

## Dr. Rajika Kuruwita

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CONTACT INFORMATION	Centre for Star and Planet Formation University of Copenhagen Øster Voldgade 5-7 DK-1350, Copenhagen, Denmark	<i>Tel:</i> +61 02 9850 7111 <i>E-mail:</i> rajikakuruwita@gmail.com <i>Website:</i> <a href="https://rajikalk.github.io/index.html">https://rajikalk.github.io/index.html</a> 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	<b>Australian National University</b> , Canberra, Australia <b>February, 2015 - January, 2019</b> <b>PhD</b> <ul style="list-style-type: none"><li>• Thesis Topic: “The formation, evolution, and survivability of discs around young binary stars”</li><li>• Primary Supervisor: Associate Christoph Federrath</li><li>• Secondary Supervisor: Associate Professor Michael Ireland</li></ul> <b>Macquarie University</b> , Sydney, Australia <b>February, 2010 - January, 2015</b> <b>MRes. Physics and Astronomy</b> <ul style="list-style-type: none"><li>• Thesis Topic: “Fallback disks and the end of the common envelope phase”</li><li>• Primary Supervisor: Professor Orsola De Marco</li><li>• Secondary Supervisor: Assistant Professor Jan Staff</li></ul> <b>BSc. Astronomy and Astrophysics</b>	
EMPLOYMENT HISTORY	<b>University of Copenhagen</b> , Copenhagen, Denmark <i>Post-doctorate researcher (European Union INTERACTIONS fellow)</i> <b>April, 2019 - Present</b> Research the formation of binary and multiple star systems via numerical simulations.  <b>Australian National University</b> , Canberra, Australia <i>Research Assistant</i> <b>February, 2019 - April, 2019</b> Research the formation of binary stars systems via simulations. <i>Outreach Assistant</i> <b>December, 2015 - April, 2019</b> 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.  <b>Macquarie University</b> , Sydney, Australia <i>Laboratory Demonstrator</i> <b>February, 2014 - January, 2015</b> Taught lab experiments for undergraduate students. This also involved marking lab books. <i>Observatory and Planetarium Supervisor</i> <b>February, 2010 - January, 2015</b> Coordinated groups, created tours and presentations, operated observatory and planetarium. <i>Vacation Scholarship Researcher</i> <b>December, 2012 - February, 2013</b> Simulated light curves to understand the influence of exoplanets on the asteroseismological pulsation spectrum of stars. <i>Vacation Scholarship Researcher</i> <b>January, 2012 - February, 2012</b> Carried out research on nanowires using white light interferometry.	
TELESCOPE TIME AWARDED	<b>Australian National University 2.3m Telescope</b> <ul style="list-style-type: none"><li>• <b>PI:</b> Building a Census of Protoplanetary Disks in Binary Star Systems (4 nights)</li></ul>	

## TALKS

- **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)

<b>Annual Danish Astronomy Meeting</b>	<b>May, 2022</b>
Contributed Talk	Fredericia, Denmark
<b>Early Phases of Star Formation (Focus Group)</b>	<b>April, 2022</b>
Contributed Talk	Ringberg, Germany
<b>Journal Club</b>	<b>April, 2022</b>
Invited Talk	Amsterdam, The Netherlands
<b>Astronomy on Tap</b>	<b>August, 2021</b>
Invited Talk	Copenhagen, Denmark
<b>StarPlan Science days</b>	<b>June, 2021</b>
Contributed Talk	Copenhagen, Denmark
<b>Distorted Astrophysical Discs</b>	<b>May, 2021</b>
Contributed Talk	Cambridge, UK
<b>Transient Tuesday</b>	<b>March, 2021</b>
Invited Talk	Copenhagen, Denmark
<b>ESO Hypatia Collouium</b>	<b>February, 2021</b>
Contributed Talk	Online
<b>Ramses User Meeting</b>	<b>September, 2019</b>
Contributed Talk	Copenhagen, Denmark
<b>Annual Danish Astronomy Meeting</b>	<b>May, 2019</b>
Contributed Talk	Nyborg, Denmark
<b>Niels Bohr Institute</b>	<b>January, 2019</b>
Invited Talk	Copenhagen, Denmark
<b>Sutherland Astronomical Society Incorporated</b>	<b>September, 2018</b>
Invited Talk	Sydney, Australia
<b>Greenlight for Girls National Science Week</b>	<b>August, 2018</b>
Invited Talk	Canberra, Australia
<b>University of Tübingen</b>	<b>May, 2018</b>
Astronomy Seminar	Tübingen, Germany
<b>Heidelberg Institute for Theoretical Astrophysics</b>	<b>May, 2018</b>
Astronomy Seminar	Heidelberg, Germany
<b>Max Planck Institute for Astronomy</b>	<b>May, 2018</b>
Planet and Star Formation Seminar	Heidelberg, Germany
<b>Hamburg Observatory</b>	<b>May, 2018</b>
Astronomy Seminar	Hamburg, Germany
<b>Annual Scientific Meeting of the Astronomical Society of Australia</b>	<b>June, 2018</b>
Contributed Talk	Melbourne, Australia
<b>Planets in Perculiar Places</b>	<b>April, 2018</b>
Contributed Talk	Sydney, Australia
<b>International Women's Day Science in the Pub</b>	<b>March, 2018</b>
Invited Talk	Canberra, Australia
<b>12th ANITA Theory Workshop</b>	<b>February, 2018</b>
Contributed Talk	Perth, Australia
<b>Franco-Australian Astrobiology and Exoplanet School and Workshop</b>	<b>December, 2017</b>
Contributed Talk	Canberra, Australia
<b>Annual Scientific Meeting of the Astronomical Society of Australia</b>	<b>July, 2017</b>
Contributed Talk	Canberra, Australia
<b>11th ANITA Theory Workshop</b>	<b>February, 2017</b>
Contributed Talk	Hobart, Australia
<b>Mt Stromlo Students Seminars</b>	<b>December, 2016</b>
Contributed Talk (Awarded Best Theme Talk)	Canberra, Australia
<b>6th Australian Exoplanet Workshop</b>	<b>November, 2016</b>

	Contributed Talk	Melbourne, Australia
	<b>Star Formation</b>	<b>August, 2016</b>
	Computational Astrophysics splinter session (Invited)	Exeter, UK
	<b>Meeting of the Astronomical Society of Australia</b>	<b>July, 2016</b>
	Contributed Talk	Sydney, Australia
	<b>10th ANITA Theory Workshop</b>	<b>February, 2016</b>
	Contributed Talk	Melbourne, Australia
	<b>5th Australian Exoplanet Workshop</b>	<b>November, 2015</b>
	Contributed Talk	Sydney, Australia
	<b>9th ANITA Theory Workshop</b>	<b>February, 2015</b>
	Contributed Talk	Canberra, Australia
AWARDS AND HONORS	<ul style="list-style-type: none"> <li>• 2021: Kvinder i Fysik (Danish Women in Physics) Prize 2021 Nominee</li> <li>• 2020: European Union INTERACTIONS Fellowship</li> <li>• 2017: Joan Duffield Research Supplementary Scholarship</li> <li>• 2015: Australian Postgraduate Award</li> <li>• 2013: Macquarie University Research Training Scholarship</li> <li>• 2012: Vacation Scholarship (Macquarie University)</li> <li>• 2011: Vacation Scholarship (Macquarie University)</li> </ul>	
TEACHING AND MENTORING EXPERIENCE	<p><b>Niels Bohr Institute Masters Students</b> <b>August, 2021 - Present</b></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><b>Niels Bohr Institute Bachelors projects</b> <b>February-April, 2021</b></p> <p>I supervised three groups of students for their bachelors' projects where we modelled the interiors of exoplanets using polytropes.</p> <p><b>Computational Astrophysics</b> <b>November, 2019, 2020</b></p> <p>Gave post-graduate level lectures on computational astrophysics reviewing hydrodynamics and modelling shock waves.</p> <p><b>Mt Stromlo Observatory Summer Research</b> <b>December, 2017 - February, 2018</b></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><b>Mt Stromlo Observatory Winter School</b> <b>June-July, 2017</b></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>	
COMPUTER SKILLS	<ul style="list-style-type: none"> <li>• Computing Languages: Python, Fortran and html</li> <li>• Applications: <math>\text{\LaTeX}</math>, yt, simulation codes RAMSES, FLASH and Enzo, analysis of hdf5 files from hydrodynamic simulations, reducing observational data in fits files, retrieving radial velocities.</li> <li>• Operating Systems: Unix/Linux, Windows, and Mac.</li> </ul>	
OTHER ACADEMIC SERVICES	<ul style="list-style-type: none"> <li>• Reviewer for Monthly Notices of the Royal Astronomical Society</li> <li>• Founded of Astronomy on Tap Copenhagen in 2020.</li> <li>• Treasurer of Kvinder i Fysik (the Danish women in physics society) from 2019 to present.</li> <li>• Contributed two popular science articles to the Sunday Space in the Canberra Times.</li> <li>• Member of the Local Organising Committee for the 2017 Harley Wood Winter School and Annual Scientific Meeting of the Astronomical Society of Australia.</li> <li>• Member of the Science Organising Committee for the 2016 Harley Wood Winter School.</li> <li>• Chair of the Organising Committee for the 2016 Mt Stromlo Student Seminars.</li> </ul>	

REFEREE  
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 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.