
ASMITA BHANDARE

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🔍 RESEARCH INTERESTS

Formation and evolution of stars, protostellar disks, and planets

Numerical simulations

Linking theoretical models to observations

🔎 POSITIONS

- Postdoctoral researcher
Universitäts-Sternwarte München (USM), Munich, Germany November 2023 - present
Advisor: Prof. Dr. Til Birnstiel
- Postdoctoral researcher
Centre de Recherche Astrophysique de Lyon (CRAL), Lyon, France 2020 - 2023
Advisors: Dr. Benoît Commerçon and Prof. Dr. Guillaume Laibe

🎓 EDUCATION

- **Ph.D. in Astronomy**
Max Planck Institute for Astronomy (MPIA), Heidelberg, Germany 2016 - 2020
- **Master of Science in Astrophysics**
Argelander Institute for Astronomy (AIfA), University of Bonn, Germany 2013 - 2015
- Master of Science in Physics (*discontinued the 2-year program to move to Bonn, Germany*)
Fergusson College, University of Pune, India 2012 - 2013
- **Bachelor of Science in Physics**
Fergusson College, University of Pune, India 2009 - 2012

📁 RESEARCH EXPERIENCE

Ph.D. Thesis: Numerical simulations of star and disk formation 2016 - 2020
Advisors: Prof. Dr. Thomas Henning (MPIA), Prof. Dr. Rolf Kuiper (University of Tübingen), Dr. Christian Fendt (MPIA)

Master Thesis: Investigation of the effects of stellar encounters on protoplanetary disk size 2014 - 2015
Advisor: Prof. Dr. Susanne Pfalzner (Max Planck Institute for Radio Astronomy, Bonn, Germany)

Summer internship: X-ray emission from the Active Galactic Nuclei: H1821+643 2013
Advisor: Prof. Dr. Gulab Chand Dewangan (Inter-University Centre for Astronomy and Astrophysics, Pune, India)

Bachelor Thesis: Exoplanet Transit Studies of WASP-12 b and HAT-P-7 b 2011 - 2012
Advisor: Dr. Firoza Sutaria (Indian Institute of Astrophysics, Bangalore, India)

🛠 EXPERTISE

- Numerical tools: Radiation magneto-hydrodynamics grid codes (PLUTO, RAMSES), N-body codes
- Programming: Python, C, C++, HTML
- Softwares and Tools: L^AT_EX, Git, Jupyter Notebook, Atom, Vim, PyCharm
- Operating Systems: macOS, Linux, Windows

TEACHING EXPERIENCE

- Tutor for the Advanced Laboratory Course on “CCD photometry in modern astronomy” SS 2018
- Tutor for the Advanced Laboratory Course on “Photometry of Star Clusters” SS 2014, WS 2015
- Tutor for the course on “The physics of dense stellar systems” by Prof. Pavel Kroupa SS 2014

★ OBSERVING EXPERIENCE

Exoplanet transit observations using:

- 1.23 m telescope, Calar Alto Observatory, Spain 10 nights
- MPG / ESO 2.2m, La Silla, Chile 5 nights
- 2m Himalayan Chandra Telescope, Indian Astronomical Observatory, Hanle, Ladakh 2 nights

PUBLICATIONS

Lead author:

- **Bhandare A.**, Kuiper R., Henning Th., Fendt C., Flock M., and Marleau G-D., “*Birth of convective low-mass to high-mass second Larson cores*”, 2020, A&A, 638, A86
- **Bhandare A.** and Pfalzner S., “*DESTINY: Database for the effects of stellar encounters on disks and planetary systems*”, 2019, Computational Astrophysics and Cosmology, 6: 3
- **Bhandare A.**, Kuiper R., Henning Th., Fendt C., Marleau G-D., and Kölligan A., “*First core properties: From low- to high-mass star formation*”, 2018, A&A, 618, A95
- **Bhandare A.**, Breslau A., and Pfalzner S., “*Effects of inclined star-disk encounter on protoplanetary disk size*”, 2016, A&A, 594, A53

Co-author:

- Lin CL. et al. (including **Bhandare A.**), “*EDEN: Flare Activity of the Nearby Exoplanet-hosting M Dwarf Wolf 359 Based on K2 and EDEN Light Curves*”, 2021, The Astronomical Journal, 162, 11
- Pfalzner S., Aizpuru Vargas L., **Bhandare A.**, and Veras D., “*Significant interstellar object production by close stellar flybys*”, 2021, A&A, 651, A38
- Rosen A. L., Offner S. S. R., Sadavoy S. I., **Bhandare A.**, Vázquez-Semadeni E., and Ginsburg A., “*Zooming in on Individual Star Formation: Low- and High-mass Stars*”, 2020, Space Science Reviews, 216, 62
- Zhao B. et al. (including **Bhandare A.**), “*Formation and Evolution of Disks Around Young Stellar Objects*”, 2020, Space Science Reviews, 216, 43
- Gibbs A. et al. (including **Bhandare A.**), “*EDEN: Sensitivity Analysis and Transiting Planet Detection Limits for Nearby Late Red Dwarfs*”, 2020, The Astronomical Journal, 159, 169
- The ‘Oumuamua ISSI team, “*Natural History of ‘Oumuamua*”, 2019, Nature Astronomy, 3, 594-602
- Pfalzner S., **Bhandare A.**, Vincke K., and Lacerda P., “*Outer solar system possibly shaped by a stellar fly-by*”, 2018, ApJ, 863, 45
- Pfalzner S., **Bhandare A.**, and Vincke K., “*Did a stellar fly-by shape the planetary system around Pr 0211 in the cluster M 44?*”, 2017, A&A, 610, A33
- Pfalzner S. et al. (including **Bhandare A.**), “*Observational constraints on star cluster formation theory. I. The mass-radius relation*”, 2016, A&A, 586, A68

🏆 ACHIEVEMENTS AND AWARDS

- Best poster prize at “The Early Phase of Star formation (EPoS) 2018: Archetypes” in Ringberg, Germany 2018
- Honourable mention for the poster presented at “Star formation from cores to clusters” in Santiago, Chile 2017
- First prize for a lecture competition organized by the Indian Physics Association 2013
- Second best poster prize at the “17th National Space Science Symposium” in Tirupati, India 2012
- Successfully got over 10 follow-up observations of known near-Earth objects allowing further refinements to their orbit calculations as part of the “All India Asteroid Search Campaign (AIASC)”, which was displayed on the website of International Asteroid Search Campaign 2010
- Contributed to the International Meteor Organization (Visual Meteor shower observations), under an Indian Space Research Organization (ISRO) project 2010 - 2012

👤 ORGANIZATIONAL RESPONSIBILITIES

- Member of the LOC for “The Physics of Star Formation: From Stellar Cores to Galactic Scales” (Star@Lyon), Lyon, France 2023
- Member of the SOC & LOC for the 4th Shaw-IAU workshop on Astronomy for Education 2022
- Weekly journal club co-organizer at the CRAL 2021 - 2023
- Member of the SOC & LOC for the 3rd Shaw-IAU workshop on Astronomy for Education 2021
- Member of the LOC for the IAU Offices Family Meeting 2021
- Volunteered as a session host at the European Astronomical Society (EAS) Annual Meeting 2021
- Member of the LOC for “The Early Phase of Star formation (EPoS) 2020: Insights from Dynamics”, Ringberg, Germany - *Cancelled due to COVID-19* 2020
- Organized a mental health seminar at the MPIA 2019
- MPIA Student Representative 2017 - 2019
- IMPRS Student Representative 2016 - 2019
- Member of the LOC & SOC for the Heidelberg-Harvard workshop “The physics of star formation” 2018
- Editorial Board Member for the monthly newsletter “Dimensions” published by the Astro Club at the Department of Physics, Fergusson College, Pune, India 2010 - 2012
- Member of the LOC for “Frontiers in Physics”, a yearly seminar at Fergusson College 2009 - 2013

⇒ EDUCATION AND PUBLIC OUTREACH

- Engaged in education and science outreach activities as an Associate Scientist at the IAU Office of Astronomy for Education in Heidelberg, Germany 2021 - present
- Volunteered as a pen-pal for the “Letters to a Pre-Scientist” program 2021 - 2023
- Volunteered as a mentor for the Supernova Foundation 2021 - present
- Volunteered as a pen-pal for the “Letters to a Pre-Scientist” program 2019 - 2020
- Organized the Max Planck Day Science Slam 2018
- Organized and volunteered for several public outreach programs in India 2007 - 2013

📅 TALKS AND POSTER PRESENTATIONS

- Poster: "Unravelling the effects of gas and dust dynamics during protostellar collapse"
@ Magnetohydrodynamical flows in young circumstellar disks, Ringberg, Germany October 2023
- Poster: "Unravelling the effects of gas and dust dynamics during protostellar collapse"
@ The Physics of Star Formation: From Stellar Cores to Galactic Scales (Star@Lyon), France June 2023
- Talk: "Resolving dust pockets in young protostellar disks"
@ DISKBUILD Meeting, Nancy, France May 2023
- Poster: "Unravelling the effects of gas and dust dynamics during protostellar collapse"
@ Protostars and Planets VII, Kyoto, Japan April 2023
- Talk: "Unravelling the birth of stars and protostellar disks"
@ (Virtual) Computational Astrophysics Seminar, University of Duisburg-Essen, Germany January 2023
- Talk: "Unravelling the birth of stars and protostellar disks"
@ PROMETHEE workshop, Grenoble, France November 2022
- Talk: "Unravelling the birth of stars and protostellar disks"
@ CRAL Internal Seminar, Lyon, France September 2022
- Talk: "The interplay of gas and dust dynamics during star and disk formation"
@ (Virtual) Planet and binary formation in gravitationally unstable protoplanetary disks in the high-resolution era, Leicester, UK September 2022
- Talk: "Unravelling the birth of stars and protostellar disks"
@ University Observatory Munich Colloquium, Munich, Germany July 2022
- Talk: "Unravelling the birth of stars and protostellar disks"
@ MPE-CAS Journal Club, Munich, Germany July 2022
- Talk: "Zooming in on star and disk formation"
@ (Virtual) 24th Meeting on Research in Astronomy at IASBS, Zanjan, Iran June 2022
- Talk: "The interplay of gas and dust dynamics during star and disk formation"
@ DISKBUILD Meeting, Paris, France May 2022
- Poster: "The interplay of gas and dust dynamics during star and disk formation"
@ The Early Phase of Star formation (EPoS) 2022: Insights from Dynamics, Ringberg, Germany April 2022
- Talk: "Birth of convective protostars"
@ (Virtual) PROMETHEE workshop, Grenoble, France November 2021
- Talk: "Zooming in on star and disk formation"
@ Königstuhl Colloquium, MPIA, Heidelberg, Germany October 2020
- Talk: "Zooming in on star and disk formation"
@ (Virtual) Annual Meeting of the German Astronomical Society 2020 September 2020
- Talk: "Zooming in on star and disk formation"
@ Astro-colloquium, Institute for Astronomy and Astrophysics, Tübingen, Germany January 2020
- Talk: "Zooming in on the early stages of star and disk formation"
@ Stars, Planets, & ISM seminar, Department of Astronomy, UT Austin, USA November 2019
- Talk: "Zooming in on the early stages of star and disk formation"
@ Stars & Planets seminar, CfA, Cambridge, MA, USA November 2019
- Poster: "Early stages of star and disk formation"
@ Harvard-Heidelberg workshop on Star Formation: Linking Observations and Simulations, CfA, Cambridge, MA, USA November 2019
- Talk: "Zooming in on the early stages of star and disk formation"
@ Fachbeirat 2019, MPIA, Heidelberg, Germany November 2019
- Talk: "Early stages of star and disk formation"
@ ITA blackboard colloquium, Heidelberg, Germany July 2019

- Poster: “Early stages of star and disk formation”
@ Zooming in on Star Formation, Nafplio, Greece June 2019
- Talk: “Earliest stages of star and disk formation”
@ Star formation workshop, International Space Science Institute (ISSI), Bern, Switzerland May 2019
- Talk: “From molecular cores to hydrostatic cores”
@ The physics of star formation: Gas flows from Milky Way cloud scales to protostellar disks,
a Heidelberg-Harvard workshop, MPIA, Heidelberg, Germany December 2018
- Talk: “From molecular cores to hydrostatic cores”
@ Centre de Recherche Astrophysique de Lyon (CRAL), Lyon, France November 2018
- Poster: “Early stages of low- to high-mass star formation”
@ The Wonders of Star Formation, Edinburgh, Scotland September 2018
- Poster: “First core properties: from low- to high-mass star formation”
@ The Olympian Symposium 2018, Mount Olympus, Greece May 2018
- Poster and Talk: “From molecular cloud cores to hydrostatic cores”
@ The Early Phase of Star formation (EPoS) 2018: Archetypes, Ringberg, Germany May 2018
- Talk: “From clouds to cores”
@ PSF coffee, MPIA, Heidelberg, Germany April 2018
- Poster: “First core lifetime from low-mass to high-mass star formation”
@ SPF2: Star and Planet Formation in the Southwest, Oracle, Arizona, USA March 2018
- Talk: “First core lifetime from low-mass to high-mass star formation”
@ ISM day, Hamburg Observatory, Germany February 2018
- Poster: “Numerical simulations of low-mass star formation”
@ Star formation from cores to clusters, Santiago, Chile March 2017
- Talk: “Effects of inclined star-disk encounter on protoplanetary disk size”
@ PSF coffee, MPIA, Heidelberg, Germany September 2016
- Poster: “Effects of star-disk encounters on protoplanetary disks”
@ DGG conference, Münster, Germany March 2016
- Poster: “Effects of star-disk encounters on protoplanetary disks”
@ The Formation of the Solar System II, Berlin, Germany June 2015
- Poster: “Study of Transiting Exoplanets WASP-12 b and HAT-P-7 b”
@ National Student Symposium on Physics, Chandigarh, India February 2013
- Poster: “Study of Transiting Exoplanet - WASP-12 b”
@ The 17th National Space Science Symposium, Tirupati, India February 2012

OTHER CONFERENCES, WORKSHOPS AND SUMMER SCHOOLS

- MIAPP program: Gaps, Rings, Spirals, and Vortices: Structure formation in planet-forming disks
@ Munich Institute for Astro- and Particle Physics (MIAPP), Munich, Germany October 2021
- European Astronomical Society (EAS) Annual Meeting
@ (Virtual) Leiden University / Leiden Observatory, The Netherlands June-July 2021
- PLUTO symposium
@ (Virtual) Torino University, Italy June 2021
- “From prestellar cores to solar nebulae II”
@ (Virtual) Institute Pascal, Paris, France May 2021
- Invited “Young scientist” for a workshop on the interstellar object 1I/’Oumuamua
@ ISSI in Bern, Switzerland November 2018
- NBIA summer school on “Astrophysical plasmas - from planets to galaxies”
@ Niels Bohr Institute, Copenhagen, Denmark August 2017

- “Physics of star formation: Milky Way and Beyond”, a Heidelberg-Harvard workshop
@ Max Planck Institute for Astronomy, Heidelberg, Germany November 2016
- “Exoplanets in Lund 2015”
@ Lund Observatory, Sweden May 2015
- “The Formation of the Solar System”
@ Max Planck Institute for Radio Astronomy, Bonn, Germany May 2014
- Vacation Students Programme
@ Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India Summer 2013
- Summer School organized by the Indian Institute of Astrophysics (IIA), Bangalore, India
@ Kodaikanal Observatory Summer 2012
- 12th PLANEX workshop on “Exploration of Asteroids and Comets” organized by
PLANEX, Physical research laboratory (PRL), Ahmedabad, India
@ Mt. Abu, Rajasthan, India January 2012
- Summer Internship Programme
@ Indian Institute of Astrophysics, Bangalore, India Summers 2011 and 2012
- “Frontiers in Physics” - a yearly seminar series
@ Fergusson College, Pune, India 2009 - 2013