Andrei Ristea

Postdoctoral Research Associate in Astrocombs
aristea@swin.edu.au · +61 402 722 390
Personal website: andreiristea.com · LinkedIn: Andrei Ristea

SUMMARY

I am a research associate developing wavelength calibration techniques for astronomical observations using laser-frequency combs. These devices emit light at well-defined, locked wavelengths, resembling a comb in appearance, making them the world's most accurate wavelength calibrators. Focusing on how to harness the full power of laser-frequency combs, I am developing novel methods to analyze their signal and extract meaningful information from it. My goal is to construct spectral calibrations accurate enough to allow measurements of the most fundamental properties of our universe with the world's largest telescopes. My research combines aspects of instrumentation, optical and radio astronomy. I am a keen science communicator to both expert audiences and the general public.

RESEARCH AND PROFESSIONAL EXPERIENCE

- **Postdoctoral Research Associate** · *Swinburne University; COMBS ARC Excellence Centre*
  May 2025 – Present

  Developing methods for high-fidelity spectral calibration using laser-frequency combs, the world's most accurate astronomical calibrators. Building capacity for measuring fundamental properties of our universe with the world's largest telescopes.

- **Adjunct Research Fellow** · *The University of Western Australia* · **Mar 2026 – Present**

  Analysing observations of Virgo-cluster galaxies to determine the star formation histories of these galaxies and deduce how they assembled their mass.

- **Assistant teaching staff (casual)** · *The University of Western Australia* · **Feb 2024 – Dec 2025**

  Creating practical assignments and pipelines for assessing computational projects; running practical classes across three departments: mathematics, computer science and physics.

EDUCATION

- **PhD in Astrophysics** · *The University of Western Australia* · **Jun 2021 – Jul 2025**
  Thesis: Galaxy Evolution Traced by Stellar and Gas Kinematics in the Nearby Universe
  Grade: Pass thesis without revisions (highest possible recommendation)

- **Master of Physics and Astronomy** · *Durham University, UK* · **Sep 2016 – Jul 2020**
  Grade: First Class (Honours)
  Thesis: The Outer Edges of Galaxies at $1.2 < z < 1.6$: A Study of the Kinematics of Star-Forming Galaxies Using Integral Field Spectroscopy with KMOS

AWARDS AND PRIZES

- **Ken and Julie Michael Prize · Nov 2024 · Link to Press Release**

  A prestigious award presented every year to the top PhD student at each node of the International Centre for Radio Astronomy Research (ICRAR) to recognise outstanding research achievement and excellence.

- **Commendation for Outstanding Contributions to Student Learning · Nov 2024 · Link**

  Award to recognise the outstanding impact that academic teaching staff have in enhancing student learning outcomes, and to encourage continued excellence within the UWA computer science department.

- **Most outstanding presentation by a graduate student at the ASTRO 3D annual science meeting · May 2023 · Link to talk**

- **Best talk at the UWA Graduate Student Association research week · Oct 2022 · Link**

- **Third best talk by a graduate student at the Astronomical Society of Australia annual science meeting · Jul 2022 · Link to talk**

- **Second best talk by a graduate student and second best use of slides at the ASTRO 3D annual science meeting · May 2022 · Link to talk**

- **Durham University Physics Department Andy Brinkman Prize · Jun 2019**

  Awarded by the Durham University Physics Department to undergraduate students who have shown outstanding performance, with reference to leadership, teamwork and experimental excellence in their undergraduate studies.

GRANTS AND AWARDED OBSERVING TIME

- **Granted observing time as PI (16 hrs) on the Very Large Telescope, Chile · Jun 2024**
  Oversubscription factor ~ 4.5
  Estimated operational value: 40,000 EUR ($65,300 AUD)

  Awarded for a research project targeting 12 peculiar galaxies identified by **Ristea et al. (2022)**. The observations will determine how these galaxies formed, a currently unknown pathway.

- **UWA Postgraduate Student Association Travel Grant ($800 AUD) · Apr 2023 · Link**

  Competitive grant, to support my travel to the European Astronomical Society annual science meeting 2023, where I presented two contributed talks.

- **Astronomical Society of Australia Travel Grant ($1500 AUD) · Mar 2023**

  Competitive grant, awarded by the Astronomical Society of Australia to supplement my travel fund to the European Astronomical Society annual science meeting 2023, where I presented two contributed talks.

- **Scholarship for International Research Fees and Living Allowance · Nov 2020**

  Merit-based scholarships awarded to support my PhD studies at UWA, with a total value of $275,600 AUD (including tuition fees and living allowance), over three years.

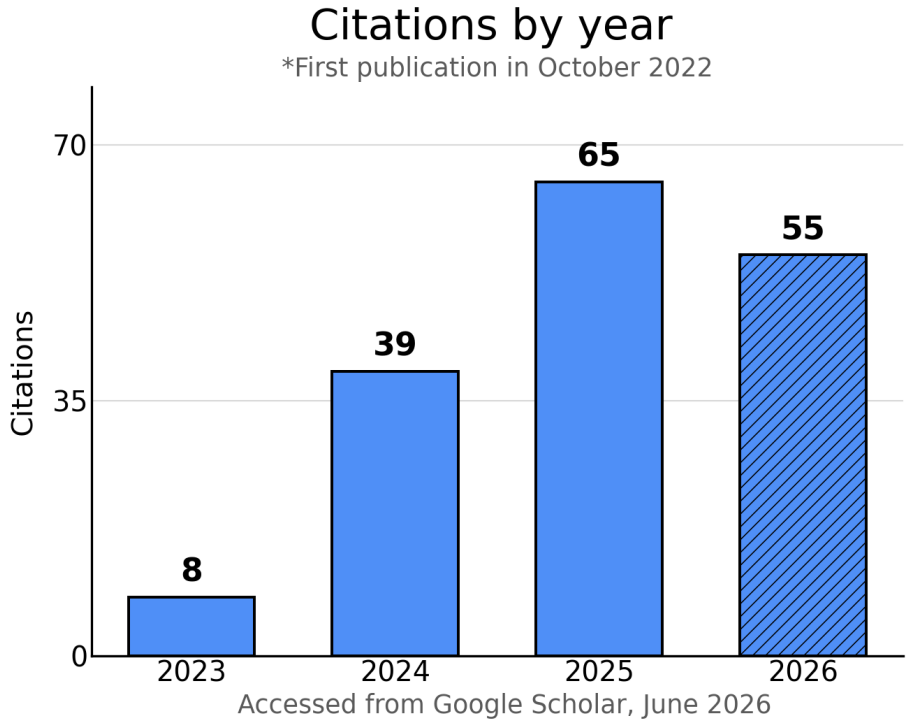
POSTGRADUATE STUDENT SUPERVISION

PhD:

- **Megha Sharma** · Swinburne University · Associate supervisor · **May 2025 – Present**
  Megha's PhD work focuses on quantifying the operational requirements of the redshift drift experiment for measuring the expansion of the universe in real time.

PUBLICATIONS

Citations: 167 · **h-index:** 7 · Google Scholar · Researchgate
First-author publications: 3 (59 citations)
Contributing-author publications: 15 (108 citations)
See my full list of publications on NASA ADS - Andrei Ristea



PROFESSIONAL COLLABORATION MEMBERSHIPS

- **The ARC Centre of Excellence in Optical Microcombs for Breakthrough Science (COMBS)** · *Postdoctoral member (Astrocombs sub-division)* · **May 2025 – Present**
- **Hector Galaxy Survey** on the Anglo-Australian Telescope · *Data reduction team member* · **Oct 2023 – Present**
- **MUSE and ALMA Unveiling the Virgo Environment (MAUVE) Galaxy Survey** · *Science team member* · **Sep 2023 – Present**
- **Sydney-AAO Multi-object Integral-field spectrograph Galaxy Survey** · *Science team member* · **Jun 2021 – Present**
- **Astronomical Society of Australia (ASA)** · *Full member* · **Jun 2021 – Present**
- **The ARC Centre of Excellence for All Sky Astrophysics in 3 Dimensions (ASTRO 3D)** · *Graduate Student Member* · **Jun 2021 – Jul 2025**

COLLOQUIA AND TALKS

Invited colloquia and talks:

- **ARC Centre of Excellence in Optical Microcombs for Breakthrough Science (COMBS) colloquia series** · Jun 2026 · online colloquium · **Link to talk**
- **COMBS Excellence Centre annual science meeting** · Feb 2026 · invited talk · Wollongong, NSW
- **"3D View of Galaxies" research group colloquia series** · Jun 2024 · online colloquium
- **ASTRO 3D Excellence Centre colloquia series** · Jun 2024 · online colloquium
- **The University of Western Australia Physics Department seminar** · Oct 2022

Selected outreach:

- **Harrisdale Senior High School - online outreach presentation** · May 2026
  Describing the latest advancements in astrophysics and discussing careers in astronomy
- **TEDx Swinburne talk** · Oct 2025 · **Link to talk**
  Title: *Can we learn the ultimate fate of our universe?*
- **Perth Observatory invited presentation to the observatory staff** · Sep 2022
  Title: *Stars and gas rotating in different directions within galaxies*

Selected contributed conference talks:

- **"Charting the future of stellar and exoplanet spectroscopy" conference** · Sep 2026 (upcoming) · Procchio, Italy
- **Astronomical Society of Australia (ASA) annual science meeting** · Jul 2024 · online talk
- **ASTRO 3D Excellence Centre legacy science meeting** · Jun 2024 · Sydney, Australia
- **European Astronomical Society annual science meeting** · Jul 2023 · Kraków, Poland
  Two contributed talks across two sessions.
- **ASA annual science meeting** · Jul 2023 · Sydney, Australia · **Link to talk**
- **ASTRO 3D annual science meeting** · May 2023 · Perth, Australia · **Link to talk**
- **ASA annual science meeting** · Jul 2022 · Hobart, Australia · **Link to talk**
- **ASTRO 3D annual science meeting** · May 2022 · Melbourne, Australia · **Link to talk**

SERVICE ROLES AND LEADERSHIP

- **Colloquium organiser** · Centre for Astrophysics & Supercomputing (Swinburne) · **Jul 2025 – Present**
  Coordinating a team of three to communicate with potential speakers, schedule colloquia and advertise them within the centre.
- **Postgraduate student representative** · International Centre for Radio Astronomy Research (ICRAR), The University of Western Australia (UWA) · **Jan 2023 – Jan 2024**
  Attending monthly senior staff meetings to advocate for student interests; organising a 1-day conference uniting UWA and Curtin astronomy graduate students.
- **Health and safety student representative** · ICRAR UWA · **Mar 2022 – Mar 2024**
  Attending Health and Safety committee meetings to discuss student issues and work to resolve them; participating in yearly health and safety inspections at ICRAR.