UWA Master of Physics 2021

Astronomy and Astrophysics

Introductory Session
WELCOME
Astronomy and Astrophysics in WA

Significant growth in the last 10-15 years

Nearly 1/3 of the whole Australian astronomical community now based in WA
The Square Kilometre Array

The most powerful radio telescope in the world… to be built in WA
Construction to start in 2021!

Australia affirms role in world’s largest telescope

September 29, 2020

Australia is another step closer to helping create the world’s largest radio telescope, which will allow further exploration of the universe while creating jobs in Western Australia and growing the economy.

Australia has today ratified the Square Kilometre Array (SKA) Observatory Convention.

Under the Convention, WA will host 130,000 antennas and South Africa the 200 dishes – together making the telescope that will allow astronomers to view the cosmos in more detail than ever before.

Minister for Industry, Science and Technology Karen Andrews said over
Astronomy and Astrophysics at UWA

The International Centre for Radio Astronomy Research (ICRAR)
Astronomy and Astrophysics at UWA

The International Centre for Radio Astronomy Research (ICRAR)

School of Physics, Mathematics and Computing
Astronomy and Astrophysics at UWA

The International Centre for Radio Astronomy Research (ICRAR)

Galaxy Formation and Evolution
  Local Universe
  Distant Universe
  Theory and Computational Astronomy

Data Intensive Astronomy

Astro-photonics

School of Physics, Mathematics and Computing
Astronomy and Astrophysics at UWA

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Astro-photonics

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Gravitational Wave Astronomy
Gravitational Wave Instrumentation
Multi-Messenger and high-energy astrophysics

Together they scored 5 in the last Research Assessment exercise by the Australian Research Council: the highest possible score equivalent to “Well above world standard”
Astronomy and Astrophysics at UWA

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Gravitational Wave Instrumentation

Multi-Messenger and high-energy astrophysics

Nodes of the 2 Australian Research Council Centres for Excellence in Astronomy and Astrophysics (>60 M$ investment combined)
Master of Physics (Astronomy and Astrophysics) at UWA

In depth astro-related course-work and research projects
The only astro-focused Master in WA

- Galaxies and Galactic Dynamics
- Radiative Processes and Interstellar Medium
- Radio and Optical Observational Techniques
- Astronomy and Gravitational Wave Instrumentation
- Cosmology and Galaxy Formation
- Astro-statistics and Computational Astronomy

Science in Australia Gender Equity (SAGE) initiative, co-partnered by the Australian Academy of Science and the Australian Academy of Technology and Engineering. Other initiatives include the creation of the Pleiades awards, provision of conference childcare, and the targeted hiring of female staff. However, the issue of gender balance in astronomy (and STEM in general) remains concerning, and the goal of 33% female participation across all levels in astronomy is yet to be achieved. The poor retention of female ECRs is of particular concern, and the Academy's Early- and Mid-Career Researcher (EMCR) Forum is playing a role in supporting and providing advocacy for this group. Broader equity issues around sexual, cultural, religious and linguistic diversity have also become of more concern to the community, as have issues related to mental health, accessibility and prolonged periods of illness. It is therefore important that astronomy institutes continue to prioritise initiatives that address these issues, and also contribute to schemes which help the broader issue of participation in STEM studies at school. Such schemes include training for girls in schools, promoting female role models in high school science curriculums.

Kewley, L., 2019, Nature Astronomy, 3, 1067

Participants at the ICRAR-CASS Radio School 2018. CREDIT: TOBIAS WESTMEIER/ICRAR
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Expansion started in 2018 and keeps going…
Towards a Graduate School of Astronomy and Astrophysics in the next few years

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ICRAR's supportive research environment

ICRAR organises a range of activities at both Curtin and UWA to bring staff and students together and encourage collaboration across disciplines.

Research group meetings
Research groups conduct their own team meetings to discuss research projects and bring the team together for updates.

Professional Development
Researchers and students are offered a wide range of professional development opportunities including training in communication skills for those looking to disseminate their research and use of social media to communicate their research.

Weekly seminars
Weekly seminars are held on Tuesdays and Thursdays at Curtin, and Wednesdays at UWA. Talks are given by visitors, local staff or experts from other institutions, and are open to the public.

Professional Development
A separate presentation day is held for summer interns. PhD and Masters students are invited to come together once a year to present their research results and encourage collaboration between the three institutes.

Induction
With the majority of people recruited internationally, staff and students are assisted with relocation support, temporary accommodation and a detailed induction.

SAGE member UWA
This monthly colloquium series aims to enhance collaboration between the two ICRAR nodes, CSIRO and high-profile centres of astronomical research around the world.

Journals club
Weekly journal clubs are held at ICRAR-Curtin and at ICRAR-UWA. These provide an opportunity for researchers to come together and discuss journal articles.

Write club
Every Monday at ICRAR-Curtin, this provides a few hours of dedicated time to get together and write.

Plot of the week
Every Friday at ICRAR-UWA, this provides an opportunity for researchers to come together to discuss research results and ask questions.

Radio galaxy morning tea
Radio galaxy morning tea is held at 10am each Thursday, alternating between ICRAR-Curtin, ICRAR-UWA and CSIRO-Perth. This allows for informal discussion on the latest research in radio astronomy and/or galaxy evolution science. The cross-institutional discussion group helps foster further research collaboration between the three institutes.

Visitors
ICRAR welcomes more than 200 national and international collaborators every year.

Student presentation day
All ICRAR staff and students are invited to come together once a year to present talks from PhD and Masters students. A separate presentation day is held for summer interns.

Plot of the week
A weekly forum at ICRAR-Curtin for staff and students to get together to discuss research results and ask questions. The “STDERR” is language agnostic and driven by the needs of the group which change throughout the year.

A Bench member
A Bench member is a senior female researcher who shares her journey with other women in astronomy. The recipient imparts her specific strategies to young students and staff to help more women reach higher levels in academia.

Visiting fellowship for senior women in astronomy
A three-month fellowship that sees a senior female researcher share her journey with other women in astronomy. The recipient shares a journey with other women in astronomy. The recipient imprints her story and strategies to young students and staff to help more women reach higher levels in academia.

Plot of the week
A weekly forum at ICRAR-Curtin for staff and students to get together to discuss research results and ask questions. The “STDERR” is language agnostic and driven by the needs of the group which change throughout the year.

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Thursday morning tea
Every Thursday, rotating between ICRAR-Curtin, ICRAR-UWA and CSIRO-Perth. The aim of this morning tea is to facilitate an informal discussion on the latest research in radio astronomy and/or galaxy evolution science. The cross-institutional discussion group helps foster further research collaboration between the three institutes.

Friday morning tea
Every Friday at ICRAR-UWA, this social and informal morning tea often showcases international food. As part of our commitment to cultural inclusivity, the ICRAR-Curtin development committee also runs occasional morning teas to mark specific cultural events.

Silver Pleiades Award - Recognising Commitment to Advancing Women in Astronomy ICRAR-UWA
A three-day retreat for all staff and students held in the first week of September, involving a detailed induction and use of social media to communicate their research.

Weekend retreat
A three-day retreat for all staff and students held in the first week of September, involving a detailed induction and use of social media to communicate their research.

Wellbeing workshops
Wellbeing and resilience events are held for both staff and students.

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Beyond coursework and research

Master of Physics (Astronomy and Astrophysics) at ICRAR

L. Cortese - Master Intro Session 2021
Today’s Program

10:10 – Master of Physics (Astronomy and Astrophysics) - enrolment/course work/etc. – Matthew Young
10:30 – Break - ICRAR Friday Morning Tea (2nd Floor)
11:00 – Insights from former UWA Master students
11:10 - Overview Talks about Master Research Opportunities
   Local Universe – Barbara Catinella
   Distant Universe – Luke Davies
   Theory and Computational Astronomy – Chris Power
   Multi-messenger and high-energy astrophysics – Bruce Gendre
   Gravitational Wave Discovery – Fiona Panter
12:10 – Lunch (pizza) and meet and greet with potential supervisors (2nd Floor)