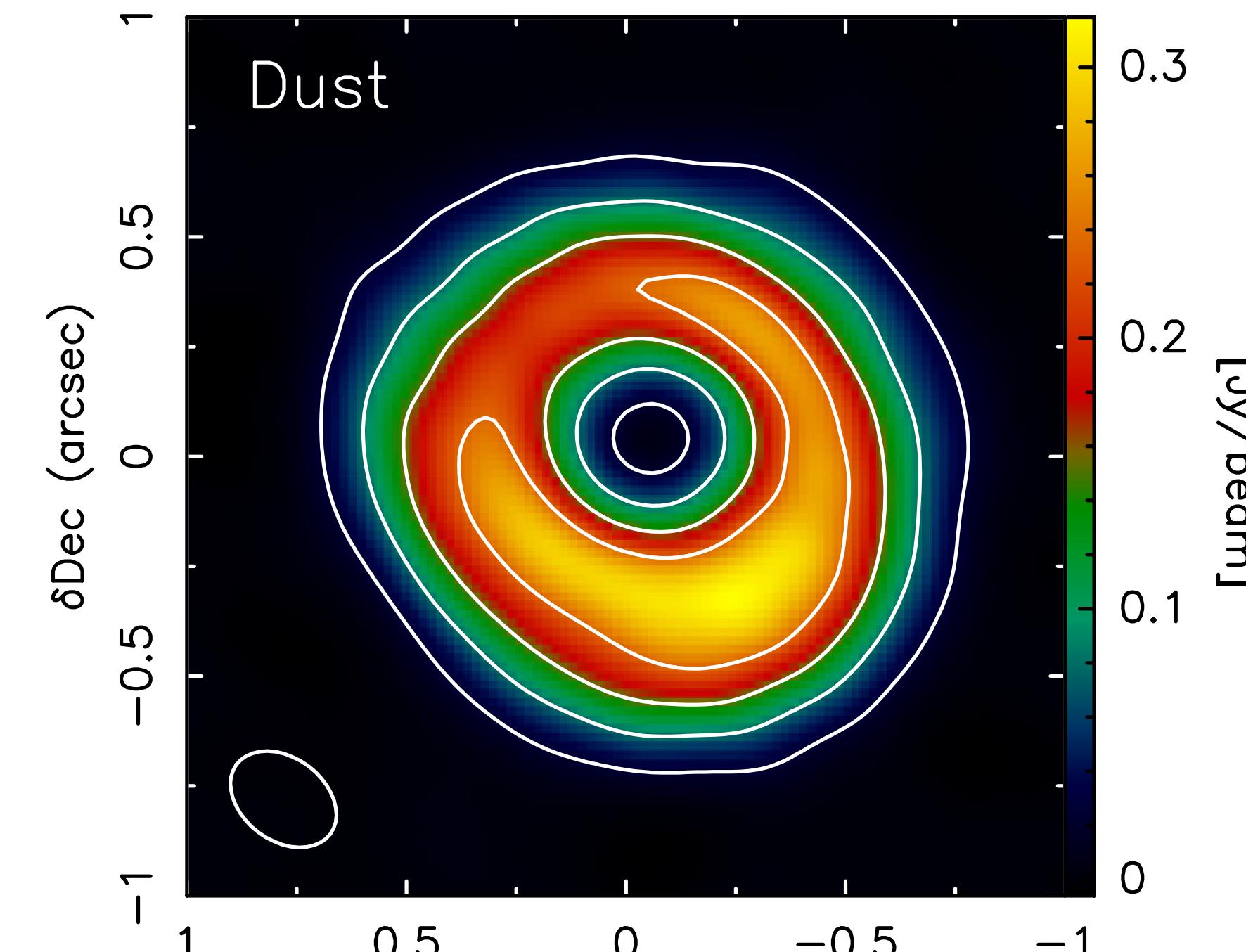
What have we learned with ALMA?



Fukagawa et al. 2013



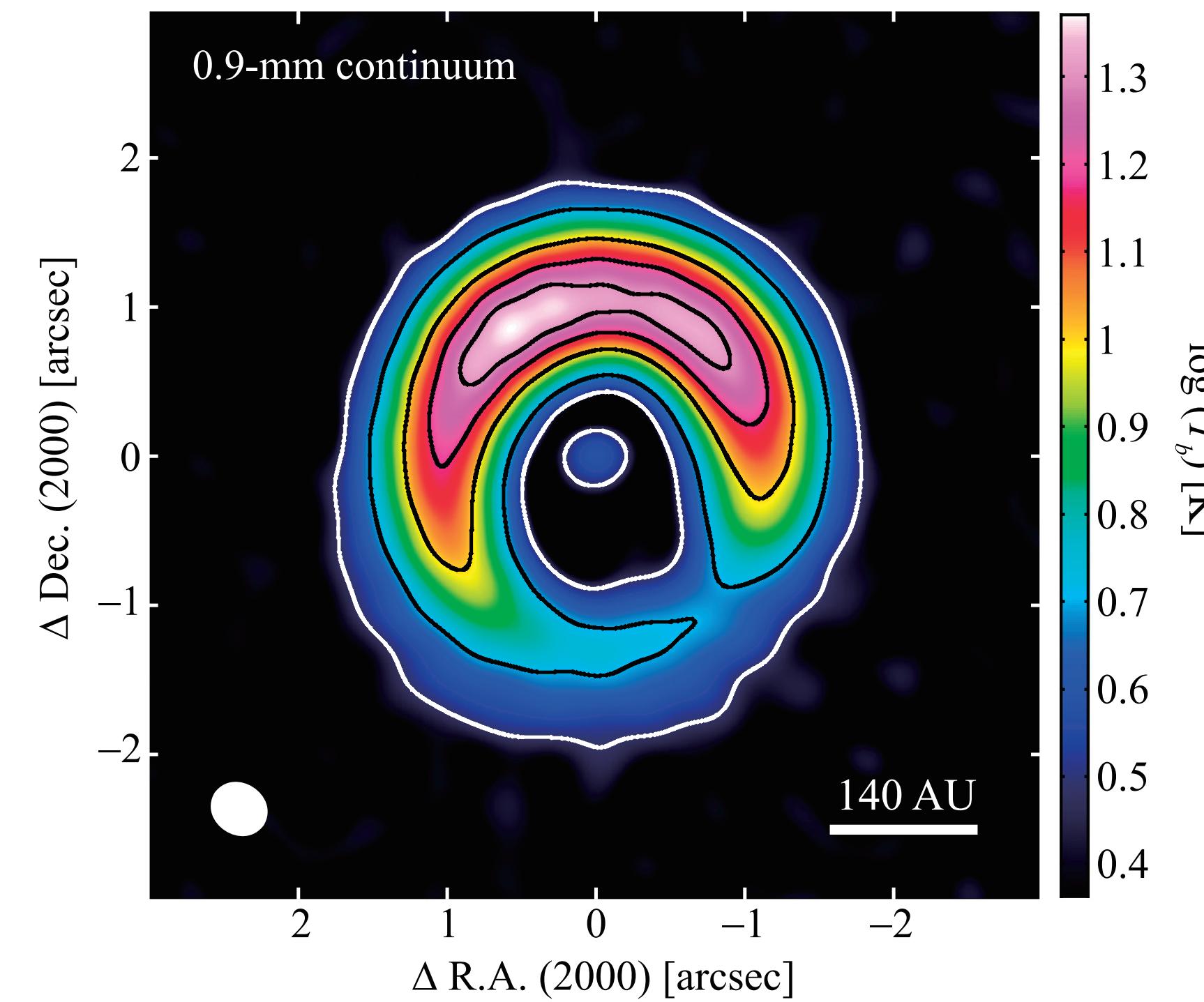
van der Marel et al. 2013



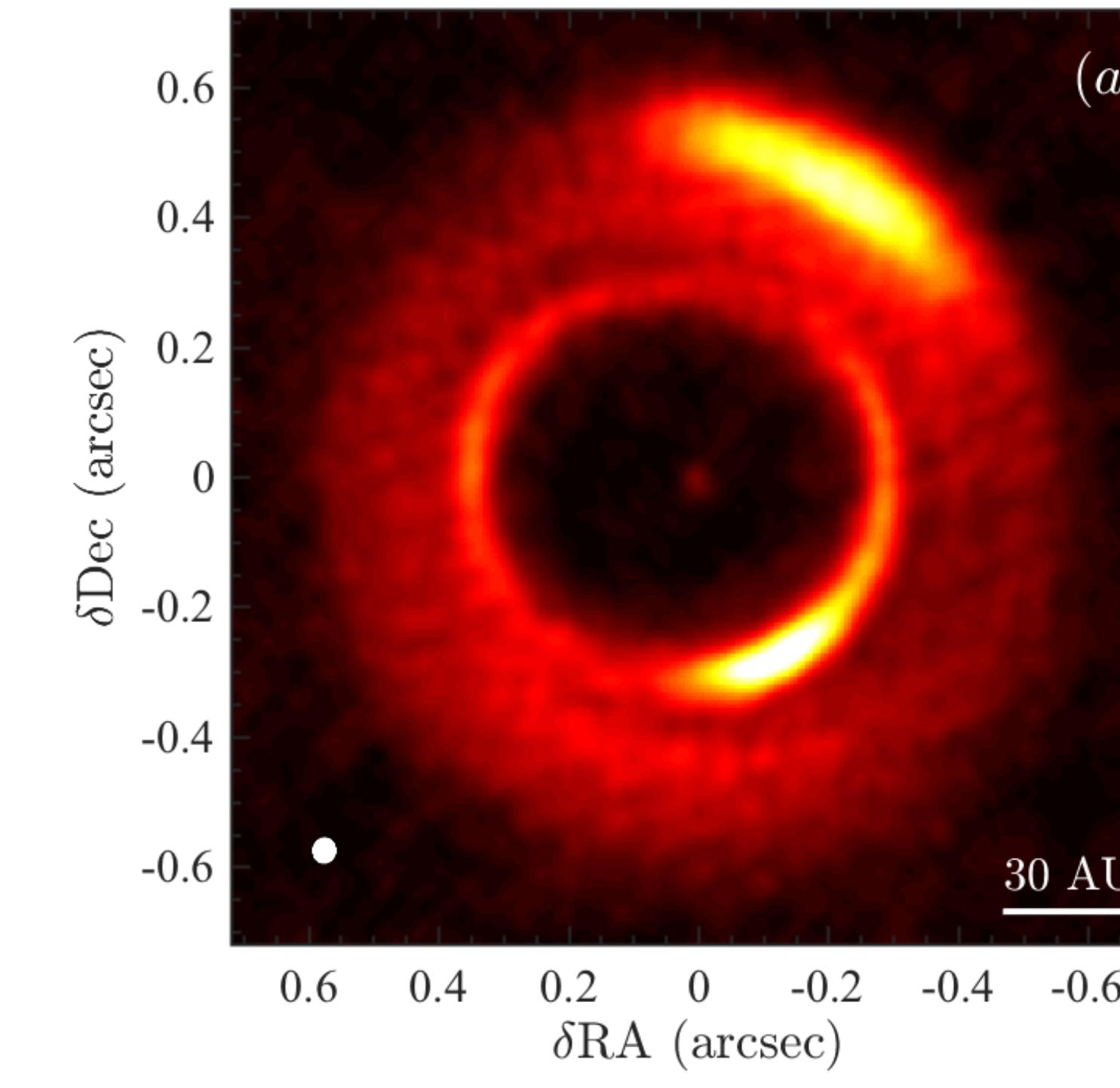
Perez et al. 2014

Transition disks are (often) lopsided.

What have we learned with ALMA?



Fukagawa et al. 2013

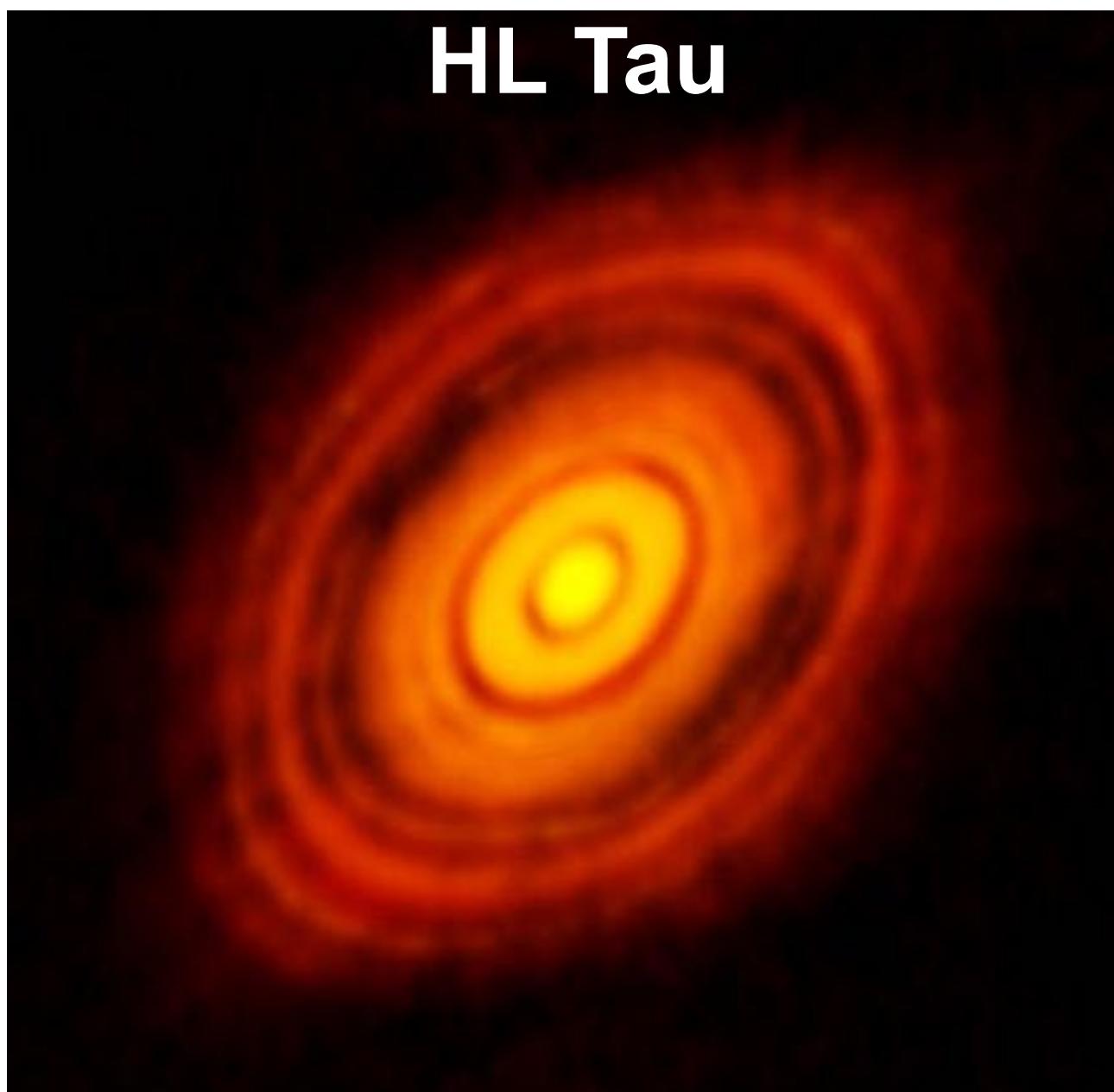


Dong et al. 2018

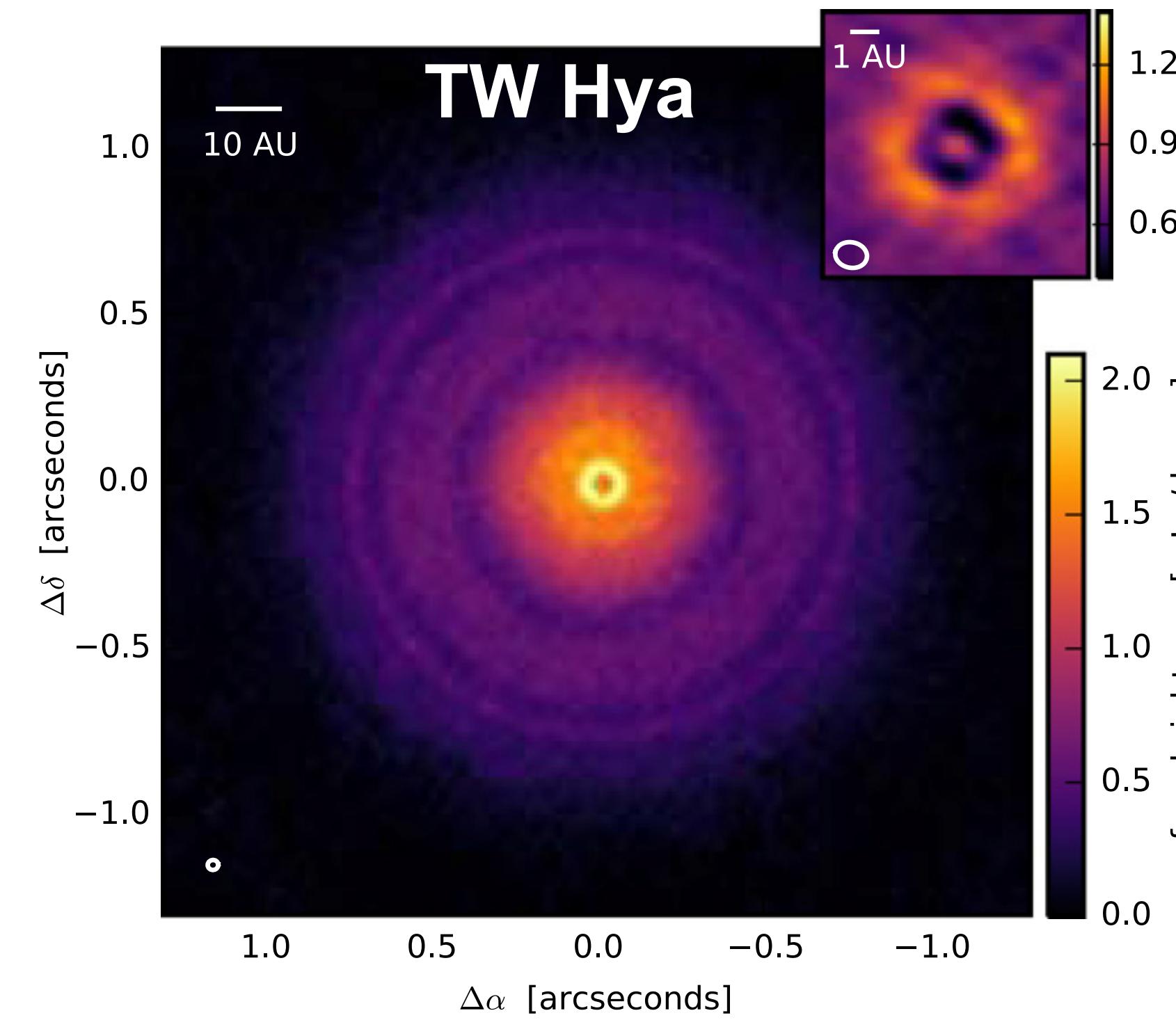
Lopsided, clumps, and complex asymmetries

talk by Ya-Wen Tang

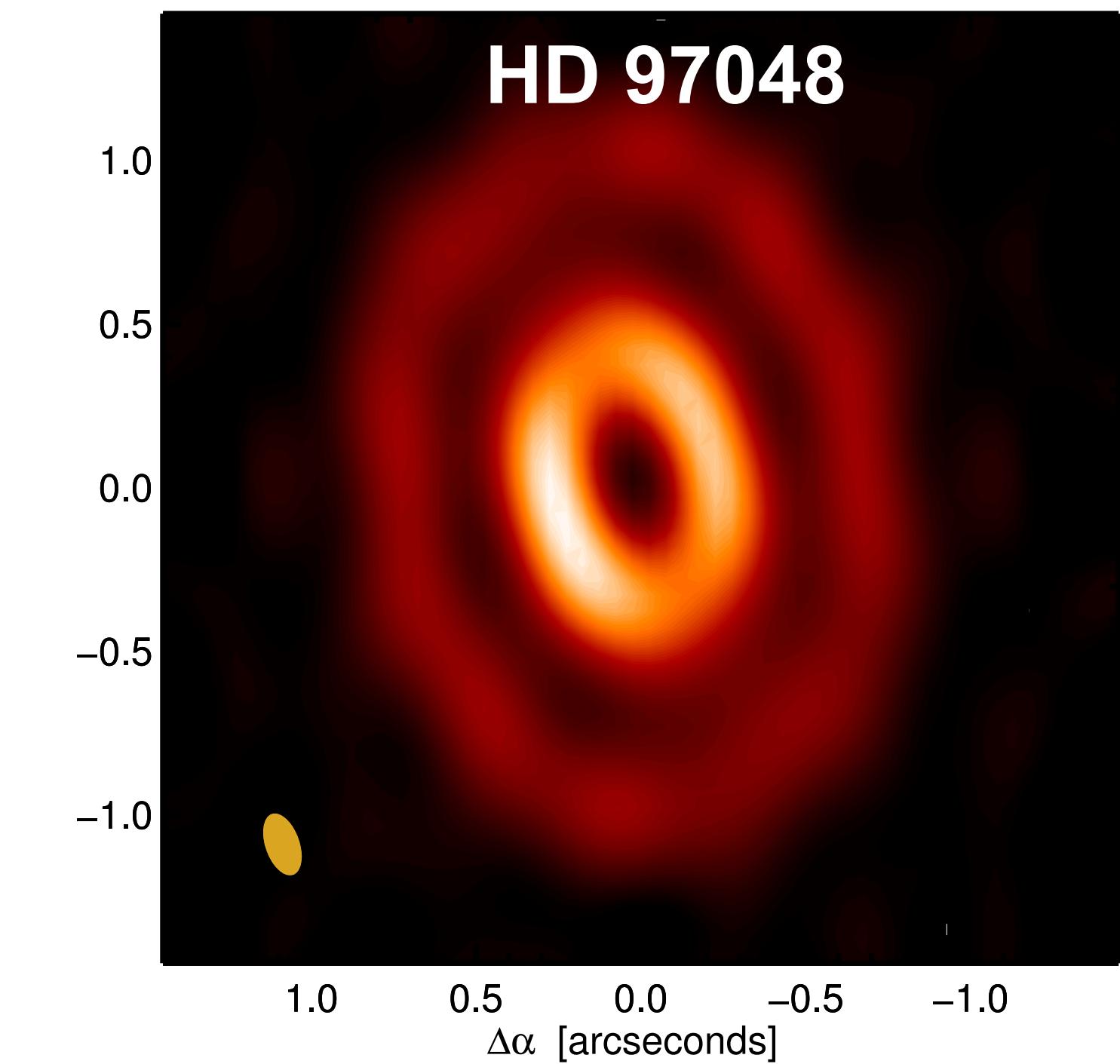
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ALMA Partnership 2015

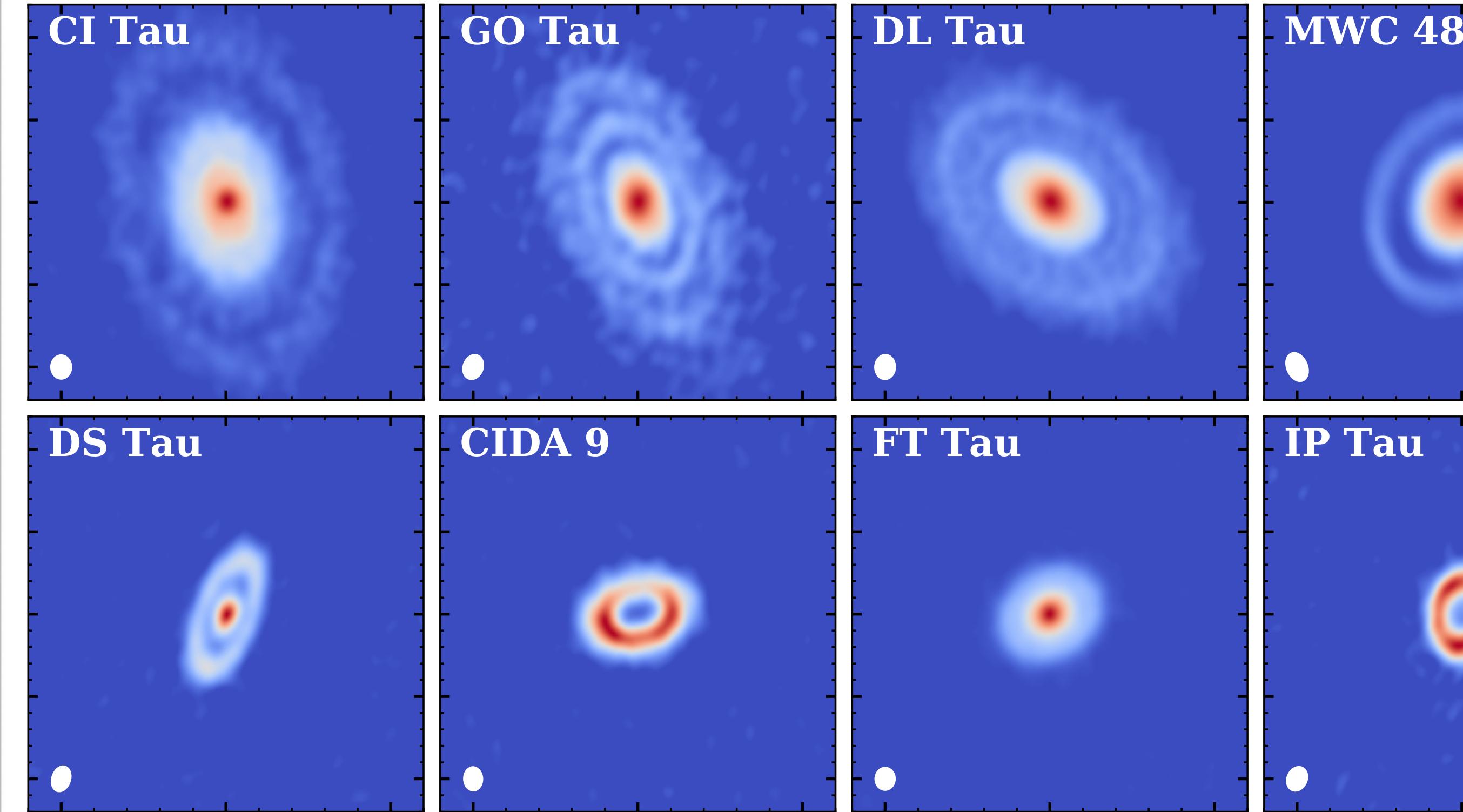
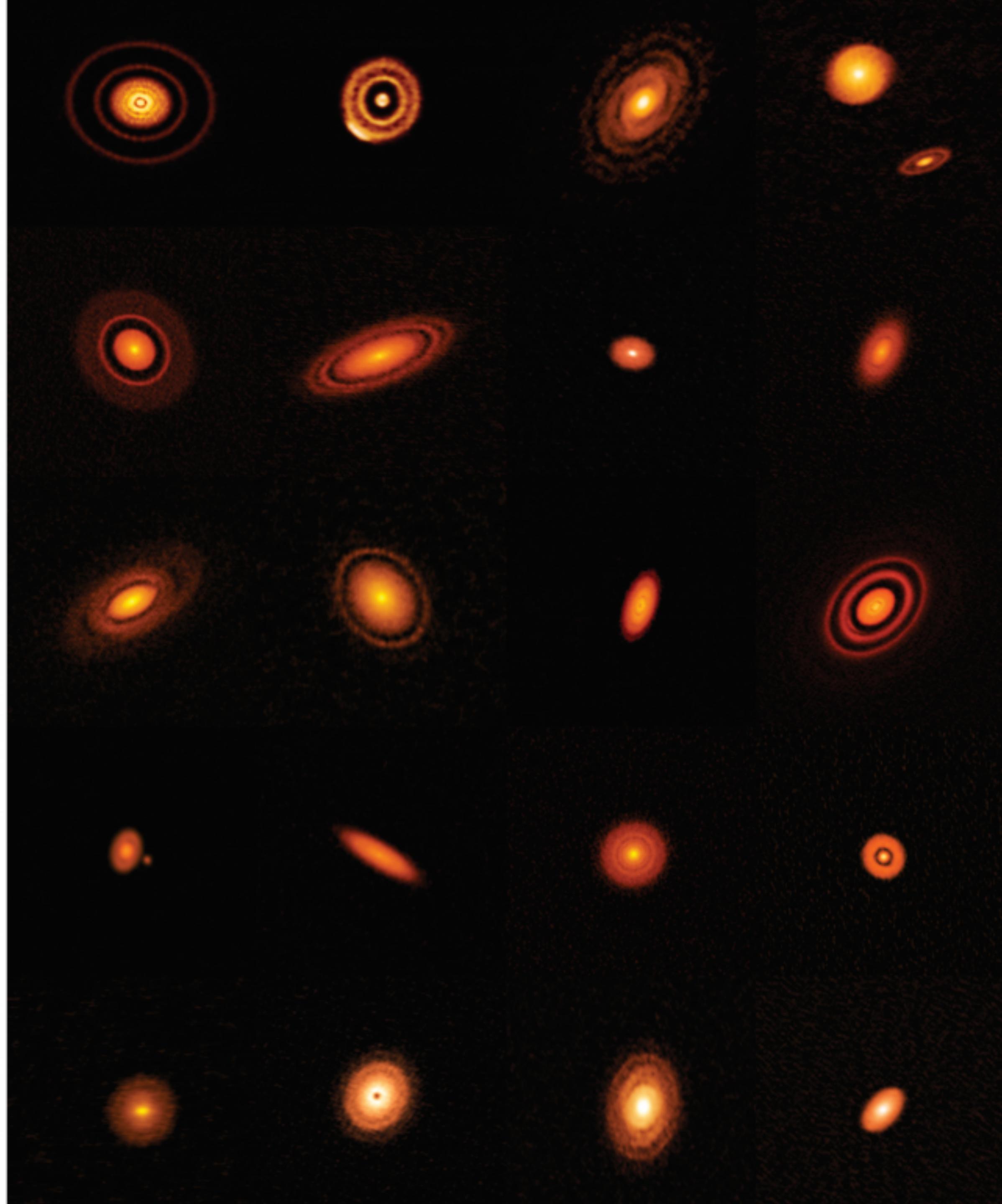


Andrews et al. 2016



van der Plas et al. 2016

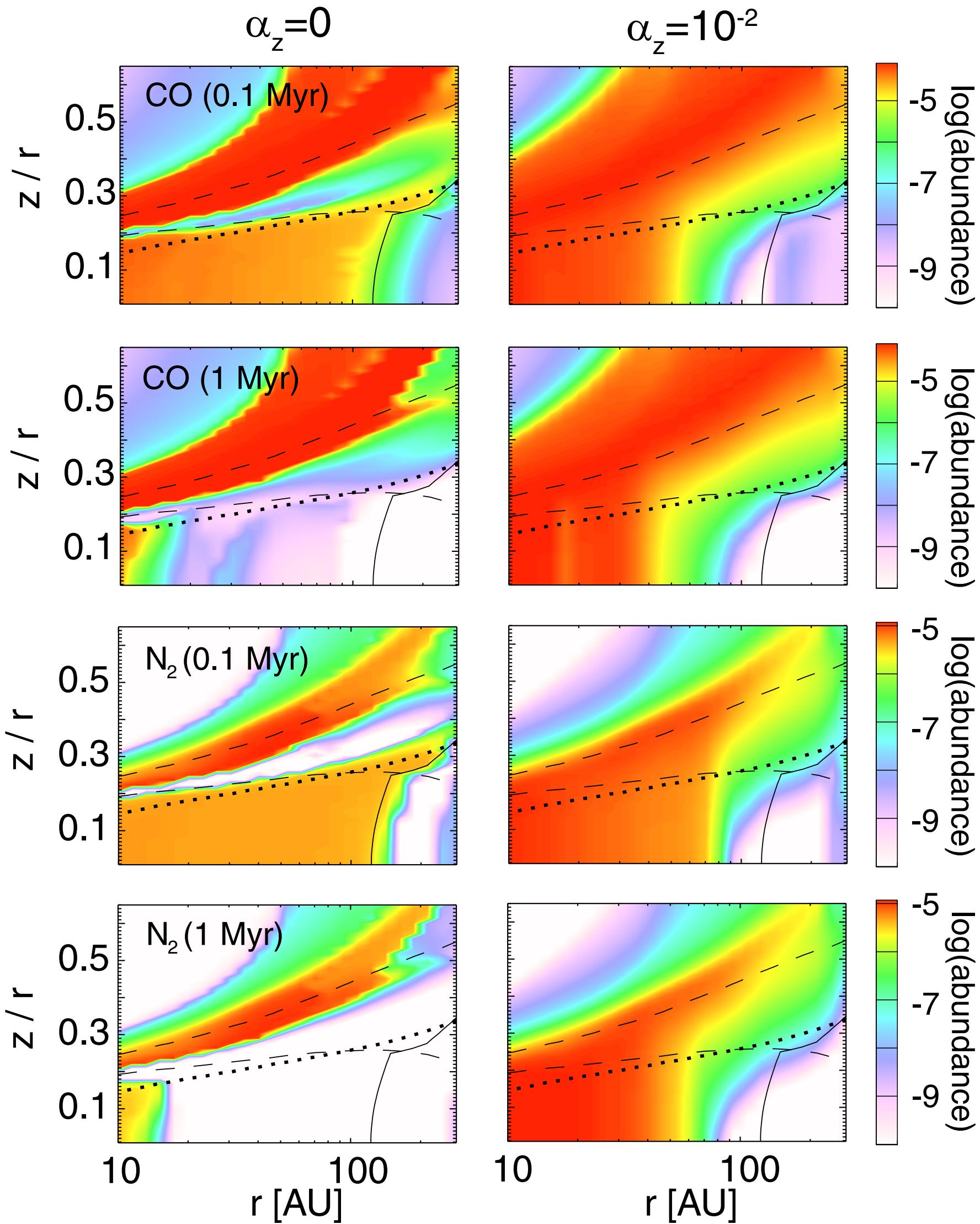
Rings, rings, rings...



Statistics - do all disks have rings?

talk by Greg Herczeg

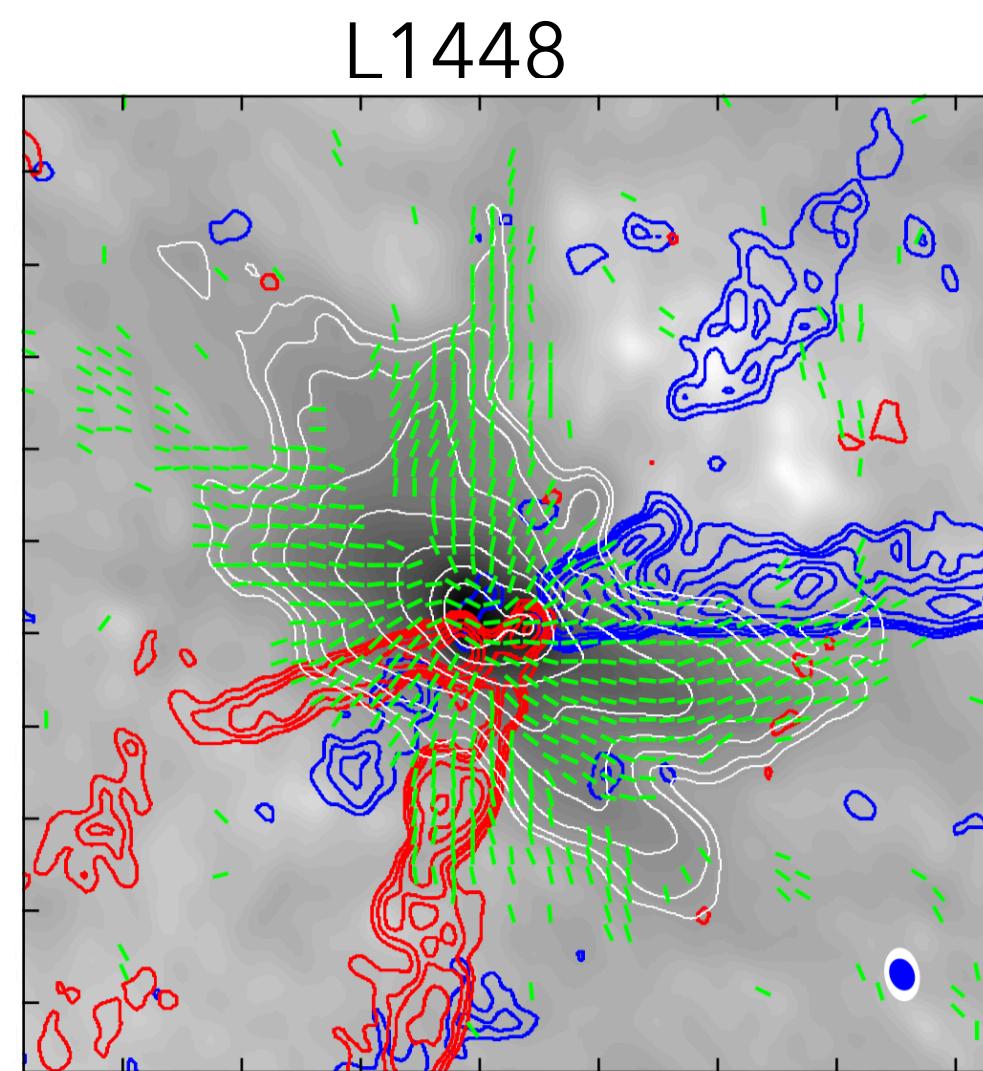
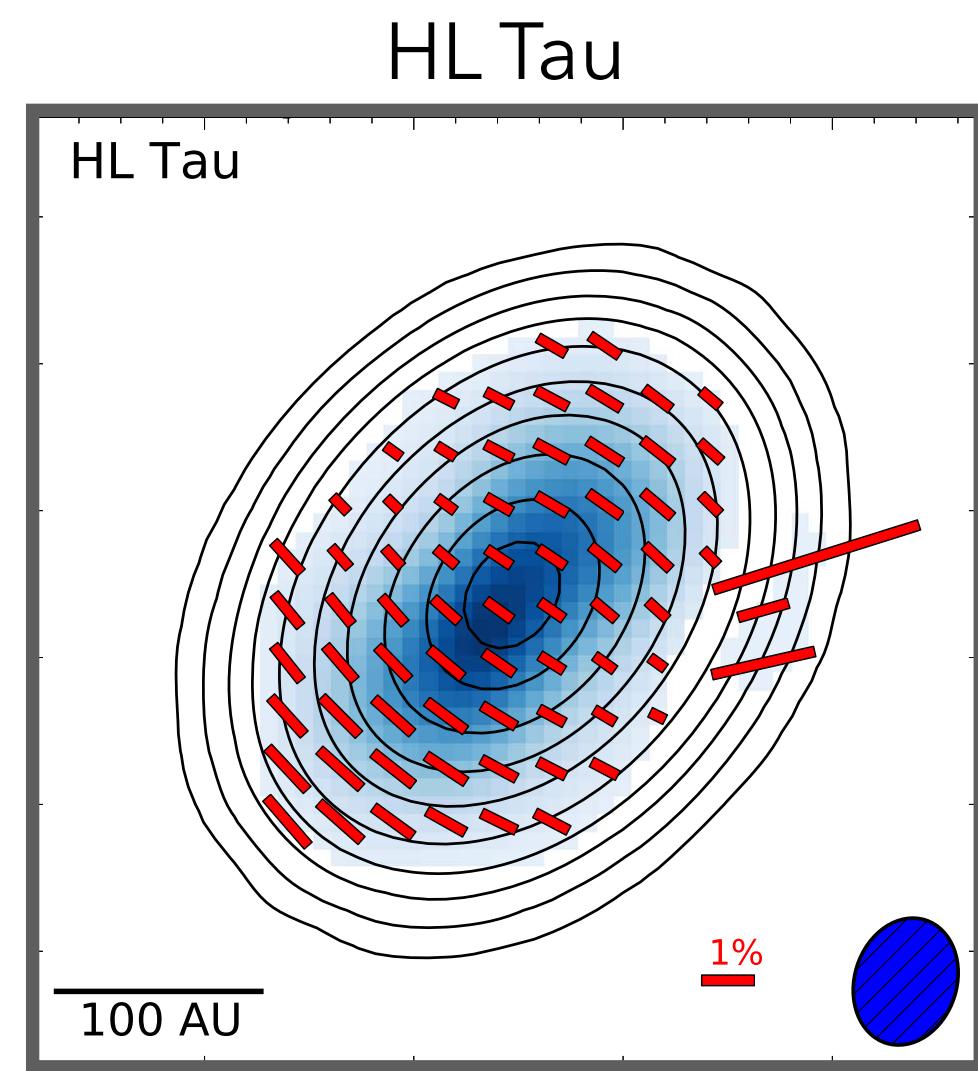
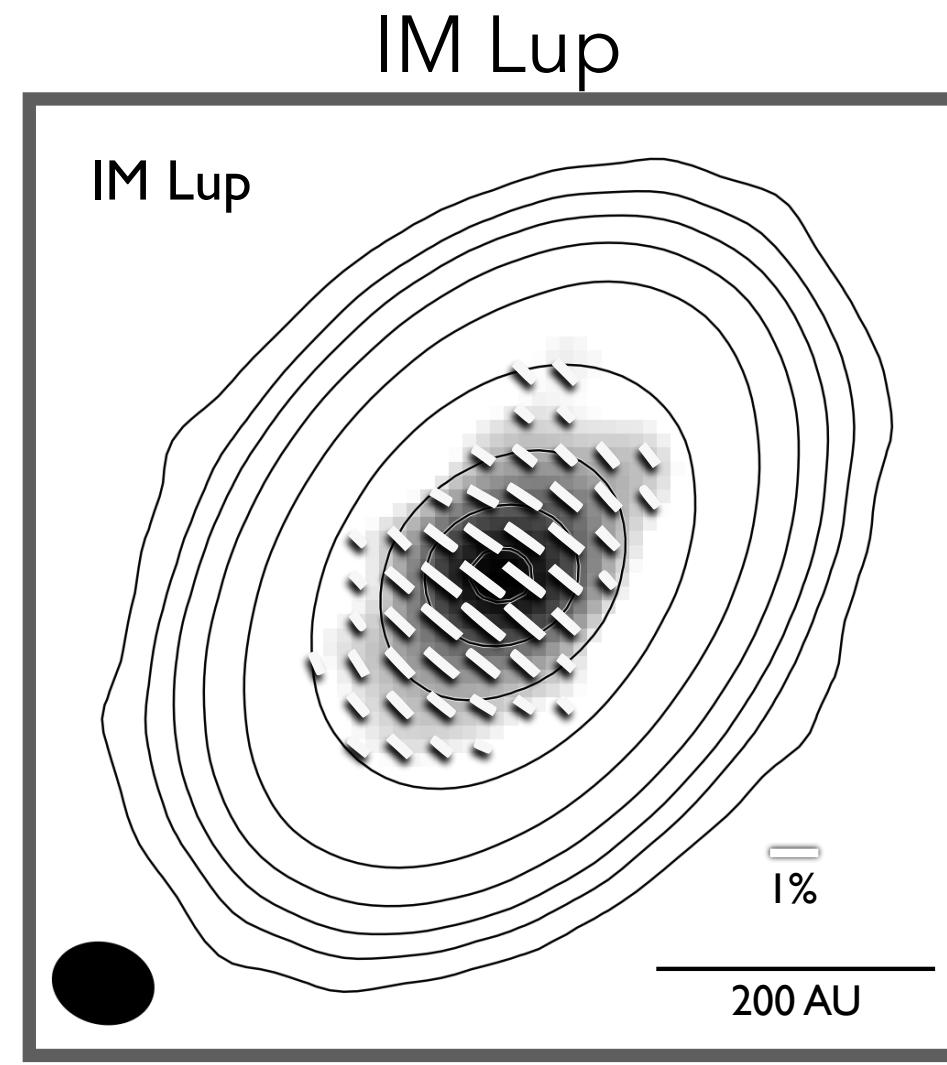
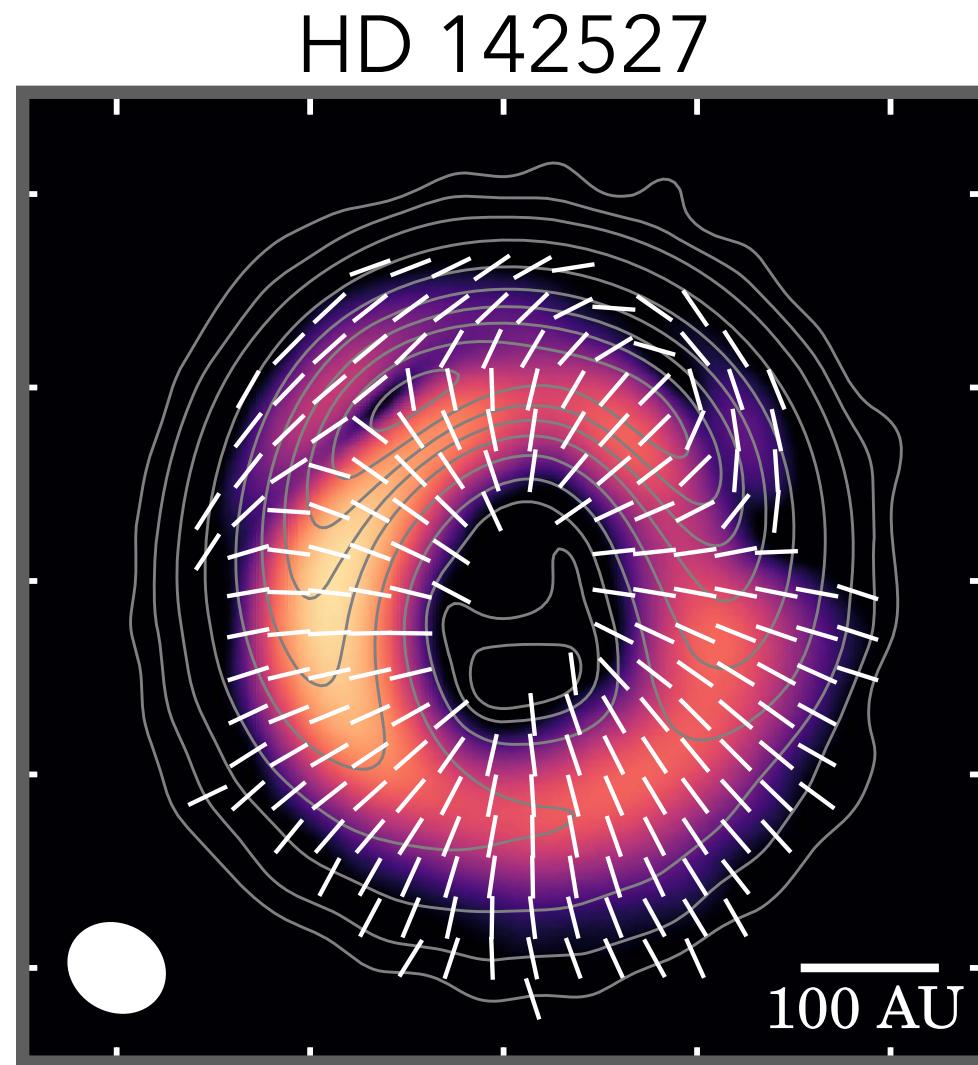
More tools to see disks: chemistry



- We observe emission lines.
We need chemistry to
understand them.

talk by Kenji Furuya

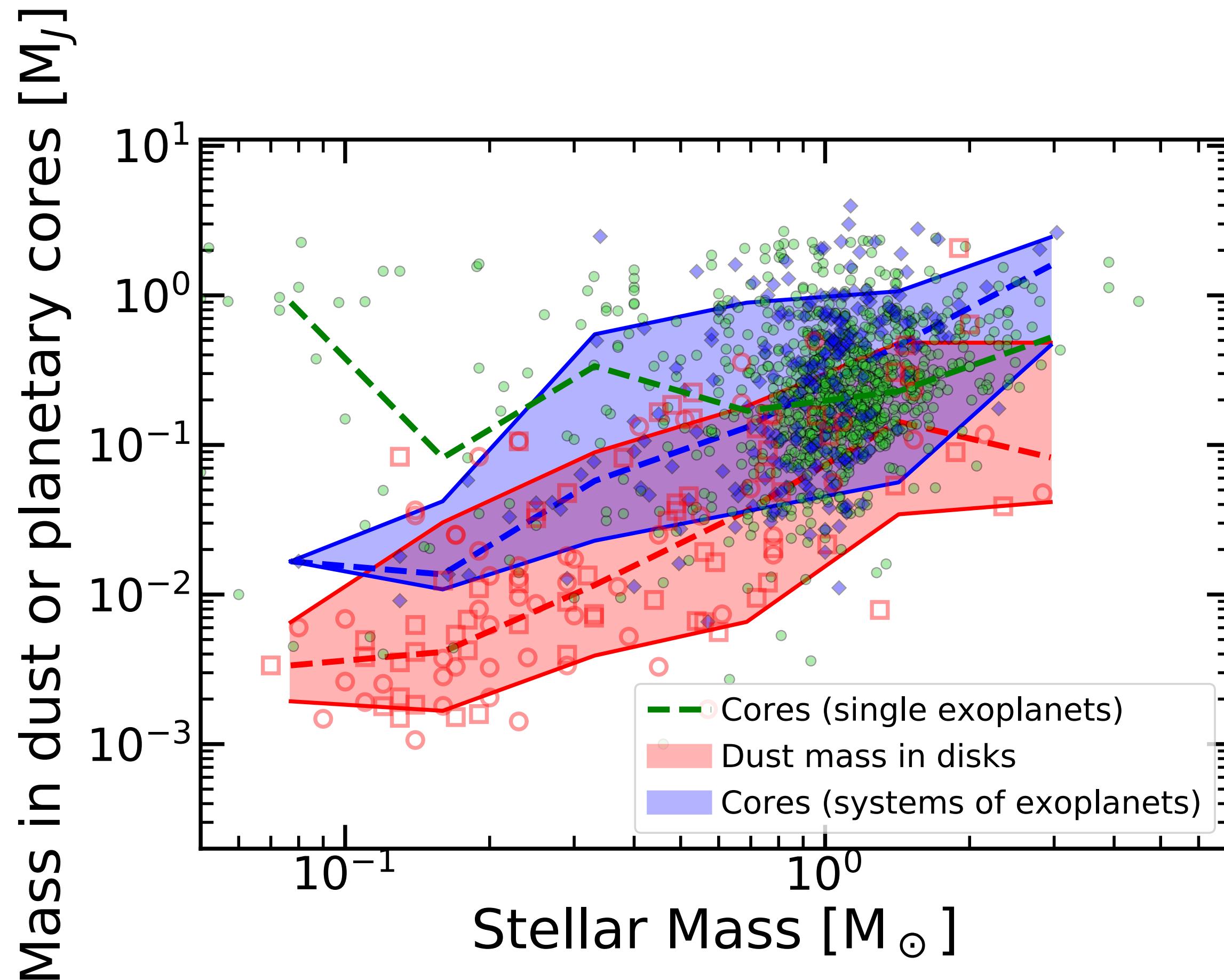
New tools to see disks, but...



- What are we observing
with polarization?

talk by Woojin Kwon

Connection to exoplanet studies



- Can we explain the
observed exoplanets?

talk by Chris Ormel

Enjoy the workshop

Dear speakers

Test the connection before the session starts.

The next session starts at 16:10

Check the email sent last night, which includes

- Quick survey form
- Instruction of upload & download of the presentation files
- Slight change of the schedule on the last day (Thursday)

Day 4 (Thursday)

11:50 - **12:50** Lunch

12:50 - 13:10 Odette Toloza From dust to dust: Remnants of planetary systems

13:10 - 13:30 Gianni Cataldi The surprisingly low carbon mass in the debris disk around HD 32297

13:30 - 14:00 Discussion led by Chris Ormel and Kenji Furuya

14:00 - 14:05 Workshop summary

- **Return the entrance card before leaving**
- Posters are also welcome to be uploaded.
- Speakers: test the connection before the session starts.
- Microphone runners: charge the microphone

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14:00 - 14:05 Workshop summary

- **Return the entrance card before leaving**
- **Take out posters before leaving**
- Speakers: test the connection before the session starts.

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Planet Formation Workshop

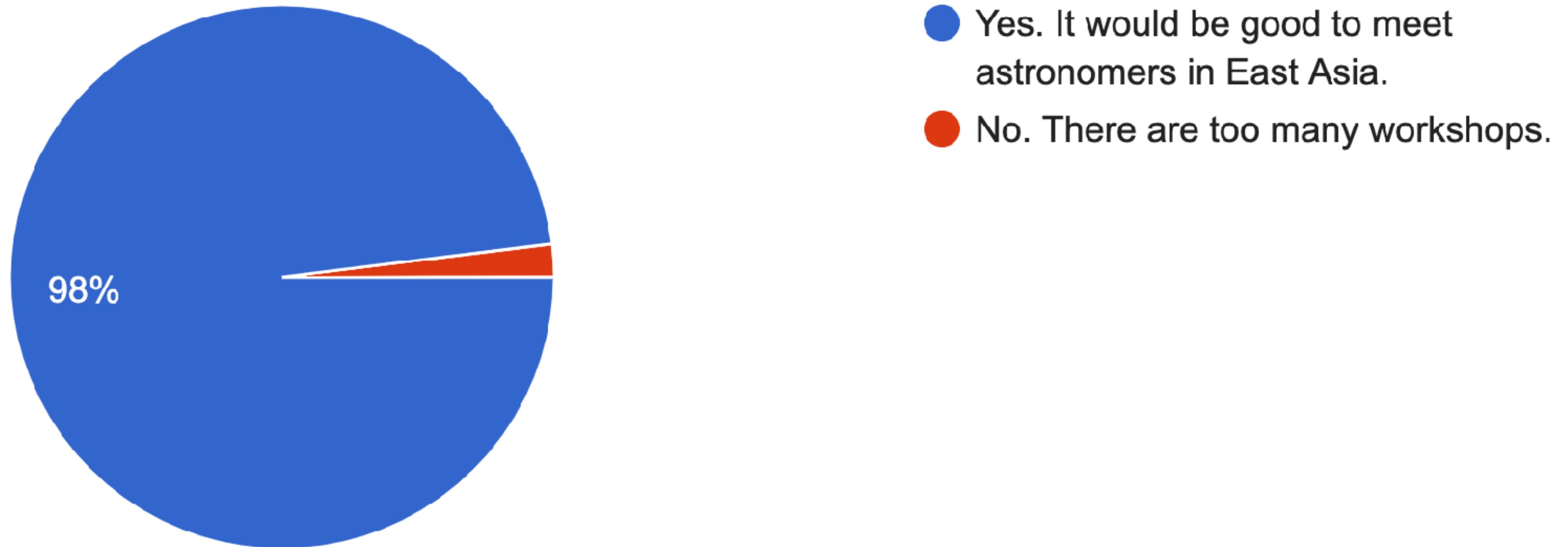
**- We also appreciate the participation
from Europe and America.**

Survey results

Keep in mind the strong bias.

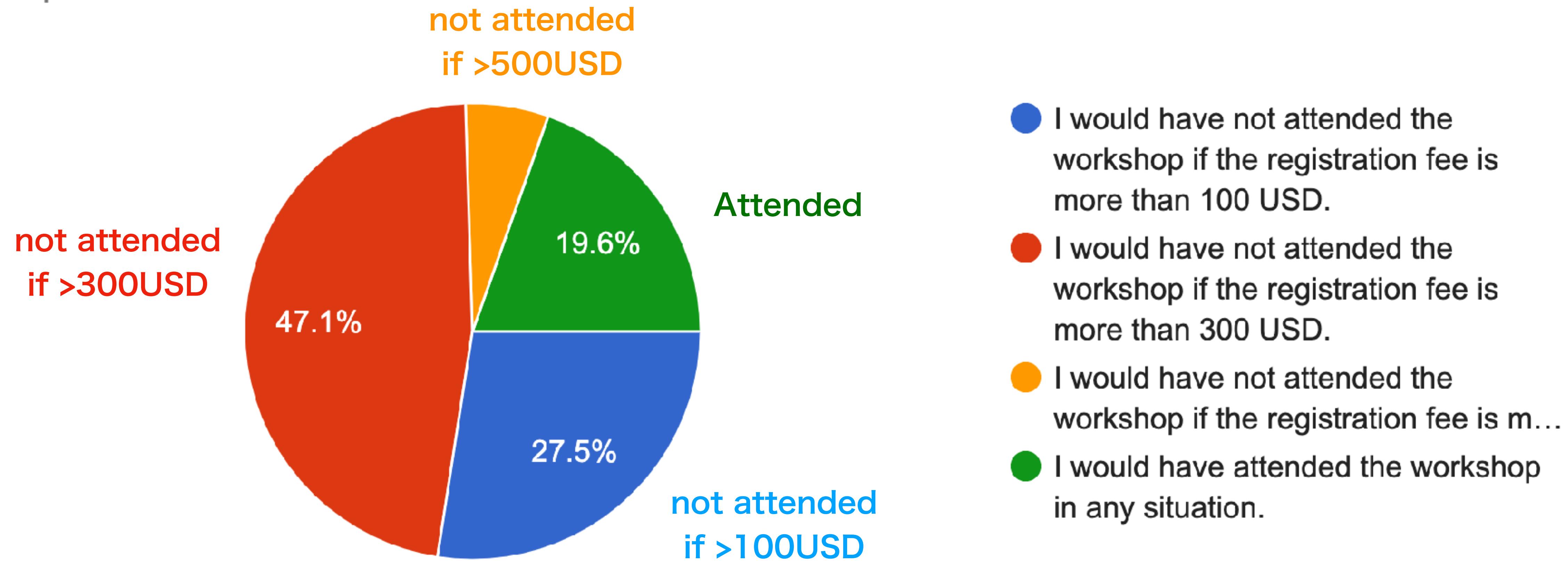
Should we (or some group) keep having this type of regional but international workshop?

51 responses



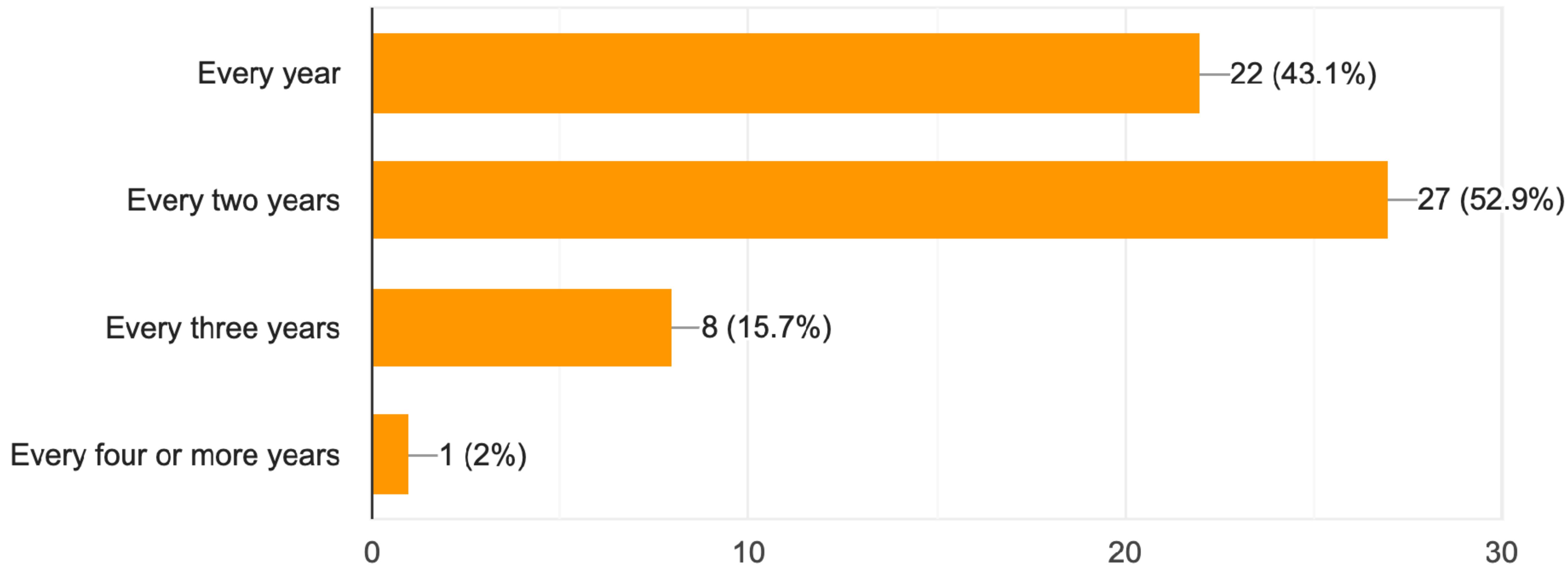
We did not take registration fee for this workshop. If we took the registration fee, did you hesitate to participate in?

51 responses



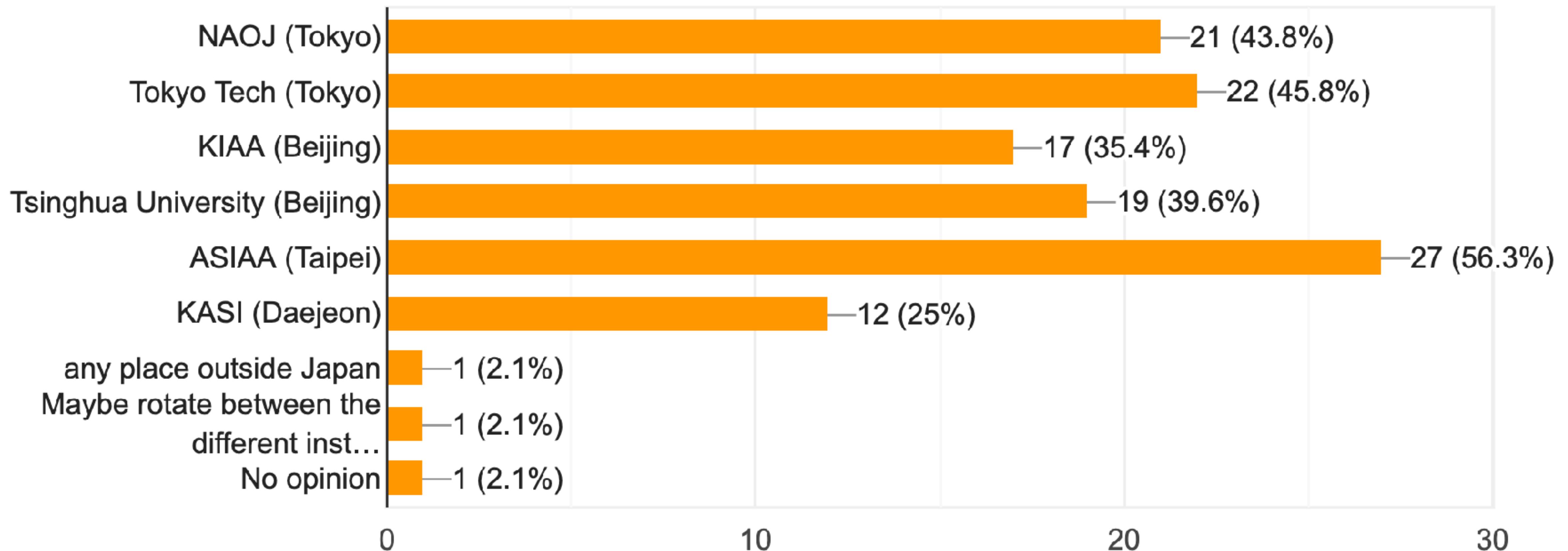
If yes, how often should we have this type of workshops?

51 responses



If we have the next workshop among the institutes below, which do you think is the best?

48 responses



Statistically insignificant and strong sample bias...

Any feedback to the organizers. (I picked up some comments)

14 responses

Collaboration with East Asia used to be a lot more difficult than in the rest of the world. It might be a good initiative if some senior invited speakers or discussion leaders can help foster certain collaboration.

It would had been nice to also **include planetary science or solar system community** that works on chondritic material, gas giants and moons.

Very friendly atmosphere! A detail: **the poster area is a little too crowded**, making it difficult to read the posters without blocking the view of other people. Thanks for organising a nice workshop!

One of the most valuable thing of this workshop is **fee-free**. Lunch, coffee breaks projection of the presentations and audio are beyond the expectations for a workshop which I did not pay registration fee. Information (broadcasted during the conference and the website) is very clear and timings are very well-organised.

Any feedback to the organizers. (I picked up some comments)

14 responses

With **PPVII coming up**, wait until late 2021 or 2022? Unclear whether Beijing (PKU, THU) would want to host.

Having longer but **more focused group discussions**? Some of discussions in the discussion session are very interesting. It may be great to make it even more in-depth.

To me this style of "low-budget" workshops, **resembles the annual (sometime bi-annual) planet formation workshops in Germany**. I am a fan of this approach. We should indeed try to start a tradition and rotate this meeting throughout Asia. The SOC/LOC at NAOJ did a great job this year, which may be hard to emulate though...

Have a safe trip back

Thank you.