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# ASMITA BHANDARE

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## 🔍 RESEARCH INTERESTS .....

Formation and evolution of stars, circumstellar disks, and planets

Numerical simulations

Linking theoretical models to observations

## 📍 POSITIONS .....

- Postdoctoral researcher  
Centre de Recherche Astrophysique de Lyon, Lyon, France September 2020 - ...
- Postdoctoral researcher  
Max Planck Institute for Astronomy, Heidelberg, Germany July 2020 - August 2020

## 🎓 EDUCATION .....

- **Ph.D. Astronomy**  
Max Planck Institute for Astronomy, Heidelberg, Germany 2016 - 2020
- **Master of Science in Astrophysics**  
Argelander Institute for Astronomy, 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), 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: PLUTO (radiation magneto-hydrodynamic code), N-body codes
- Programming: Python, C, C++, HTML
- Softwares and Tools: LaTeX, Git, Jupyter Notebook, Atom, Vim, Mathematica, IRAF
- Operating Systems: macOS, Linux, Windows

## PUBLICATIONS .....

- Pfalzner S., Aizpuru Vargas L., **Bhandare A.**, and Veras D., “Significant interstellar object production by close stellar flybys”, 2021, A&A, arXiv:2104.06845
- 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
- **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
- 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
- **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
- The ‘Oumuamua ISSI team, “Natural History of ‘Oumuamua”, 2019, Nature Astronomy, 3, 594-602
- **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
- 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
- **Bhandare A.**, Breslau A., and Pfalzner S., “Effects of inclined star-disc encounter on protoplanetary disc size”, 2016, A&A, 594, A53
- Pfalzner S., Kirk H., Sills A., Urquhart J. S., Kauffmann J., Kuhn M., **Bhandare A.**, and Menten K. M., “Observational constraints on star cluster formation theory. I. The mass-radius relation”, 2016, A&A, 586, A68

## 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

## ACHIEVEMENTS AND AWARDS .....

- Best poster prize at “The Early Phase of Star formation (EPoS) 2018: Archetypes”, Ringberg, Germany 2018
- Fellow of the International Max Planck Research School (IMPRS-HD) 2016 - 2020
- First prize for a lecture competition organized by the Indian Physics Association 2013
- Second best poster prize at the “17th National Space Science Symposium”, 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 ISRO project 2010 - 2012

## ORGANIZATIONAL RESPONSIBILITIES .....

- Volunteer for 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 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, Pune 2009 - 2013

## SCIENCE OUTREACH .....

- Intern at the IAU Office of Astronomy for Education, Heidelberg, Germany June 2021 - ...
- Volunteered as a mentor for the Supernova Foundation 2021 - ...
- 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 .....

- Talk: “Zooming in on star and disk formation”  
@ Königstuhl Colloquium, Max Planck Institute for Astronomy, 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, 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, MPA, 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, MPA, 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, MPA, 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

## CONFERENCES, MEETINGS AND SUMMER SCHOOLS .....

- 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
- Workshop on “The Astrophysics of Black Holes” organized by IUCAA, Pune in collaboration with Astro Club, Department of Physics, Fergusson College, Pune, India September 2012
- 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”  
@ Fergusson College, Pune, India 2009 - 2013