

Dingshan DENG

Lunar and Planetary Laboratory & Department of Planetary Sciences, The University of Arizona

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EDUCATION

Ph.D. candidate (Planetary Sciences). *The University of Arizona*, Arizona, USA (present).

Advisors – Prof. Ilaria Pascucci and Dr. Uma Gorti

B.S. (Astronomy). *Beijing Normal University*, Beijing, China (2020)

RESEARCH INTERESTS

Star and planet formation; protoplanetary disks; interstellar and circumstellar gas and dust; (sub)mm interferometry; astrochemistry

ACADEMIC ACTIVITIES

➤ Poster Presentation at the *Origins of Solar Systems Gordon Research Conference*, South Hadley, Massachusetts, USA. (2025)

➤ Oral Presentations at the *Origins Seminar*, Tucson, Arizona, USA. (2025)

Online recordings:

- *CO line emission supports large protoplanetary disk masses w/o much CO depletion*

<https://www.youtube.com/watch?v=qxE-9GC9w0o>

- *Introducing ysoisochrone: A Python package that handles the isochrones for young stellar objects (YSOs)*

<https://www.youtube.com/watch?v=0ydPsf9QDM&t=21s>

➤ Oral Presentation at the *From Star to Planet Formation*, Como, Italy. (2024)

➤ Invited Talk at the *ESO Star and Planet Formation Seminar*, Munich, Germany. (2023)

➤ Oral Presentation at the *DPS-EPSC 2023*, San Antonio, Texas, USA. (2023)

➤ Poster Presentation at the *Protostars and Planets VII*, Kyoto, Japan. (2023)

➤ Visiting student at *Dharma Planet Survey Project*, Department of Astronomy, University of Florida. (2019)

➤ Oral Presentation at the *Seminar on Star Week*, Shijiazhuang, China. (2019)

➤ Poster Presentation at the *Seminar on Interstellar Physics and Chemistry*, Kunming, China. (2018)

➤ Poster Presentation at the *Seminar on Stars, Supernovas, and Interstellar Dust*, Beijing, China. (2018)

SERVICES

➤ Origins Seminars Organizer (2024-present). Website: <https://alienearthspace.org/origins-seminar/>

➤ Lunar and Planetary Laboratory Conference Organizer (2023-present)

➤ Arizona Pima County K-12 Teacher's workshop on radio waves Organizer (2025)

➤ The Art of Planetary Sciences Organizer (2024)

➤ Teaching assistance in the online class *Alien Earths* by Prof. Jessica Barnes at the University of Arizona. (2024)

➤ Participation in the production of a Massive Open Online Course on *Numerical Methods* by Prof. Li Chen at Beijing Normal University. (2018)

➤ Volunteer at Beijing Astronomy Planetarium. (2017-2019)

➤ Referee for AAS Journals.

➤ Undergraduate student mentor at Beijing Normal University

Mentee Huang, Q., with one first-author paper published in *The Astronomical Journal*, vol. 166, no. 1

HONORS

➤ Galileo Circle Scholarship. The University of Arizona. (2024)

➤ Outstanding Undergraduate. Beijing Normal University. (2017, 2018, 2019)

➤ Excellent Research Project for Undergraduates. Beijing Normal University. (2019)

➤ *Jingshi* First Prize Scholarship for Excellent Academic Performance. Beijing Normal University. (2018)

➤ *Kuangqiao* Scholarship for Excellent Academic Performance. Beijing Normal University. (2017)

SOFTWARE

- **DiskMINT:** Disk Model for INdividual Targets
An open-source Fortran-Python code to build self-consistent thermochemical disk models.
GitHub repository: <https://github.com/DingshanDeng/DiskMINT>
- **ysoisochrone:** an open-source Python package that handles the isochrones for young stellar objects (YSOs).
GitHub repository: <https://github.com/DingshanDeng/ysoisochrone>

PUBLICATIONS

As First-author:

- 1) **Deng, D.**, Gorti, U., and Pascucci, I., and Ruaud, M. (submitted), DiskMINT: Self-Consistent Thermochemical Disk Models with Radially Varying Gas and Dust -- Application to the Massive, CO-Rich Disk of IM Lup. *Submitted to The Astrophysical Journal*. Under review.
- 2) **Deng, D.**, Vioque, M., Pascucci, I., et al., (2025), The ALMA Survey of Gas Evolution of PROtoplanetary Disks (AGE-PRO). III. Dust and Gas Disk Properties in the Lupus Star-forming Region, *The Astrophysical Journal*, vol. 989, no. 1.
- 3) **Deng, D.**, Pascucci, I., Fernandes, Rachel, (2025), ysoisochrone: A Python package to estimate masses and ages for YSOs, *Journal of Open Source Software*, vol. 10, issue 106.
- 4) **Deng, D.**, Ruaud, M., Gorti, U., and Pascucci, I. (2023). DiskMINT: A Tool to Estimate Disk Masses with CO Isotopologues. *The Astrophysical Journal*, vol. 954, no. 2.
- 5) **Deng, D.**, Sun, Y., Wang, T., Wang, Y., and Jiang, B. (2022). Infrared Excess of a Large OB Star Sample, *The Astrophysical Journal*, vol. 935, no. 2.
- 6) **Deng, D.**, Sun, Y., Jian, M., Jiang, B., and Yuan, H. (2020). Intrinsic Color Indices of Early-type Dwarf Stars, *The Astronomical Journal*, vol. 159, no. 5.

Key contributions:

- 1) Xie, C., Pascucci, I., **Deng, D.**, et al., (2025), JWST Captures a Sudden Stellar Outburst and Inner Disk Wall Destruction, *The Astrophysical Journal*, vol. 978, no. 1.
- 2) Pascucci, I., Skinner, Bennett N., S., **Deng, D.**, et al. (2023). Large Myr-old Disks Are Not Severely Depleted of Gas-phase CO or Carbon, *The Astrophysical Journal*, vol. 953, no. 2.
- 3) Huang, Q., Jiang, B., **Deng, D.**, Yu, B., and Zijlstra, A. (2023). Estimation of the Flux at 1450 MHz of OB Stars for FAST and SKA, *The Astronomical Journal*, vol. 166, no. 1.
- 4) Yuan, H., **Deng, D.**, and Sun, Y. (2021). A star-based method for precise wavelength calibration of the Chinese Space Station Telescope (CSST) slitless spectroscopic survey, *Research in Astronomy and Astrophysics*, vol. 21, no. 3.
- 5) Sun, Y., **Deng, D.**, and Yuan, H. (2021). Precision of the Chinese Space Station Telescope (CSST) stellar radial velocities, *Research in Astronomy and Astrophysics*, vol. 21, no. 4.

As co-author:

- 1) Miley, J, et al. including **Deng, D.**, (2025). The ALMA Survey of Gas Evolution of PROtoplanetary Disks (AGE-PRO). XII. Extreme Millimeter Variability Detected in a Class II Disk, *The Astrophysical Journal*, vol. 989, no. 1
- 2) Vioque, M, et al. including **Deng, D.**, (2025). The ALMA Survey of Gas Evolution of PROtoplanetary Disks (AGE-PRO). X. Dust Substructures, Disk Geometries, and Dust-disk Radii, *The Astrophysical Journal*, vol. 989, no. 1
- 3) Anania, R, et al. including **Deng, D.**, (2025). The ALMA Survey of Gas Evolution of PROtoplanetary Disks (AGE-PRO). VIII. The Impact of External Photoevaporation on Disk Masses and Radii in Upper Scorpius, *The Astrophysical Journal*, vol. 989, no. 1
- 4) Tabone, B, et al. including **Deng, D.**, (2025). The ALMA Survey of Gas Evolution of PROtoplanetary Disks (AGE-PRO). VII. Testing Accretion Mechanisms from Disk Population Synthesis, *The Astrophysical Journal*, vol. 989, no. 1
- 5) Kurtovic, N, et al. including **Deng, D.**, (2025). The ALMA Survey of Gas Evolution of PROtoplanetary Disks (AGE-PRO). VI. Comparison of Dust Evolution Models to AGE-PRO Observations, *The Astrophysical Journal*, vol. 989, no. 1
- 6) Trapman, L., et al. including **Deng, D.**, (2025). The ALMA Survey of Gas Evolution of PROtoplanetary Disks (AGE-PRO). V. Protoplanetary Gas Disk Masses, *The Astrophysical Journal*, vol. 989, no. 1

- 7) Agurto-Gangas, C., et al., including **Deng, D.** (2025). The ALMA Survey of Gas Evolution of PROtoplanetary Disks (AGE-PRO). IV. Dust and Gas Disk Properties in the Upper Scorpius Star-forming Region, *The Astrophysical Journal*, vol. 989, no. 1
- 8) Ruiz-Rodriguez, D. A., including **Deng, D.**, (2025). The ALMA Survey of Gas Evolution of PROtoplanetary Disks (AGE-PRO). II. Dust and Gas Disk Properties in the Ophiuchus Star-forming Region, *The Astrophysical Journal*, vol. 989, no. 1
- 9) Zhang, K., et al. including **Deng, D.**, (2025). The ALMA Survey of Gas Evolution of PROtoplanetary Disks (AGE-PRO). I. Program Overview and Summary of First Results, *The Astrophysical Journal*, vol. 989, no. 1
- 10) Sierra, A., et al. including **Deng, D.**, (2024). Hints of Planet Formation Signatures in a Large-cavity Disk Studied in the AGE-PRO ALMA Large Program, *The Astrophysical Journal*, vol. 974, no. 1.
- 11) Sellek, A. D., et al. including **Deng, D.**, (2024). Modeling JWST MIRI-MRS Observations of T Cha: Mid-IR Noble Gas Emission Tracing a Dense Disk Wind, *The Astronomical Journal*, vol. 167, no. 5.
- 12) Bajaj, N. S., et al. including **Deng, D.**, (2024). JWST MIRI MRS Observations of T Cha: Discovery of a Spatially Resolved Disk Wind, *The Astronomical Journal*, vol. 167, no. 3.