



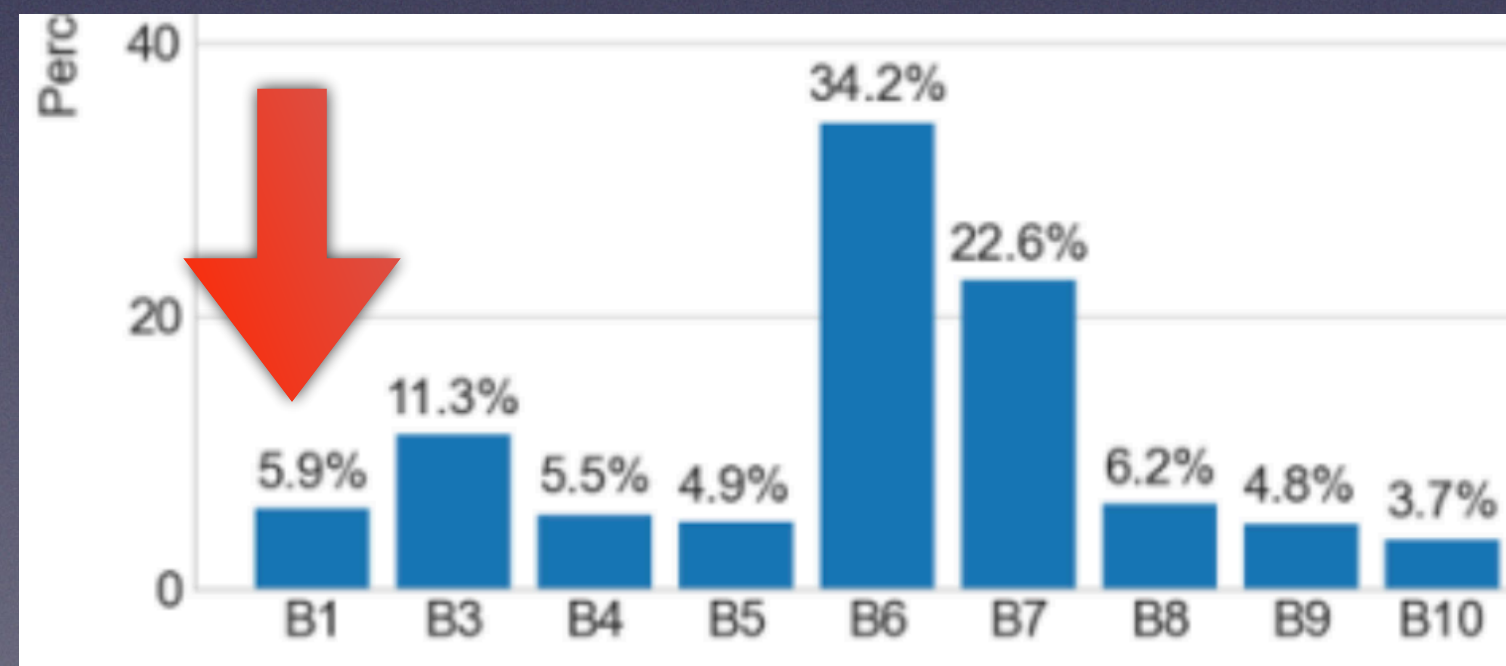
Update from ALMA-Taiwan

Tien-Hao Hsieh
& Taiwan ALMA/ARC team

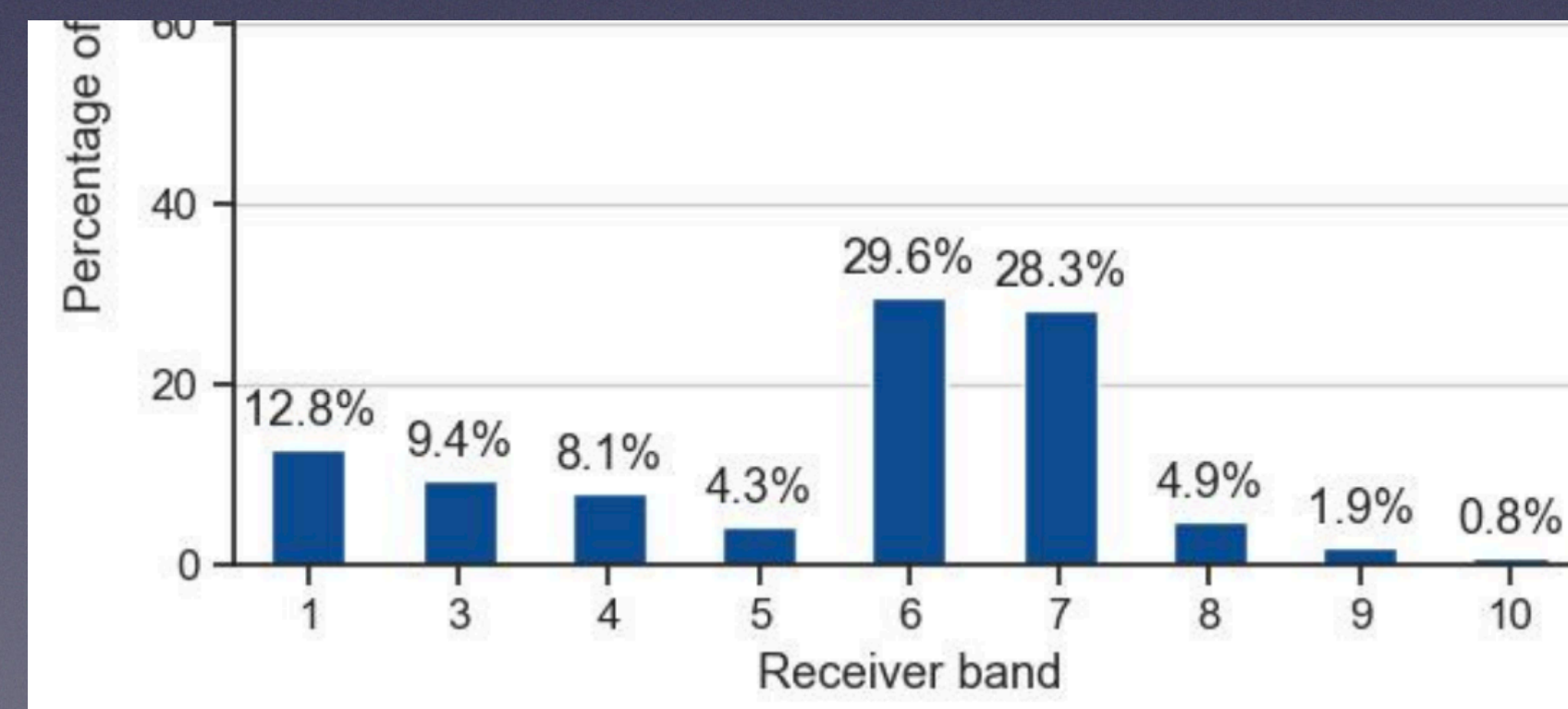
Recent and ongoing projects from Taiwan

- Band 1
 - ASIAA (lead institute), NAOJ, NRAO, University of Chile, HIA
 - SV team: H-W. Yen, H. Nagai, P-Y. Hsieh, Y-N. Su, P. Koch, K. Nakanishi, J. Sai, N. Izumi

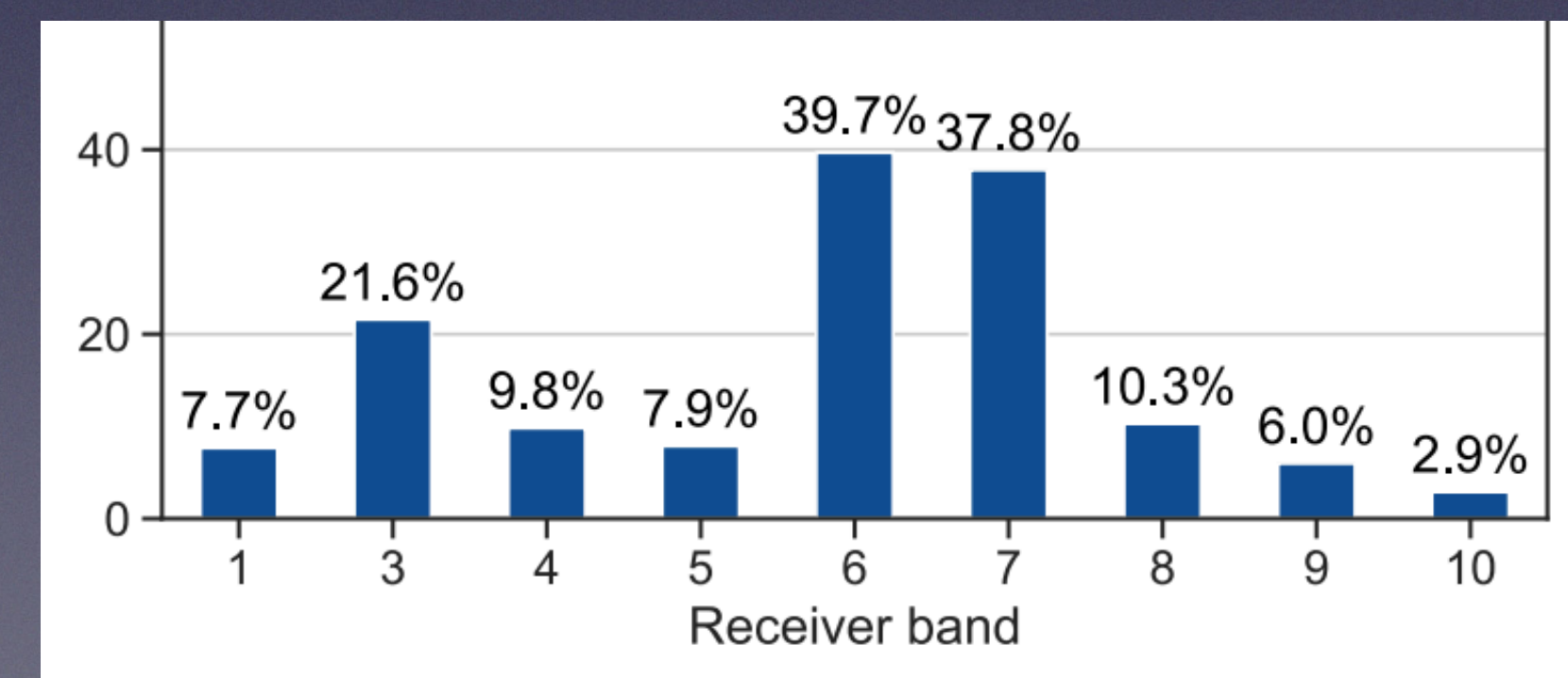
Cycle 10



Cycle 11



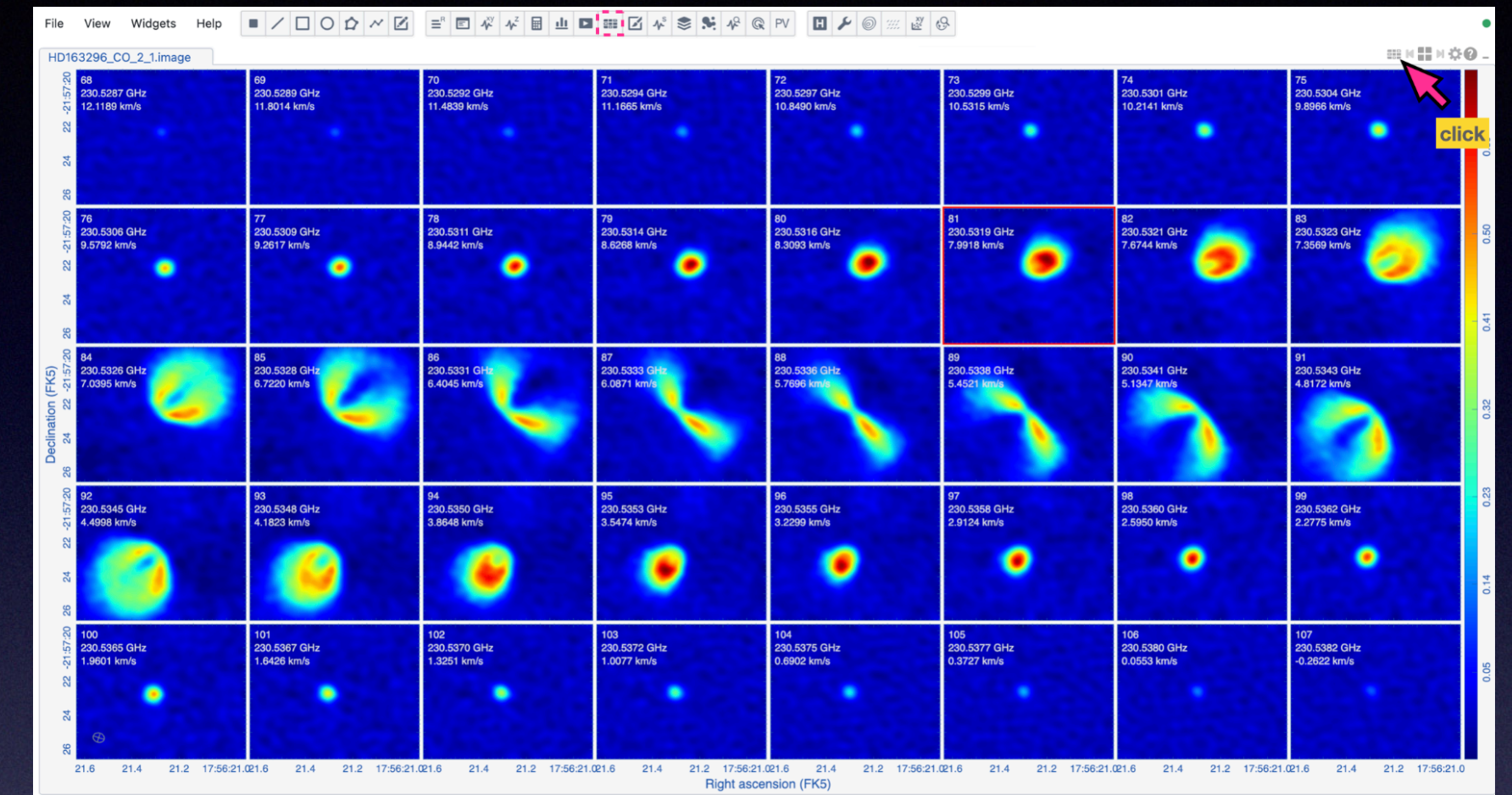
Cycle 12



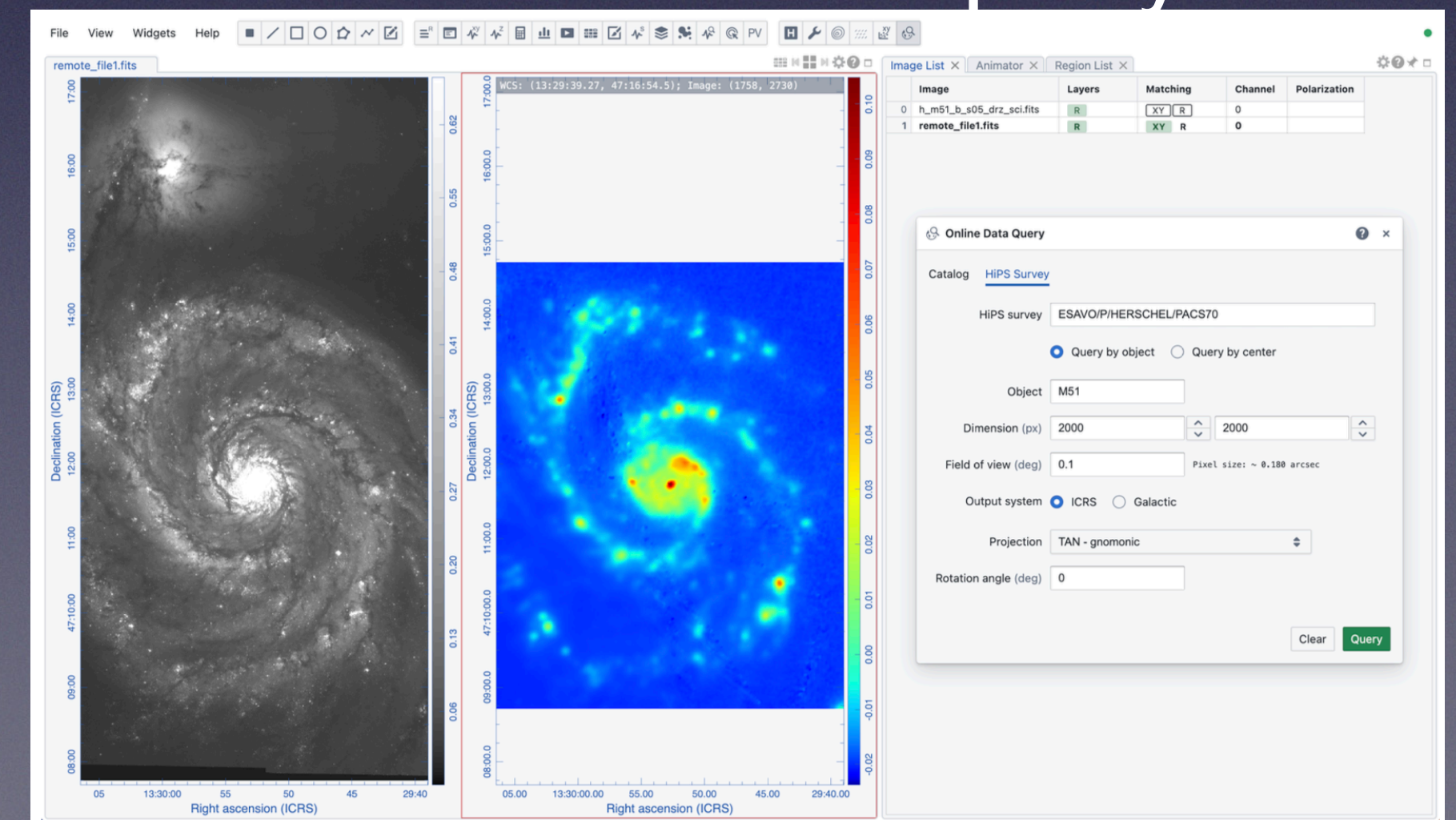
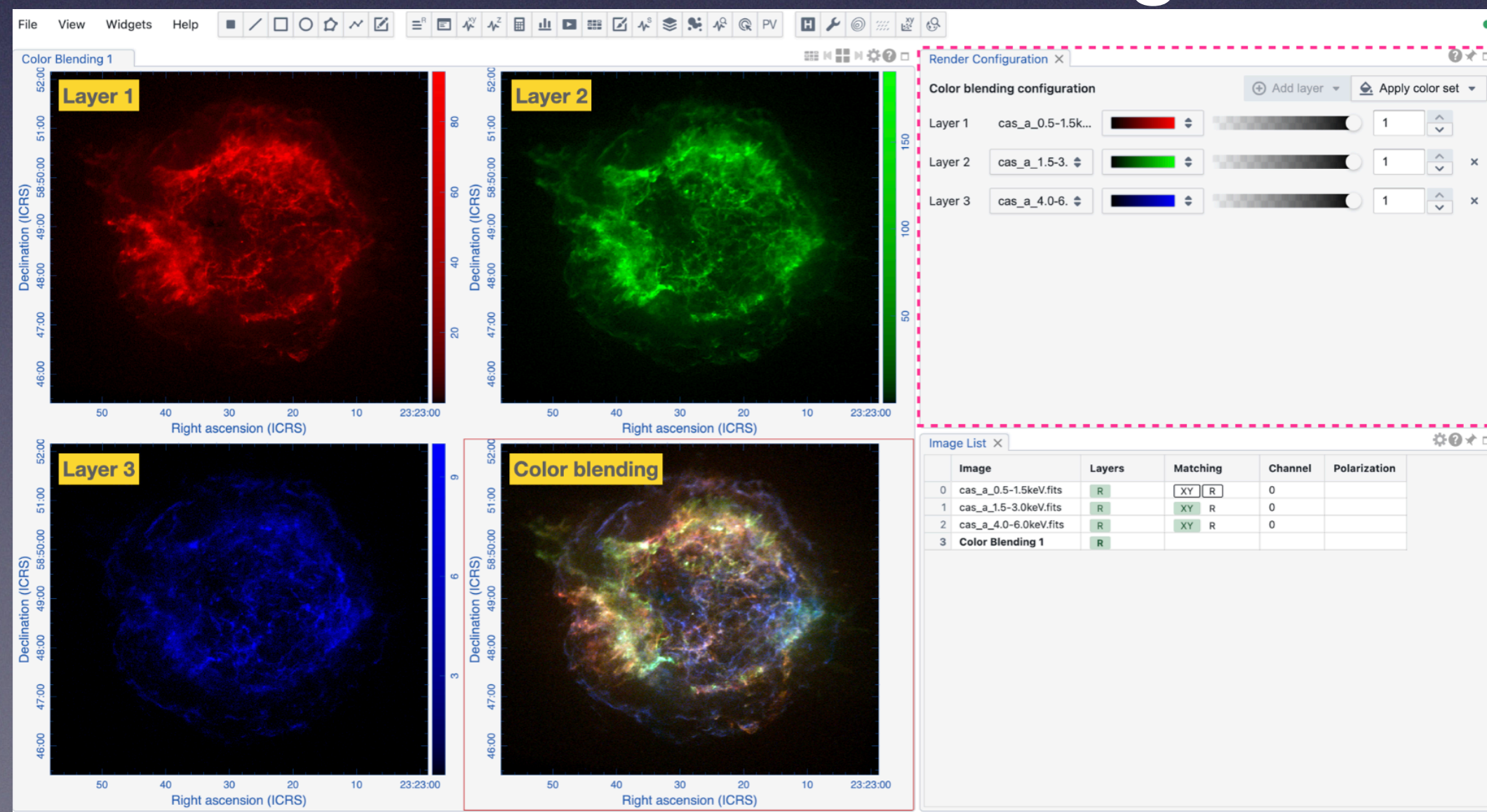
Recent and ongoing projects from Taiwan

- CARTA (ongoing)
 - ASIAA, IDID, NRAO, University of Alberta
 - **A**SIAA **C**ASA **D**evelopment **C**enter (ACDC)
PI: Chin-Fei Lee, PM: Kuo-Song Wang
 - Version5 new release
- Multi-color blending

- Channel map view



- HiPS2FITS query



Information from Kuo-Song Wang

CARTA - upcoming news

- AusSRC (Australian SKA Regional Centre) join CARTA for v6+
- CARTA v6.0
 - CARTA v6.0-beta1 (Feb 2026)
maintenance release focusing on codebase refactoring and bug fix
 - CARTA v6.0-beta2 and beta3 (Summer and Winter 2026, TBD)
 - Time-domain data analysis toolset
 - Finalizing
 - Workspace features
 - Channel map view
 - Python scripting capability
 - Other minor enhancements / bug fix

Scientific publications from Taiwan at 2025

- 101 publications in total, 15 first-author
- Nature scientific reports by Chin-Fei Lee

scientific reports

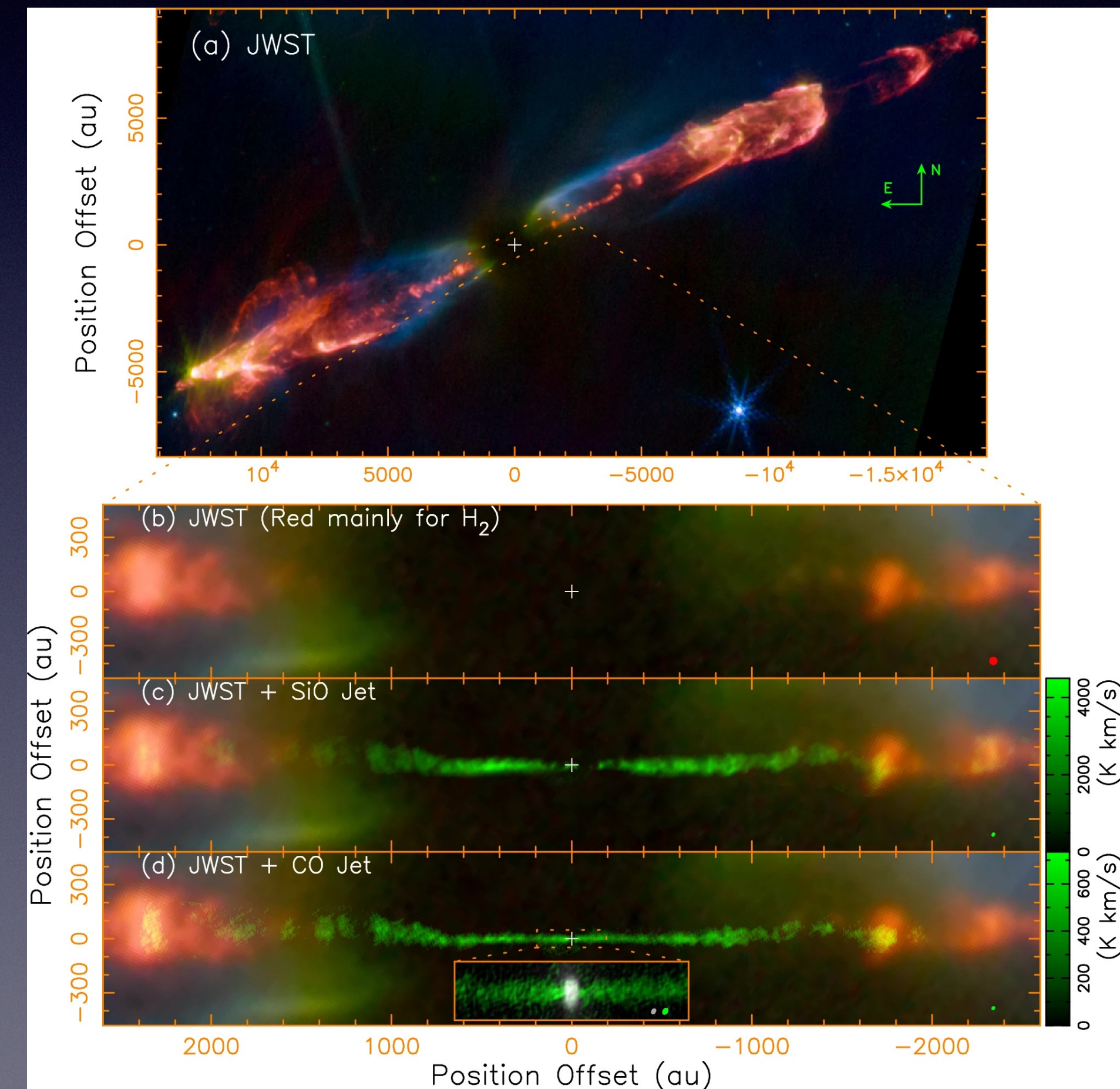
OPEN

A magnetized protostellar jet launched from the innermost disk at the truncation radius

Chin-Fei Lee^{1,2}✉, Kai-Syun Jhan^{1,3} & Anthony Moraghan^{1,4}

Protostellar jets form when part of the accreting material is energetically ejected from the vicinity of protostars. Understanding where and how they are launched and collimated is crucial to determining their role in the accretion process. The HH 211 jet is a highly collimated, magnetized jet associated with a rotating disk around a young protostar. With Atacama Large Millimeter/submillimeter Array, we have resolved a pristine molecular spine at its base down to the disk. This spine has a high velocity of $\sim 107 \pm 8 \text{ km s}^{-1}$ but a slow rotation with a specific angular momentum of $\sim 4 \pm 1 \text{ au km s}^{-1}$, suggesting it to be launched at $\sim 0.021 \pm 0.005 \text{ au}$ in the disk, providing the most stringent constraint yet on current magneto-centrifugal theories of jet production. Quantitative modeling supports the interpretation that the molecular spine represents the dense central component of a magnetized radial wind. This wind, launched by magneto-centrifugal force at the innermost edge of the disk—the truncation radius, removes residual angular momentum from the disk, enabling disk material to accrete onto the protostar. The toroidal field strength to collimate the dense spine in the model also agrees with that previously measured in the jet.

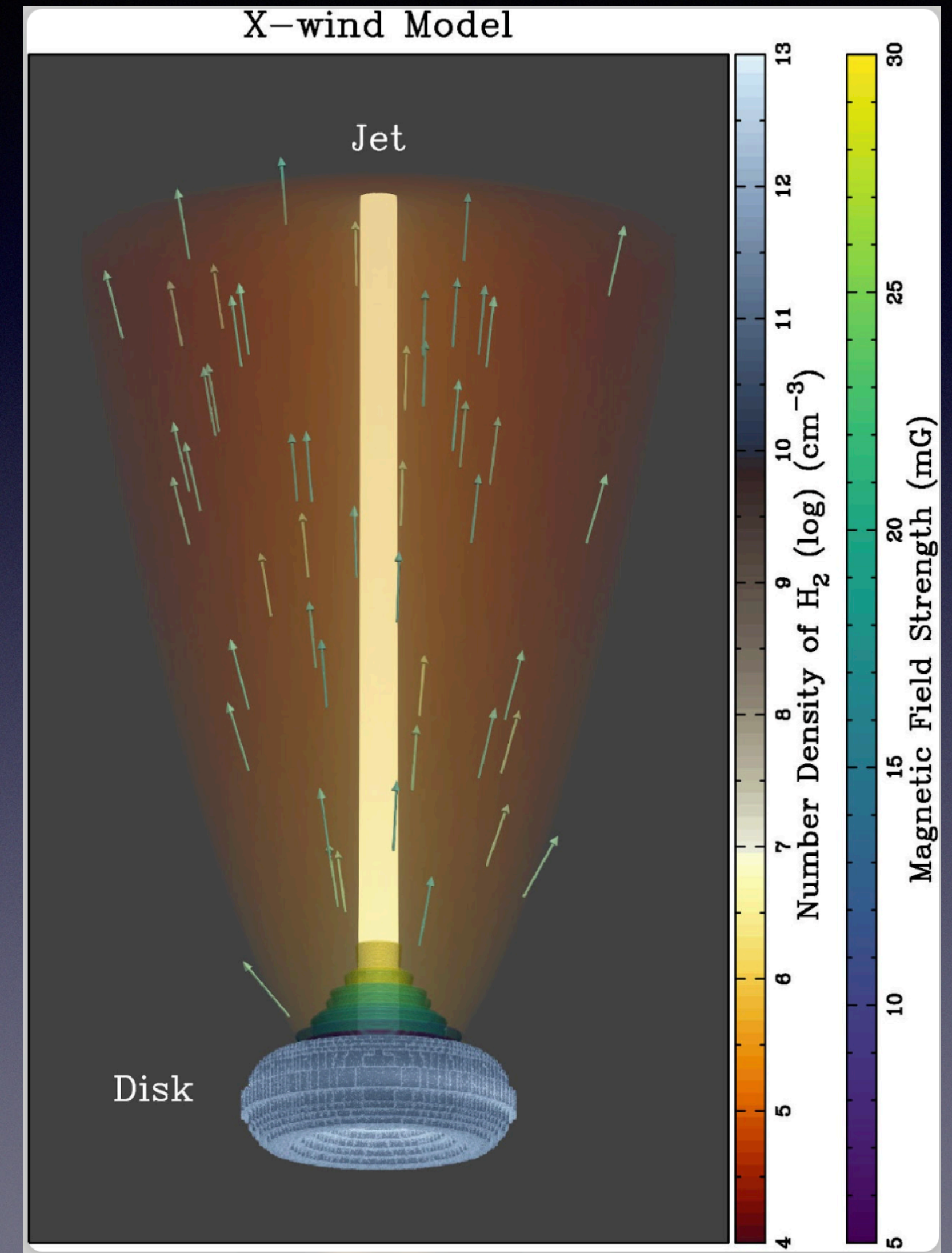
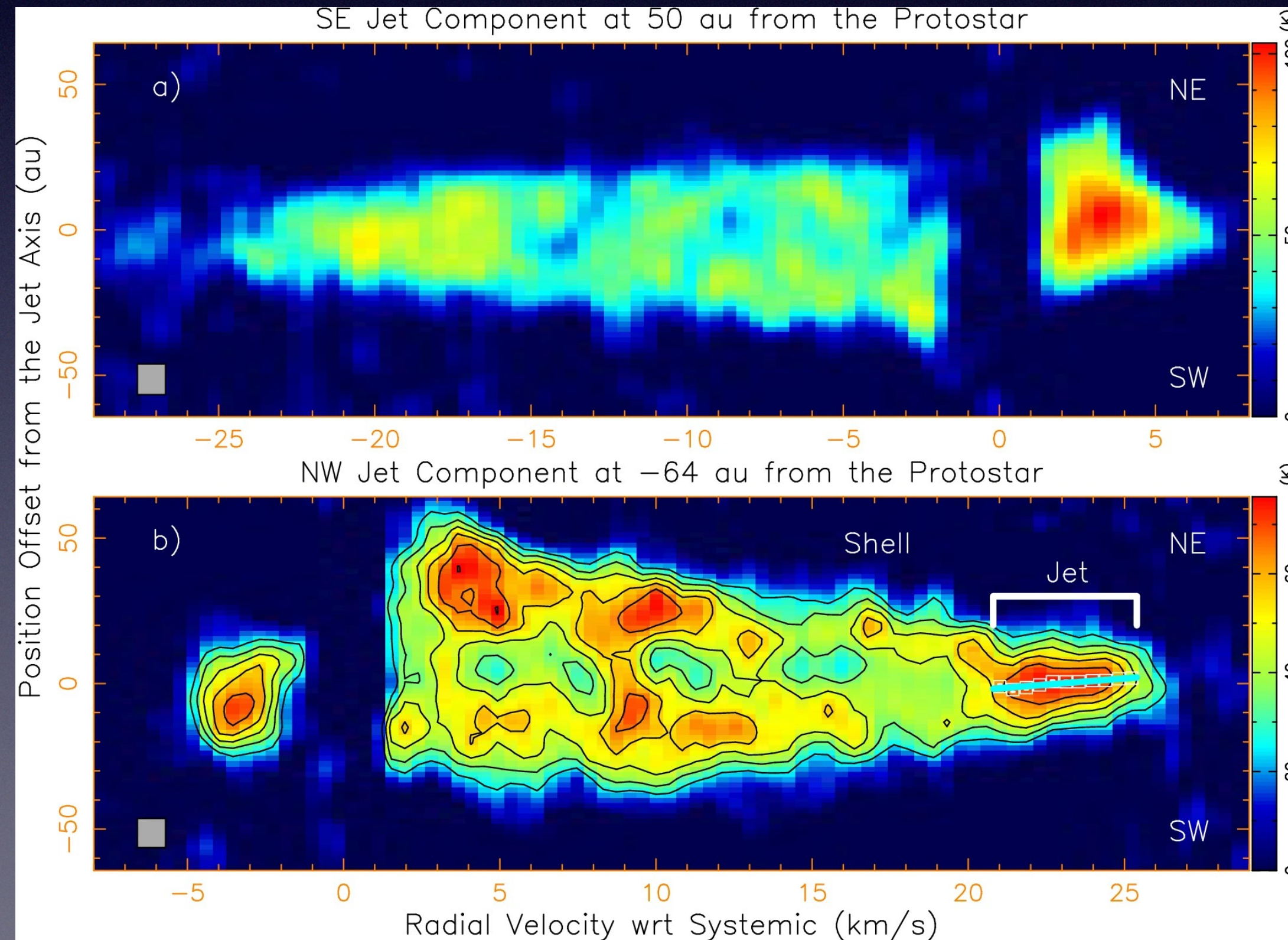
Check for updates



Lee, C.-F. et al. (2025)

Scientific publications from Taiwan at 2025

- 101 publications in total, 15 first-author
- Nature scientific reports by Chin-Fei Lee
- Jet rotation detected agreed with X-wind model



Training/Activities with ALMA Taiwan in 2025



**ALMA imaging
workshop**

February



**Cycle 12 user
workshop**

March



**NA-TW Joint ALMA
workshop**

June

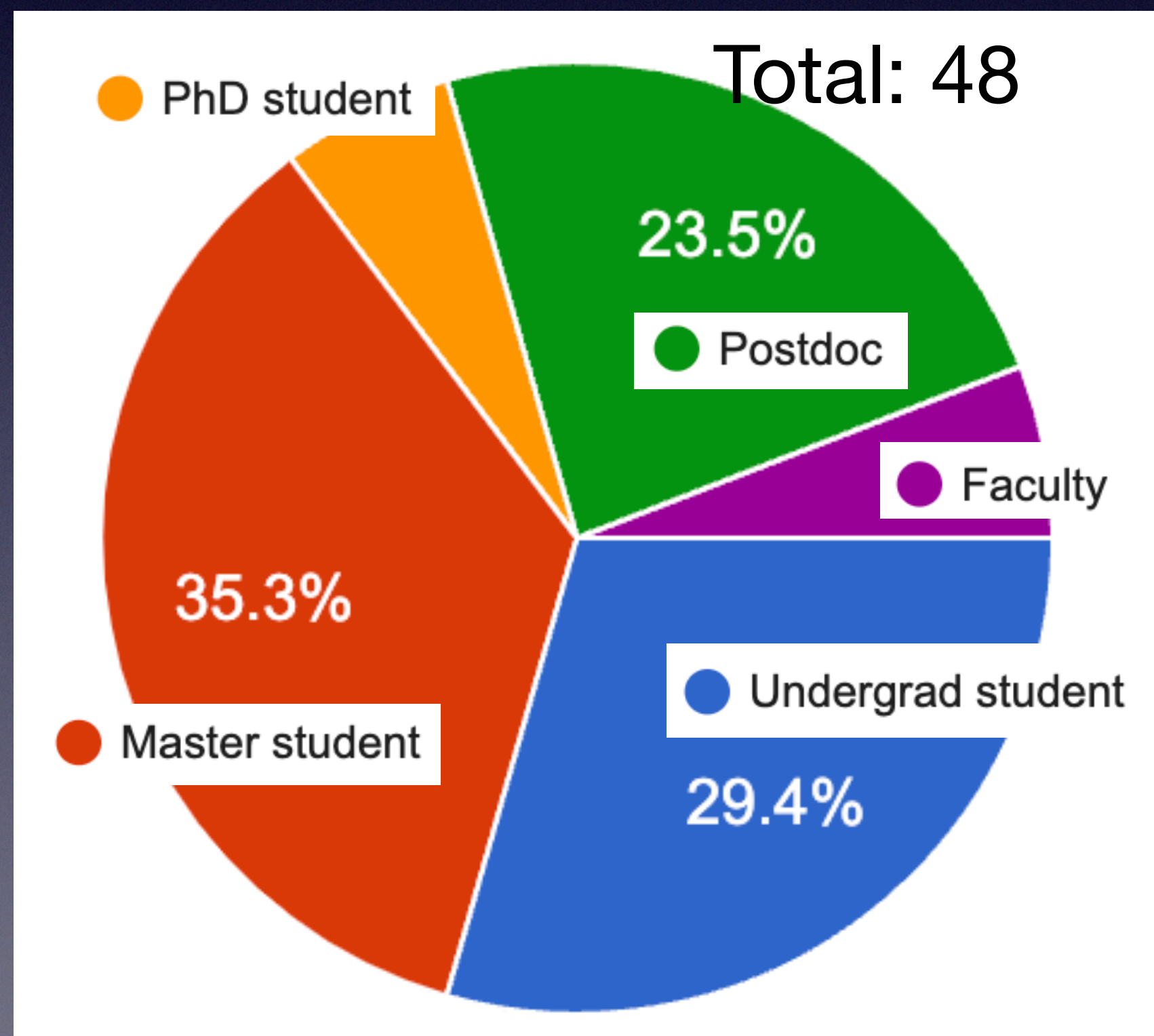


**CARTA showcase
miniworkshop**

August

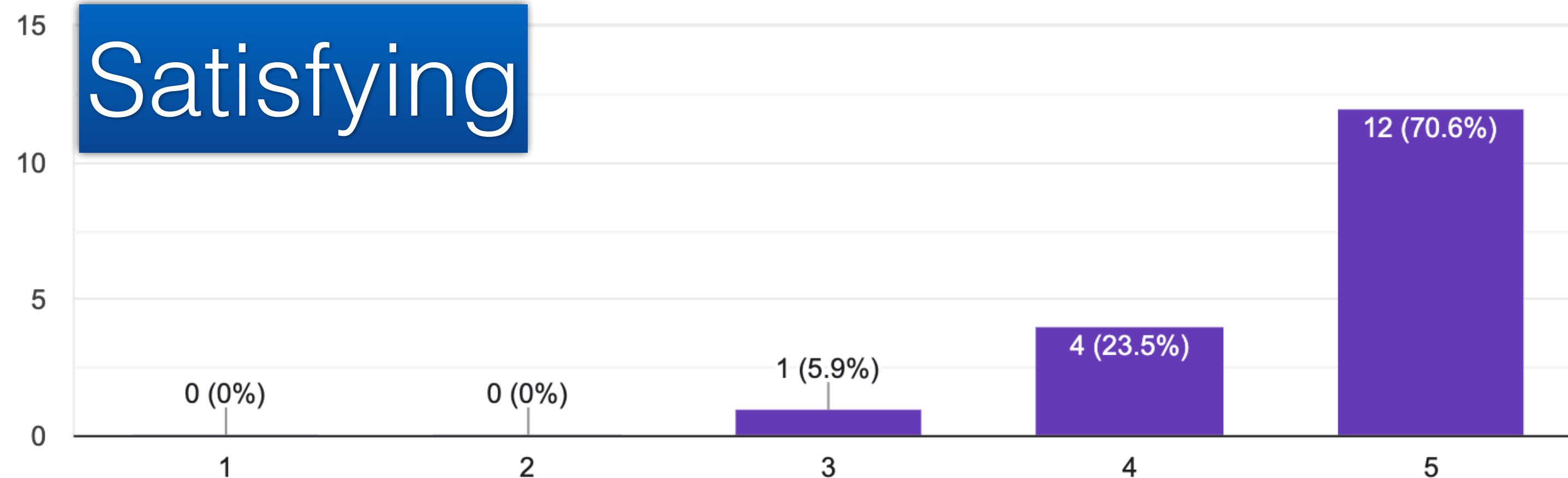
Training/Activities with ALMA Taiwan in 2025

- ALMA imaging workshop (Feb 13-14 @ ASIAA)
 - Jinshi Sai (chair), Tien-Hao Hsieh (co-chair), and ARC team
 - <https://events.asiaa.sinica.edu.tw/workshop/20250213/index.php>

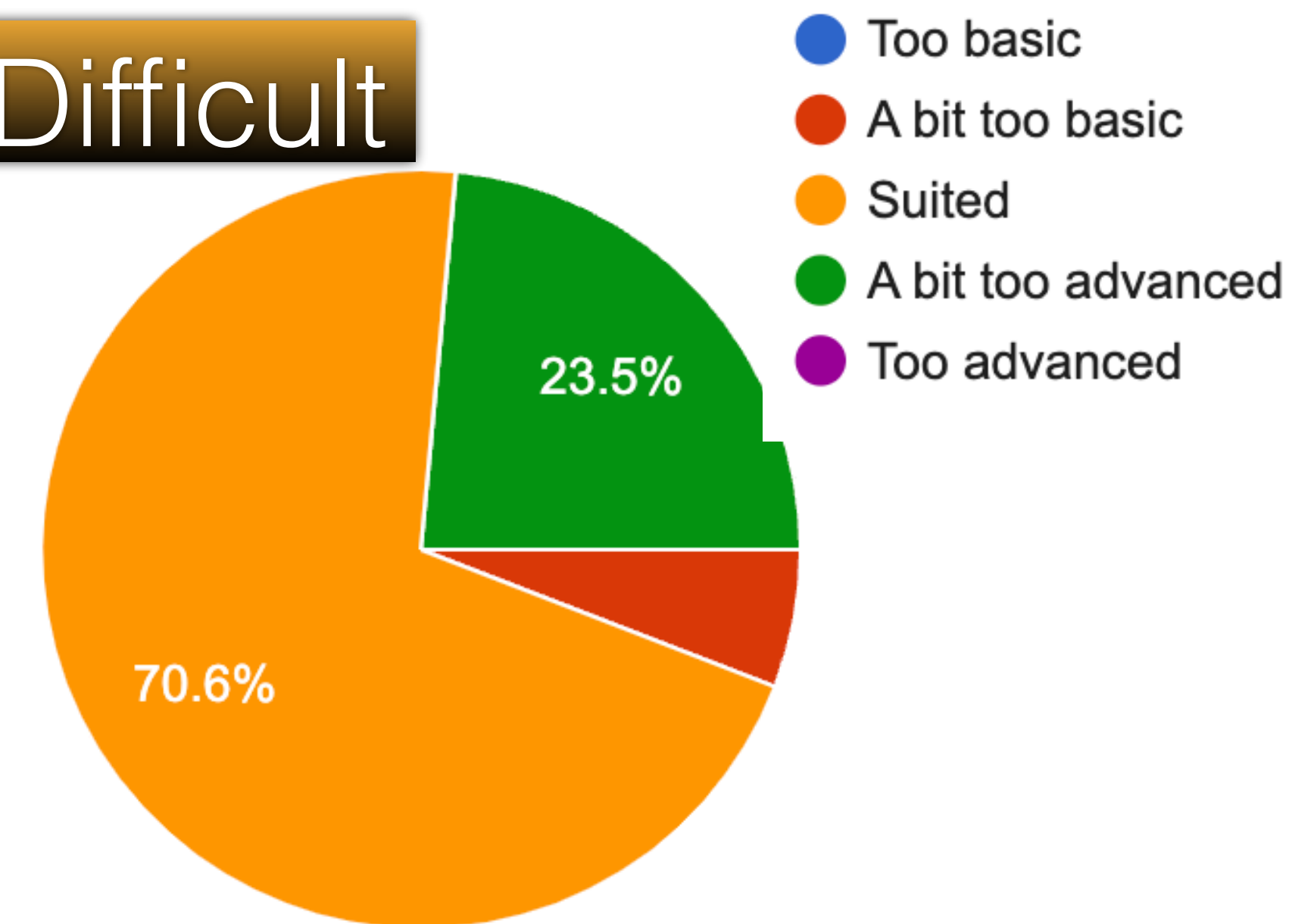


Imaging workshop feedback

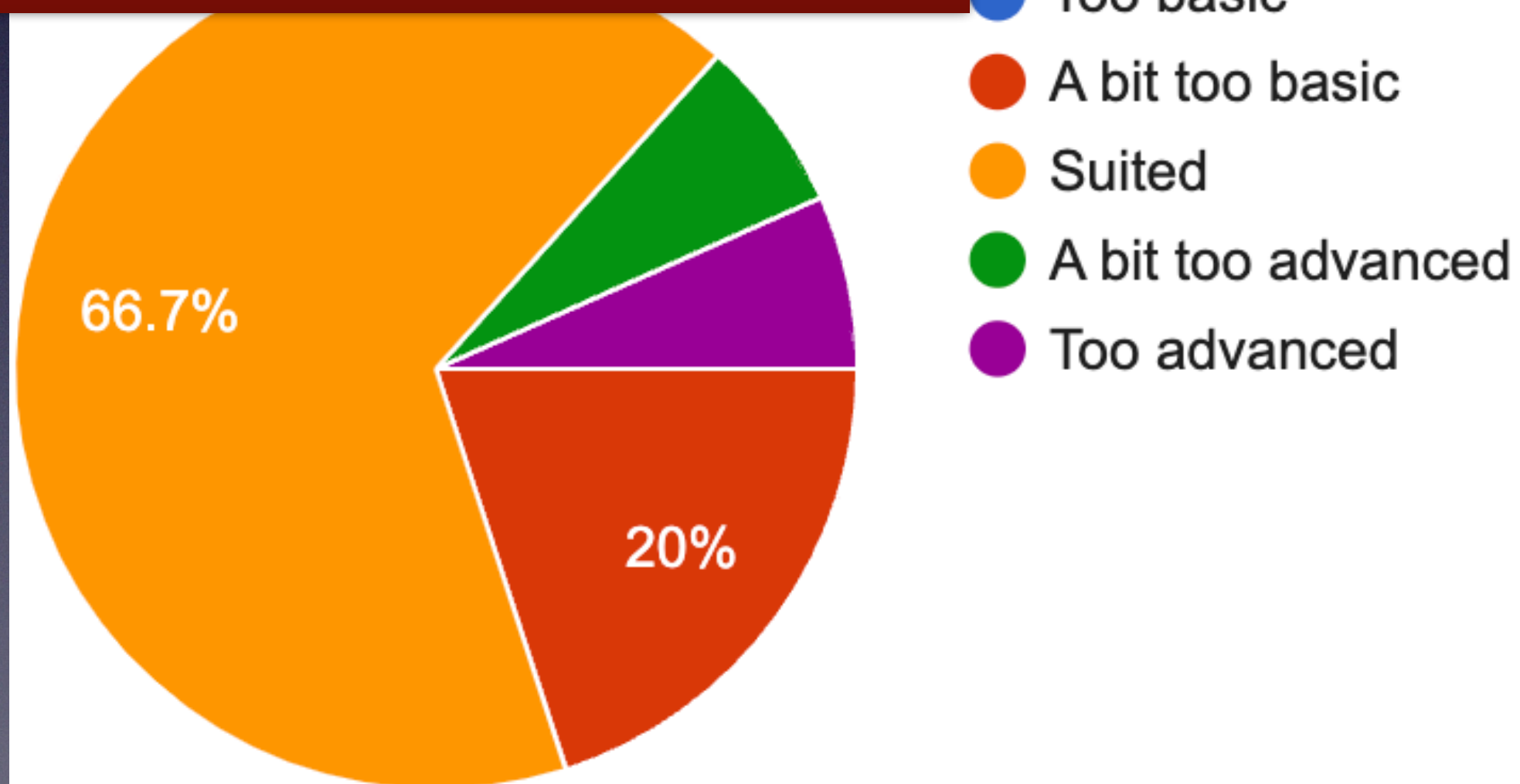
Satisfying



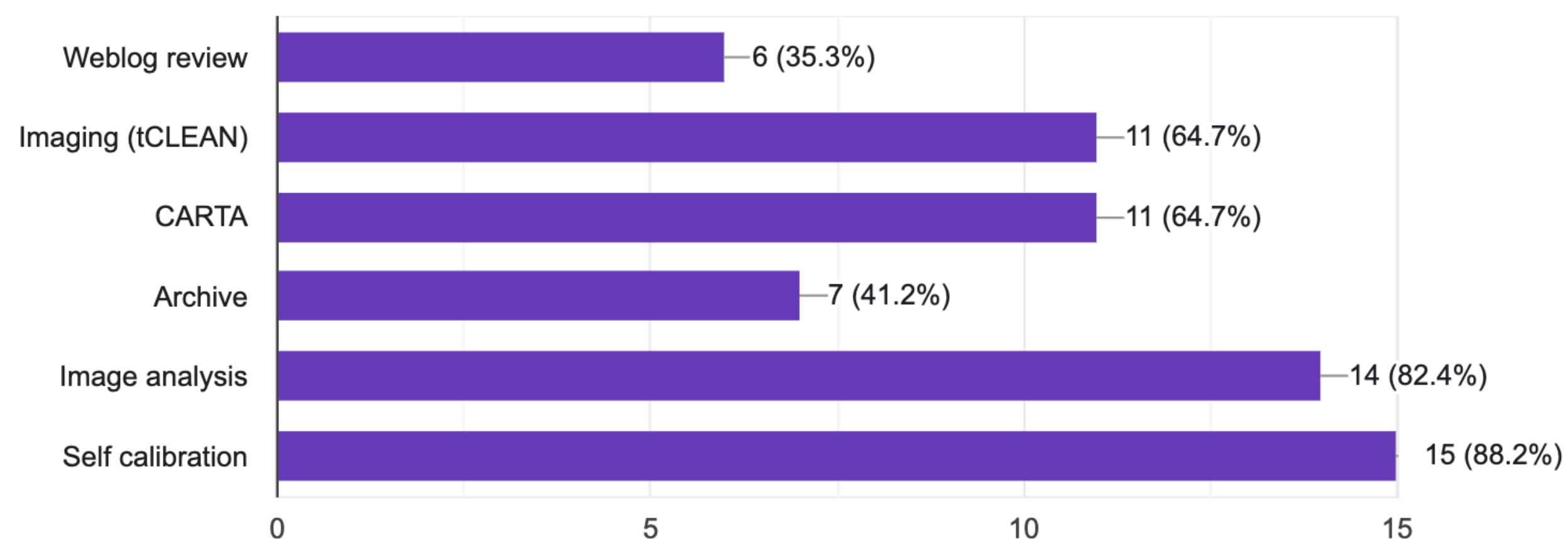
Difficult



Hands-on useful?



What topic was the most useful?



More feedback

About ALMA proposal

polarization analysis

I would expect at least one lecture on proposal writing (although there are separate workshop for that, you may ask them to attend that workshop too in this lecture)

More about pipeline and calibration

A primer on the telescopic machinery (like the settings, something fun to learn about as well, since many of us

I want to know how to write a good proposal 😊

It would be fantastic if the recordings of the lectures could be uploaded to YouTube for those who are unable to attend the workshop in person.

I think the hands-on sessions can have more given parameter combinations to see how these parameters affect the result image (for example, changing the "uvrange" in tclean), and what's the risk on modifying these parameters.

Short lecture on proposal writing. How could I know when there will be proposal writing workshop? You may add all the participant in the email list for the "proposal writing workshop" advertisement. Thank you so much.

I think a deeper dive into CARTA and more hands-on session time would be very helpful.

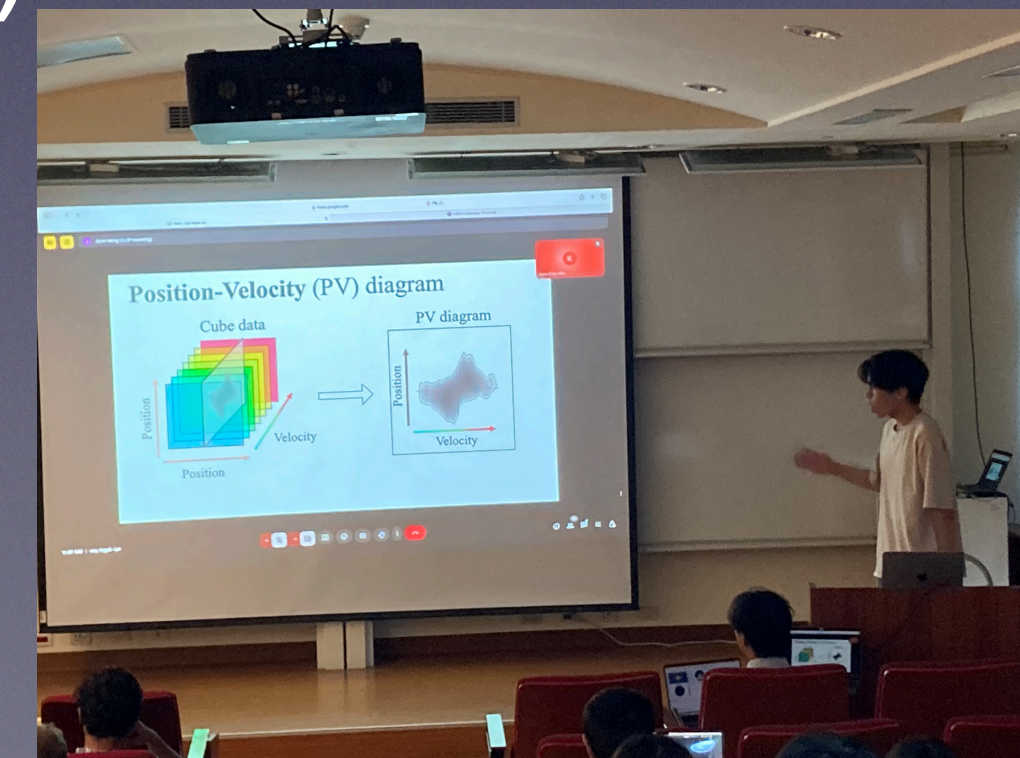
I think more hand-on sessions would be better! For example, the topics in the first day very need hand-on practice to have a better understanding! It's actually hard to remember the points by only listening to the talk like weblog or CARTA. But overall this workshop is useful (especially since I've taken radio astronomy

Training/Activities with ALMA Taiwan in 2025

- Cycle 12 Users Workshop
(Mar. 25 @ National Tsing Hua University)
 - Tien-Hao Hsieh (chair) and Taiwan ARC team
 - 28 participants
 - 70 proposals submitted from Taiwan at Cy12



- CARTA showcase (Aug. 5th @ ASIAA)
 - Chair: Kuan-Chou Hou (ACDC)
 - ~30 participants
(many non-radio participants)



NA-TW joint ALMA workshop

1. 2013@Hawaii

Transformational Science with ALMA: From Dust to Rocks to Planets
Formation and Evolution of Planetary Systems

2. 2018@NTHU, Taiwan

Magnetic field or Turbulence - Which is the critical factor for the
formation of stars and planetary disk?

3. 2025@ASIAA, Taiwan

New ALMA windows on the Universe - Band1 and the future WSU

NA-TW joint ALMA workshop 2025

- LOC chair: Wei-Hao Wang
SOC chair: Ya-Wen Tang
- June 16-19th
- Specific highlights:
 - Science at WSU
 - Science at Band1
- ~80 participants
50 talks and 19 posters
4 splinter sessions



WSU and band1 talks by ALMA staff

- Band1:
 - From Beginning to Completion — ALMA Band 1
Patrick Koch (ASIAA)
 - ALMA Band 1
Hiroshi Nagai (NAOJ)
- WSU
 - An Introduction to the ALMA Wideband Sensitivity Upgrade (WSU)
Jennifer Donovan Meyer (NRAO)
 - Total Power GPU Spectrometer (TPGS) for the ALMA Total Power Array
Jongsoo Kim (KASI)
- CARTA Tutorial
 - Kuo-Song Wang (ACDC/ASIAA)

Scientific talks about WSU/Band1

- Using New ALMA Band1 to Study Dust Properties in Orion Protostellar Cores by Parisa Nozari (Queen's University)
- Unveiling the Nature of Luminous Galaxy Mergers with ALMA-WSU and JWST by Aaron Evans (NRAO)
- Radio observations on the planet-forming disk PDS70 by Hauyu Baobab Liu (NSYSU)
- Studying Star Formation in U/LIRGs with VLA+ALMA Bands1/2 by Loreto Barcos-Munoz (NRAO)
- Extremely Normal Planet Formation: the long mm- and cm-wavelength view of externally irradiated disks by Ryan Boyden (University of Virginia)
- An ALMA Band-1 spectroimaging survey of Orion KL by Sheng-Yuan Liu (ASIAA)
- Vz-GAL cold Molecular Gas Survey of High-redshift Dusty Galaxies as a demonstrator for the power of ALMA Band1 by Prachi Prajapati (MPIfR)

Splitter sessions

- Chian-Chou Chen (ASIAA) "The next frontier of extragalactic spectroscopic survey with WSU"
- Shigehisa Takakuwa (Kagoshima University, Japan) "Define new projects"
- Shih-Ping Lai (NTHU, Taiwan) "Band 1 polarization"
- Sarah Sadavoy (Queen's University) "Advances in Galactic Science and ISM with WSU"

Thanks for your attention