

Dr. Rajika Kuruwita

CONTACT INFORMATION	Heidelberg Institute for Theoretical Studies Schloß-Wolfsbrunnenweg 35 69118 Heidelberg, Germany	<i>Tel:</i> +45 71 68 44 53 <i>E-mail:</i> rajika.kuruwita@h-its.org <i>Website:</i> https://rajikalk.github.io/index.html ORCID: 0000-0002-9236-2919
RESEARCH INTERESTS	Star formation, binary and multiple star systems, protoplanetary disks and planets in binary star systems, MHD simulations, software development.	
EDUCATION	Australian National University , Canberra, Australia February, 2015 - January, 2019 PhD <ul style="list-style-type: none">• Thesis Topic: “The formation, evolution, and survivability of discs around young binary stars”• Primary Supervisor: Associate Christoph Federrath• Secondary Supervisor: Associate Professor Michael Ireland Macquarie University , Sydney, Australia February, 2010 - January, 2015 MRes. Physics and Astronomy <ul style="list-style-type: none">• Thesis Topic: “Fallback disks and the end of the common envelope phase”• Primary Supervisor: Professor Orsola De Marco• Secondary Supervisor: Assistant Professor Jan Staff BSc. Astronomy and Astrophysics	
EMPLOYMENT HISTORY	Heidelberg Institute for Theoretical Studies , Heidelberg, Germany <i>Independant Postdoc Fellow</i> October, 2019 - Present Research the formation of binary and multiple star systems via numerical simulations. University of Copenhagen , Copenhagen, Denmark <i>Post-doctorate researcher (European Union INTERACTIONS fellow)</i> April, 2019 - August, 2022 Investigate protostellar multiplicity, and binarity on disc evolution. Australian National University , Canberra, Australia <i>Research Assistant</i> February, 2019 - April, 2019 Research the formation of binary stars systems via simulations. <i>Outreach Assistant</i> December, 2015 - April, 2019 Organise and run outreach observing and site tours for the public, school, scout and private groups, as well as design activities for the observatory visitor centre. Macquarie University , Sydney, Australia <i>Laboratory Demonstrator</i> February, 2014 - January, 2015 Taught lab experiments for undergraduate students. This also involved marking lab books. <i>Observatory and Planetarium Supervisor</i> February, 2010 - January, 2015 Coordinated groups, created tours and presentations, operated observatory and planetarium. <i>Vacation Scholarship Researcher</i> December, 2012 - February, 2013 Simulated light curves to understand the influence of exoplanets on the asteroseismological pulsation spectrum of stars. <i>Vacation Scholarship Researcher</i> January, 2012 - February, 2012	

Carried out research on nanowires using white light interferometry.

TELESCOPE	Australian National University 2.3m Telescope	
TIME AWARDED	<ul style="list-style-type: none"> • PI: Building a Census of Protoplanetary Disks in Binary Star Systems (4 nights) • PI: Building a Census of Circumbinary Protoplanetary Disks (3 nights) • PI: Building a Census of Circumbinary Protoplanetary Disks (6 nights) • PI: Building a Census of Circumbinary Protoplanetary Disks (7 nights) 	
TALKS	Annual Danish Astronomy Meeting	May, 2022
	Contributed Talk	Fredericia, Denmark
	Early Phases of Star Formation (Focus Group)	April, 2022
	Contributed Talk	Ringberg, Germany
	Journal Club	April, 2022
	Invited Talk	Amsterdam, The Netherlands
	Astronomy on Tap	August, 2021
	Invited Talk	Copenhagen, Denmark
	StarPlan Science days	June, 2021
	Contributed Talk	Copenhagen, Denmark
	Distorted Astrophysical Discs	May, 2021
	Contributed Talk	Cambridge, UK
	Transient Tuesday	March, 2021
	Invited Talk	Copenhagen, Denmark
	ESO Hypatia Collouium	February, 2021
	Contributed Talk	Online
	Ramses User Meeting	September, 2019
	Contributed Talk	Copenhagen, Denmark
	Annual Danish Astronomy Meeting	May, 2019
	Contributed Talk	Nyborg, Denmark
	Niels Bohr Institute	January, 2019
	Invited Talk	Copenhagen, Denmark
	Sutherland Astronomical Society Incorporated	September, 2018
	Invited Talk	Sydney, Australia
	Greenlight for Girls National Science Week	August, 2018
	Invited Talk	Canberra, Australia
	University of Tübingen	May, 2018
	Astronomy Seminar	Tübingen, Germany
	Heidelberg Institute for Theoretical Astrophysics	May, 2018
	Astronomy Seminar	Heidelberg, Germany
	Max Planck Institute for Astronomy	May, 2018
	Planet and Star Formation Seminar	Heidelberg, Germany
	Hamburg Observatory	May, 2018
	Astronomy Seminar	Hamburg, Germany
	Annual Scientific Meeting of the Astronomical Society of Australia	June, 2018
	Contributed Talk	Melbourne, Australia
	Planets in Perculiar Places	April, 2018
	Contributed Talk	Sydney, Australia
	International Women's Day Science in the Pub	March, 2018
	Invited Talk	Canberra, Australia
	12th ANITA Theory Workshop	February, 2018
	Contributed Talk	Perth, Australia
	Franco-Australian Astrobiology and Exoplanet School and Workshop	December, 2017
	Contributed Talk	Canberra, Australia
	Annual Scientific Meeting of the Astronomical Society of Australia	July, 2017
	Contributed Talk	Canberra, Australia

11th ANITA Theory Workshop	February, 2017
Contributed Talk	Hobart, Australia
Mt Stromlo Students Seminars	December, 2016
Contributed Talk (Awarded Best Theme Talk)	Canberra, Australia
6th Australian Exoplanet Workshop	November, 2016
Contributed Talk	Melbourne, Australia
Star Formation	August, 2016
Computational Astrophysics splinter session (Invited)	Exeter, UK Annual Scientific Meeting of the Astronomical Society of Australia
Contributed Talk	July, 2016 Sydney, Australia
10th ANITA Theory Workshop	February, 2016
Contributed Talk	Melbourne, Australia
5th Australian Exoplanet Workshop	November, 2015
Contributed Talk	Sydney, Australia
9th ANITA Theory Workshop	February, 2015
Contributed Talk	Canberra, Australia

AWARDS AND HONORS	<ul style="list-style-type: none"> • 2021: Kvinder i Fysik (Danish Women in Physics) Prize 2021 Nominee • 2020: European Union INTERACTIONS Fellowship • 2017: Joan Duffield Research Supplementary Scholarship • 2015: Australian Postgraduate Award • 2013: Macquarie University Research Training Scholarship • 2012: Vacation Scholarship (Macquarie University) • 2011: Vacation Scholarship (Macquarie University)
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TEACHING AND MENTORING EXPERIENCE	<p>Niels Bohr Institute Masters Students August, 2021 - Present</p> <p>I am co-supervising two Masters student. One student is working on producing synthetic observations from my simulations and the other is building a pipeline using machine learning to fit synthetics observations to real observations of young protostars.</p> <p>Niels Bohr Institute Bachelors projects February-April, 2021</p> <p>I supervised three groups of students for their bachelors' projects where we modelled the interiors of exoplanets using polytropes.</p> <p>Computational Astrophysics November, 2019, 2020</p> <p>Gave post-graduate level lectures on computational astrophysics reviewing hydrodynamics and modelling shock waves.</p> <p>Mt Stromlo Observatory Summer Research December, 2017 - February, 2018</p> <p>Co-supervised Isabella Gerard (currently a graduate student at Monash University) on a research project on turbulent magnetic fields and star formation. I am co-author on the paper published from this project.</p> <p>Mt Stromlo Observatory Winter School June-July, 2017</p> <p>Advised undergraduate students Lara Cullinane and Patrick Armstrong (currently a graduate students at ANU), Joshua Ho and Lillian Guo in planning observations and writing telescope proposals.</p>
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COMPUTER SKILLS	<ul style="list-style-type: none"> • Computing Languages: Python, Fortran and html • Applications: \LaTeX, yt, simulation codes RAMSES, FLASH and Enzo, analysis of hdf5 files from hydrodynamic simulations, reducing observational data in fits files, retrieving radial velocities. • Operating Systems: Unix/Linux, Windows, and Mac.
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OTHER ACADEMIC SERVICES	<ul style="list-style-type: none"> • Reviewer for Monthly Notices of the Royal Astronomical Society • Founded of Astronomy on Tap Copenhagen in 2020. • Treasurer of Kvinder i Fysik (the Danish women in physics society) from 2019 to present.
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- Contributed two popular science articles to the Sunday Space in the Canberra Times.
- Member of the Local Organising Committee for the 2017 Harley Wood Winter School and Annual Scientific Meeting of the Astronomical Society of Australia.
- Member of the Science Organising Committee for the 2016 Harley Wood Winter School.
- Chair of the Organising Committee for the 2016 Mt Stromlo Student Seminars.

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DETAILS

- Associate Professor Troels Haugbølle, Center for Star and Planet formation, University of Copenhagen, Geology Museum, Øster Voldgade 5-7, 1350 København K, tel: +45 35 32 11 41, email: haugboel@nbi.ku.dk
- Dr Christoph Federrath, Research School of Astronomy and Astrophysics, Australian National University, Research School of Astronomy & Astrophysics, Mount Stromlo Observatory, Cotter Road, Weston Creek, ACT 2611, tel: +61 2 6125 0217, email: christoph.federrath@anu.edu.au
- Professor Jes Kristian Jørgensen, Center for Star and Planet formation, University of Copenhagen, Geology Museum, Øster Voldgade 5-7, 1350 København K, tel: +45 35 32 41 86, email: jeskj@nbi.ku.dk

REFereed
PUBLICATIONS

Kuruwita & Haubølle, *The contribution of binary star formation from core-fragmentation scales on protostellar multiplicity*, 2022, *Astronomy & Astrophysics*, *Submitted*

- Lead author, and conductor of research and analysis.

Kuruwita et al., *The dependence of episodic accretion on eccentricity during the formation of binary stars*, 2020, *Astronomy & Astrophysics*, 641, A59

- Lead author, and conductor of research and analysis.

Kuruwita & Federrath, *The role of turbulence during the formation of circumbinary discs*, 2019, *Monthly Notices of the Royal Astronomical Society*, 486, 3647-3663

- Lead author, and conductor of research and analysis.

Kuruwita et al., *Multiplicity of disc-bearing stars in Upper Scorpius and Upper Centaurus-Lupus*, 2018, *Monthly Notices of the Royal Astronomical Society*, 480, 5099–5112

- Lead author, and conductor of research and analysis.
- Collected the majority of observations.

Kuruwita et al., *Binary star formation and the outflows from their discs*, 2017, *Monthly Notices of the Royal Astronomical Society*, 470, 1626-1641

- Lead author, and conductor of research and analysis.

Kuruwita et al., *Considerations on the role of fall-back discs in the final stages of the common envelope binary interaction*, 2016, *Monthly Notices of the Royal Astronomical Society*, 461, 486-496

- Lead author, and conductor of research and analysis.

Jørgensen, J. & **Kuruwita, R.** et al, *Binarity of a protostar affects the evolution of the disk and planets*, 2021, *Nature*, Volume 606, Issue 7913, p.272-275

- Lead the theoretical component of paper. Conducted analysis of simulations used for comparison with observations.

Gerrard et al., *The role of magnetic field structure in the launching of protostellar jets*, 2019, *Monthly Notices of the Royal Astronomical Society*, 485, 5532-5542

- Co-supervised Gerrard in running simulations and analysing them

Green et al., *Testing the binary trigger hypothesis in FUors*, 2016, *The Astrophysical Journal*, 830, 29

- Obtained observational data with Keck and commented on paper drafts.

Childress et al., *The ANU WiFeS SuperNova Programme (AWSNAP)*, 2016, Publications of the Astronomical Society of Australia, 33, 29

- Obtained observational data with Australian National University 2.3m telescope.

Little et al., *Phase-stepping interferometry of GaAs nanowires: Determining nano-wire radius*, 2013, Applied Physical Letters, 103, 161107

- Obtained experimental data with white light interferometry of nanowires.