Sanchit Sabhlok

Postdoctoral Researcher

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EDUCATION

University of California, San Diego — La Jolla, CA
Physics, Ph.D. — 2017 – 2024

UM-DAE Center for Excellence in Basic Sciences — Mumbai, India
Physics, Integrated M.S. — 2012 – 2017

Research Experience

University of Arizona
Advisor: Prof. Ewan Douglas — Tucson, Arizona
Postdoctoral Advisor — 2024-Present

- Developing Machine Learning tools to run Phase Retrieval on a conceptual space telescope with active primary mirror.
- Developing Algorithmic Differentiable Phase Retrieval techniques for space and ground based astronomy.

OIRLab
Advisor: Prof. Shelley Wright — La Jolla, CA
Graduate Student Researcher — 2019 – 2024

- Studied environments around radio-loud quasars 3C 9 and 4C 05.84 using KCWI and MOSFIRE.
- Studied the relationship between the circumgalactic medium and radio jets around radio loud quasars using Keck KCWI data.
- Developed an analytic PSF Generator for OSIRIS ETC.
- Modeling an on-axis reconstructed PSF for the Keck All-sky Precision Adaptive Optics AO system.

APOLLO
Advisor: Prof. Tom Murphy — La Jolla, CA
Graduate Student Researcher — 2018 – 2024

- Characterized the timing performance of the APOLLO Lunar Laser Ranging experimental setup and improving the APD timing performance, resulting in improved system performance.
- Developed an in-house code for thermal modeling of the Lunar corner cube reflectors in a convection free radiative environment to characterize their thermal performance.

Teaching Experience

Physics 2C: Fluids, Waves, Thermodynamics, and Optics
Lecturer — Summer
Instructor on Record: Sanchit Sabhlok — 2021

Physics 200A: Graduate Theoretical Mechanics
Grader — Fall
Instructor on Record: Daniel Dubin — 2019

Teaching and Learning Commons
Academic Student Worker — Jan – Aug
Advisor: Martha Stacklin — 2019

- Ran workshops on Presentation Skills and Presentation Design for UCSD graduate students and postdocs, with special focus on international scholars.
- Assisted in organizing and running the Summer Bridge Program for the incoming international graduate students in the Physics department in Summer 2019.

Physics 110A: Classical Mechanics
Teaching Assistant — Fall Quarter
Instructor on Record: Rick Averitt — 2017

Service Experience

KAPA Annual Science Meeting
Organizing Committee Member — 2020 – 2022
Organizing Committee, Chair — 2023

Organizer
UCSD Astrophysics Journal Club — 2021 – 2023

Founder and Organizer
JWSTea Time — 2022 – Present

Chair
UCSD Physics Graduate Council — 2020 – 2021

Class Representative
UCSD Physics Graduate Council — 2019 – 2022

Committee Member
Physics Dept Outreach Committee — 2018 – 2020

Committee Member
Astrophysics Seminar Committee — 2021 – 2022

Committee Member
Physics Climate Committee — 2021

Committee Member
Physics Colloquium Committee — 2021 - 2022

Founding Member
Graduate Student Diversity Initiative — 2020 – 2021

UCSD Physics Recruiter
SACNAS Conference — 2019

Outreach Experience

Young Physicist Program
Co-Director — Aug 2018 – Present

UCSD Cosmic Tours Portable Planetarium
Student Coordinator — Jan 2020-Present

Tech Trek at UCSD
Student Volunteer — Annual 2018-2020

San Diego Expo Day
UCSD Student Volunteer — Annual 2018-2020

Young Physicist Program Newsletter
Founder — Oct 2020

Graduate Student Outreach Coordinator
For UCSD Physics Department — Jan – Aug 2020

Awards and Fellowships

2021 Friends of International Center Fellowship
2013 Kishore Vaigyanik Protsahan Yojana (KVPY) Fellow
2012 INSPIRE Fellow

Skills

Python · C · FORTRAN · Mathematica
LaTeX · Shellscript · JIRA · Git · SQL

Contributed Talks

1. KAPA Science Meeting — September, 2023
2. Astro3D conference on Outflows, Feedback and the Baryon Cycle — July, 2023
3. KAPA Science Meeting — September 2022
4. Keck Science Meeting — September 2021

Invited Talks

1. UC Davis — January 2024
2. Texas A&M University — December 2023
3. University of Texas, Austin — December 2023
4. Carnegie Observatories — October 2023
5. University of California Los Angeles — October 2023
6. Virtual International Workshop on Laser Ranging — October 2023
7. University of California, Berkeley — October 2023
8. Yale University — October 2023

References

Shelley Wright
Professor
Department of Astronomy
and Astrophysics,
UC San Diego
s2wright@ucsd.edu

Karin Sandstrom
Associate Professor
Department of Astronomy
and Astrophysics,
UC San Diego
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Ewan Dougloas
Associate Professor
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List of Publications

ORCID - https://orcid.org/0000-0002-8780-8226

1. "Circumgalactic Environments around Distant Quasars 3C 9 and 4C 05.84". **Sabhlok, S.**; Wright, S. A.; Vayner, A.; Simonaitis-Boyd, S.; Murray, N.; Armus, L.; Cosens, M.; Wiley, J.; Kriek, M. ApJ 964 84 (2024).

2. "A clear case for dust obscuration of the lunar retroreflectors". **Sabhlok, S.**; Gonzales, D. P.; Battat, J. B. R.; Murphy, T W., Jr.; Colmenares, N. R. Icarus 417. doi:10.1016/j.icarus.2024.116113.

3. "Fifteen years of millimeter accuracy lunar laser ranging with APOLLO: data reduction and calibration". Colmenares, N. R.; Battat, J. B. R.; Gonzales, D. P.; Murphy, T W., Jr.; **Sabhlok, S.** doi:10.48550/arXiv.2304.11174 (2023).

4. Fifteen years of millimeter accuracy lunar laser ranging with APOLLO: dataset characterization - Battat, J. B. R.; Adelberger, E.; Colmenares, N. R.; Farrah, M.; Gonzales, D. P.; Hoyle, C. D.; McMillan, R. J.; Murphy, T. W., Jr.; **Sabhlok, S.**; Stubbs, C. W. doi:10.48550/arXiv.2304.11128 (2023).

5. "Cold mode gas accretion on two galaxy groups at z $\sim$ 2". Vayner, A.; Zakamska, N. L.; **Sabhlok, S.**; Wright, S. A.; Armus, L.; Murray, N.; Walth, G.; Ishikawa, Y. MNRAS 519, 1 (2023).

6. "Keck All sky Precision Adaptive optics program overview". Wizinowich, P.; Lu, J. R.; Cetre, S.; Chin, J.; Correia, C.; Delorme, J. -R.; Gers, L.; Lilley, S.; Lyke, J.; Marin, E.; Ragland, S.; Richards, P.; Surendran, A.; Wetherell, E.; Chen, C. -F.; Chu, D.; Do, T.; Fassnacht, C.; Freeman, M.; Gautam, A.; Ghez, A.; Hunter, L.; Jones, T.; Liu, M. C.; Mawet, D.; Max, C.; Morris, M.; Phillips, M.; Ruffio, J. -B.; Rundquist, N. -E.; **Sabhlok, S.**; Terry, S.; Treu, T.; Wright, S. Proc. SPIE 12185 (2022).

7. "Kinematics and Feedback in H II Regions in the Dwarf Starburst Galaxy IC 10". Cosens, M.; Wright, S. A.; Murray, N.; Armus, L.; Sandstrom, K.; Do, T.; Larson, K.; Martinez, G.; **Sabhlok, S.**; Vayner, A; Wiley, J. ApJ 929, 74 (2022).

Advanced Manuscripts

1. "Circumgalactic medium around Radio-loud quasars with compact jets". **Sabhlok, S.**; Wright, S. A.; Vayner, A.; Simonaitis-Boyd, S.; Armus, L.; Cosens, M.; Wiley, J. In Prep (2025).

2. ""On-axis point spread function reconstruction performance validation for Keck NIRC2" **Sabhlok, S.** ; Wright, S. A. ; Lu, J. R. ; Terry, S. ; Wizinowich, P. ; Neichel, B. ; Kuznetsov, A.; Paper 13097-236 Proceedings of SPIE, 2025 (in prep)"