Jinshi Sai — Curriculum Vitae

Academia Sinica Institute of Astronomy and Astrophysics (ASIAA)
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EMPLOYMENT & SALARY HISTORY

Postdoc Fellow *Dec. 2021–present*
Academia Sinica Institute of Astronomy and Astrophysics (ASIAA)

Visiting PhD Student *Dec. 2019–Nov. 2021*
Academia Sinica Institute of Astronomy and Astrophysics (ASIAA)

Subaru Sr. Research Intern *Dec. 2018–Dec. 2019*
Research Corporation of the University of Hawaii

EDUCATION

PhD, Astronomy *Apr. 2018–Nov. 2021*
Graduate School of Science, The University of Tokyo
"Probing Gas Kinematics around Protostars with Multi-scale Observations"
Supervisor: Dr. Nagayoshi Ohashi

MS, Astronomy *Apr. 2016–Mar. 2018*
Graduate School of Science, The University of Tokyo

BS, Earth & Planetary Science *Apr. 2012–Mar. 2016*
Kobe University

EXPERTISE & SKILLS

Field:	Star formation, planet formation, (sub)millimeter astronomy
Observing Experience:	ALMA (Astronomer on Duty), IRAM-30m (on-site), Nobeyama-45m (remote), JCMT, Keck, Subaru (PI proposal)
Data Reduction:	(Sub)millimeter interferometers (ALMA, ACA, SMA), (sub)mm single dish telescopes (IRAM-30m, JCMT, APEX), infrared telescope (Keck, Subaru)
Software for Astronomy:	CASA, MIRIAD, GILDAS, RADMC-3D
Software:	LaTeX, Microsoft Office, Inkscape
Programming:	Python, Julia, Fortran
Languages:	Japanese (native), English (fluent)

SUPERVISION

Mihirkumar Sanjeevkumar Tripathi, ASIAA 2023–2024
Summer Student/Research Assistant

CONFERENCES & SEMINARS

(Talks)

Mini Workshop on Star Formation, Kagoshima, Japan *Jun. 2024*
Multiple Outflows Observed around the Single Protostar IRAS 15398−3359

ASJ (Astronomical Society of Japan) Spring Annual Meeting 2024, online *Mar. 2024*
Multiple Outflows Associated with the Protostar IRAS 15398−3359 Revealed by ACA Mosaic Observations

TPS (Physical Society of Taiwan) Annual Meeting 2024, Taoyuan, Taiwan *Jan. 2024*
Multiple Outflows around the Single Protostar IRAS 15398−3359

Probing the Universe at Higher Resolution, Taipei, Taiwan *Nov. 2023*
Multiple Outflows around the Single Protostar IRAS 15398−3359

ASJ Spring Annual Meeting 2023, Tokyo, Japan *Mar. 2023*
eDisk First-look Result: Possible Substructure Formation in the Circumstellar Disk around the Protostar Ced110 IRS4A

East Asia ALMA Science Workshop 2023, New Taipei City, Taiwan *Feb. 2023*
The eDisk First-look Results of Ced110 IRS4: a Possible Substructure in an Embedded Disk

A Half Century of Millimeter and Submillimeter Astronomy, Okinawa, Japan *Dec. 2022*
First Results from the eDisk Survey: a Marginal Substructure in an Embedded Disk around Ced110 IRS4

ASROC (Astronomical Society of Republic of China) Annual Meeting, Jiayi, Taiwan *Oct. 2022*
First Results from the eDisk Survey: Shallow Substructures in an Embedded Disk around Ced110 IRS4

Star Formation in Different Environments 2022, Quy Nhon, Vietnam *Aug. 2022*
Probing Infalling Regions around Low-mass Protostars with Multiscale Observations

ASIAA Colloquium, Taipei, Taiwan *Jun. 2022*
Characterizing Gas Kinematics around Protostars over a Wide Spatial Range from Cores to Disks

National Central University Colloquium, Taoyuan, Taiwan *Mar. 2022*
Gas kinematics around protostars over a wide spatial range from a disk to a core *(invited)*

JRAF (Japan Radio Astronomy Forum) Symposium, online *Mar. 2022*
Gas Kinematics around Protostars Probed by Multiscale Observations

East Asia ALMA Science Workshop 2022, Virtual *Jan. 2022*
The Gas kinematics of the Protostellar Envelopes/Cores Probed with Multiscale Observations

East Asia ALMA Science Workshop 2021, Virtual *Feb. 2021*
Which Part of Dense Cores Does Feed Materials to Protostars?: the Case of L1489 IRS

ASJ Autumn Annual Meeting 2020, online *Sep. 2020*
Multiscale Observations of the Protostar L1489 IRS: Gas Kinematics on scales of 1000 to 10,000 au

ALMA Workshop 2019: Early Planet Formation in Embedded Disks, Tokyo, Japan *Dec. 2019*
Warped Disk Structure around the Class I Protostar L1489 IRS Revealed by ALMA

2019 JCMT Users Meeting, Taipei, Taiwan *Nov. 2019*
Transtion from a Quiescent Core to a Dynamical Envelope around the Protostar L1489 IRS

Subaru 20th Anniversary, Waikoloa, Hawaii, USA *Nov. 2019*
ALMA Observations of the Late-Phase Protostar L1489 IRS: Warped or Misaligned Disk Structure

East Asia ALMA Science Workshop 2017, Daejeon, Korea *Nov. 2017*
ALMA Cycle 2 Observations of the Class I Protostar L1489 IRS: Misaligned Disk Structure

ASJ Autumn Annual Meeting 2017, Sapporo, Japan *Sep. 2017*
ALMA Cycle 2/3 Observations of the Class I Protostar L1489 IRS II: Warped Disk Structure

ASJ Spring Annual Meeting 2017, Fukuoka, Japan *Mar. 2017*
ALMA Cycle 2/3 Observations of the Class I Protostar L1489 IRS

(Posters)

The Early Phase of Star Formation (EPos), Ringberg, Germany *May 2024*
Influence of Turbulence in Dense Cores on the Formation and Evolution of Protostellar Disks

Protostar and Planets VII, Kyoto, Japan *Apr. 2023*
Early Planet Formation in Embedded Disks (eDisk): Possible Substructure Formation in an Embedded Disk of the Ced110 IRS4 System

RAS Early Career Poster Exhibition 2020, Virtual *Sep. 2020*
A Kinematical Transition from an Infalling Envelope to a Core around the Protostar L1489 IRS

East Asia ALMA Science Workshop 2019, Taipei, Taiwan *Feb. 2020*
Kinematical transition from an infalling envelope to a quiescent core around the protostar L1489 IRS

SUCCESSFUL PI PROPOSALS

Atacama Large Millimeter/submillimeter Array (ALMA)
The Spatial Scale of the Infalling Envelope at the Late Protostellar Phase *2022*
- 2.1 hours for 12-m array (16.4 h for 7-m, 40.3 h for TP), Grade C, Cycle 9

The Kinematical Transition between the Envelope and Core around Young Embedded Protostars *2019*
- 16.6 hours for ACA 7-m array, Grade B, Cycle 7

IRAM-30 m Telescope
Kinematical Transition from Cores to Envelopes around Evolved Protostars *2019 winter*
- 36 hours, Grade A

Kinematical Transition from a Core to an Envelope *2018 winter*
- 21 hours, Grade A

James Clerk Maxwell Telescope (JCMT)
Impact of Dense Core Properties on Disk Size (continued from 2022 winter) *2023 winter*
- 16.5 hours, Grade A

Impact of Dense Core Properties on Disk Size (continued from 2022 winter) *2023 summer*
- 38 hours, Grade A

Impact of Dense Core Properties on Disk Size *2022 winter*
- 34 hours, Grade A

Magnetic field, turbulence and velocity gradients in dense cores of single protostars hosting multiple outflows
- 4 hours, Grade B *2022 summer*

Submillimeter Array (SMA)
Probing nature of possible secondary outflows around single protostars in Perseus *2022 summer*
- 32 hours (4 tracks), Grade B

Subaru Telescope
Morphologies and Structures of Embedded Disks I: Pilot Observations *2023 spring*
- 4 hours, Grade B, Service Program

Keck Telescope (through Subaru–Keck Time Exchange)
Probing Structures of Young, Embedded Disks *2023 fall*
- Two half nights, Grade A

RESEARCH GRANTS

Grant from the Hayakawa Satio Fund, Astronomical Society of Japan *Sep. 2019*

OUTREACH

Catching Radio from Space—Astronomy on Tap Taipei, Taipei, Taiwan *Dec. 2022*

Ask Astronomer—Academia Sinica Open House, Taipei, Taiwan *Oct. 2022*

PUBLICATIONS

First Author, Refereed

5. *Multiple Outflows around a Single Protostar IRAS 15398-3359*
   J. Sai, H.-W. Yen, M.N. Machida, N. Ohashi, Y. Aso, A.J. Maury, S. Maret, the Astrophysical Journal, 2024, 966, 192S
4. *Early Planet Formation in Embedded Disks (eDisk) V: Possible Annular Substructure in a Circumstellar Disk in the Ced110 IRS4 System*
   J. Sai, H.-W. Yen, N. Ohashi, J.J. Tobin, J.K. Jørgensen et al., the Astrophysical Journal, 2023, 954, 67S
3. *Probing Velocity Structures of Protostellar Envelopes: Infalling and Rotating Envelopes within Turbulent Dense Cores*
   J. Sai, N. Ohashi, H.-W. Yen, A.J. Maury, S. Maret, the Astrophysical Journal, 2023, 944, 24
2. *Which Part of Dense Cores Feeds Material to Protostars?: The Case of L1489 IRS*
   J. Sai, N. Ohashi, A.J. Maury, S. Maret, H.-W. Yen, Y. Aso, M. Gaudel, the Astrophysical Journal, 2022, 925, 12
1. *Disk Structure around the Class I Protostar L1489 IRS Revealed by ALMA: A Warped- disk System*
   J. Sai, N. Ohashi, K. Saigo, T. Matsumoto, Y. Aso et al., the Astrophysical Journal, 202, 893, 51

Co Author, Refereed

15. *Early Planet Formation in Embedded Disks (eDisk). XV. Influence of Magnetic Field Morphology in Dense Cores on Sizes of Protostellar Disks*
    H.-W. Yen, J. Williams, **J. Sai** et al., the Astrophysical Journal, 2024, 969, 125Y
14. *Early Planet Formation in Embedded Disks (eDisk). XIV. Flared Dust Distribution and Viscous Accretion Heating of the Disk around R CrA IRS 7B-a*
    S. Takakuwa, K. Saigo, M. Kido et al. **(J. Sai, 19th)**, the Astrophysical Journal, 2024, 964, 24T
13. *Spectral Line Analysis/Modeling (SLAM) I: pvanalysis*
    Y. Aso and **J. Sai**, Publications of The Korean Astronomical Society, Research Note, 2023
12. *Early Planet Formation in Embedded Disks (eDisk). VIII. A Small Protostellar Disk around the Extremely Low Mass and Young Class 0 Protostar IRAS 15398-3359*
    T. Thieme, S.-P. Lai, N. Ohashi, et al. **(J. Sai, 6th)**, Astrophysical Journal, 2023, 958, 1
11. *Early Planet Formation in Embedded Disks (eDisk). IX. High-resolution ALMA Observations of the Class 0 Protostar R CrA IRS5N and Its Surroundings*
    R. Sharma, J. K. Jørgensen, S. Gavino, et al. (**J. Sai, 10th**), Astrophysical Journal, 2023, 954, 1, id.69
10. *Early Planet Formation in Embedded Disks (eDisk). VI. Kinematic Structures around the Very-low-mass Protostar IRAS 16253-2429*
    Y. Aso, W. Kwon, N. Ohashi et al. (**J. Sai, 19th**), Astrophysical Journal, 2023, 954, 101-117
9. *Anisotropic Ionizing Illumination from an M-type Pre-main Sequence Star, DM Tau*
    Y. Terada, H. B. Liu, D. Mkrtichian, et al. (**J. Sai, 4th**), the Astrophysical Journal, 2023, 953, 147
8. *Early Planet Formation in Embedded Disks (eDisk). VII. Keplerian Disk, Disk Substructure, and Accretion Streamers in the Class 0 Protostar IRAS 16544-1604 in CB 68*
    M. Kido, S. Takakuwa, K. Saigo, et al. (**J. Sai, 27th**), the Astrophysical Journal, 2023, 953, 2
7. *Early Planet Formation in Embedded Disks (eDisk). IV. The Ringed and Warped Structure of the Disk around the Class I Protostar L1489 IRS*
    Y. Yamato, Y. Aikawa, N. Ohashi, et al. (**J. Sai, 8th**), the Astrophysical Journal, 2023, 951, 20
6. *Early Planet Formation in Embedded Disks (eDisk). III. A First High-resolution View of Submillimeter Continuum and Molecular Line Emission toward the Class 0 Protostar L1527 IRS*
    M. L. R. van't Hoff, J. J. Tobin, Z.-Y. Li, et al. (**J. Sai, 19th**), the Astrophysical Journal, 2023, 951, 29

5. *Early Planet Formation in Embedded Disks (eDisk). II. Limited Dust Settling and Prominent Snow Surfaces in the Edge-on Class I Disk IRAS 04302+2247*

   Z.-Y. D. Lin, Z.-Y. Li, J. J. Tobin, et al. (**J. Sai, 23th**), the Astrophysical Journal, 2023, 951, 26

4. *Early Planet Formation in Embedded Disks (eDisk). I. Overview of the Program and First Results*

   N. Ohashi, J. J. Tobin, J. K. Jørgensen, et al. (**J. Sai, 12th**), the Astrophysical Journal, 2023, 951, 26

3. *Increasing Mass-to-flux Ratio from the Dense Core to the Protostellar Envelope around the Class 0 Protostar HH 211*

   H.-W. Yen, P. M. Koch, C.-F. Lee, et al. (**J. Sai, 6th**), the Astrophysical Journal, 2023, 942, 20

2. *No Evidence of the Significant Grain Growth but Tentative Discovery of Disk Substructure in a Disk around the Class I Protostar L1489 IRS*

   S. Ohashi, H. Kobayashi, **J. Sai**, et al, the Astrophysical Journal, 2022, 933, 7

1. *ALMA Reveals a Misaligned Inner Gas Disk inside the Large Cavity of a Transitional Disk*
   S. Mayama, E. Akiyama, O. Panič, et al. (**J. Sai, 12th**), the Astrophysical Journal, 2018, 868, L3