International
Centre for
Radio
Astronomy
Research

AAS DECADAL PLAN

WOMEN IN STEM

INTERNATIONAL CENTRE FOR RADIO ASTRONOMY RESEARCH

ICRAR

International Centre for Radio Astronomy Research

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INTRODUCTION

THE INTERNATIONAL CENTRE FOR RADIO ASTRONOMY RESEARCH

The International Centre for Radio Astronomy Research (ICRAR) is an equal joint venture between Curtin University and The University of Western Australia, with funding support from the State Government of Western Australia.

Established in 2009, the vision was to become a collaborative centre achieving research excellence in astronomical science and engineering, making a fundamental contribution to the realisation and success of the Square Kilometer Array. Over the past decade, our research topics have expanded well beyond radio astronomy research alone. ICRAR is also focussed on translation of skills and opportunities into returns for industry and the broader community.

ICRAR has continued its journey of excellence in radio astronomy science, engineering and data science and a very meaningful education and outreach program. ICRAR's aims include inspiring public interest and participation in science, engineering and data intensive research. ICRAR is committed to training and establishing a pool of world-class scientists and technologists in disciplines related to radio astronomy by attracting top academics from across the globe and helping early career researchers to reach the top of their fields.

Over the last decade, ICRAR has grown to include over 100 staff and over 75 postgraduate students across the two universities. This accounts for nearly one third of the total Australian astronomical community. The centre is also among the top five radio astronomy research centres in the world.

ICRAR is a supportive, innovative workplace that actively promotes work life balance, equity and diversity, flexibility and development of staff, students, visitors and collaborators. ICRAR has been recognised with Gold and Silver Pleiades diversity, equity and inclusivity awards by the Astronomical Society of Australia. We therefore believe it is vastly important that we provide a response to the Australian Academy of Science regarding our initiatives, current and planned, that foster gender equality within our institution.

DR KATE HARBORNE PRACTISING HER MEDIA ENGAGEMENT SKILLS DURING A TRAINING DAY

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OPPORTUNITY 1

LEADERSHIP

ICRAR has a leadership team who are never complacent and constantly looking for ways to promote equity and diversity in the workplace. This is reflected in the supportive and friendly culture that is frequently commented on by staff and visitors.

OPPORTUNITY 1: LEADERSHIP

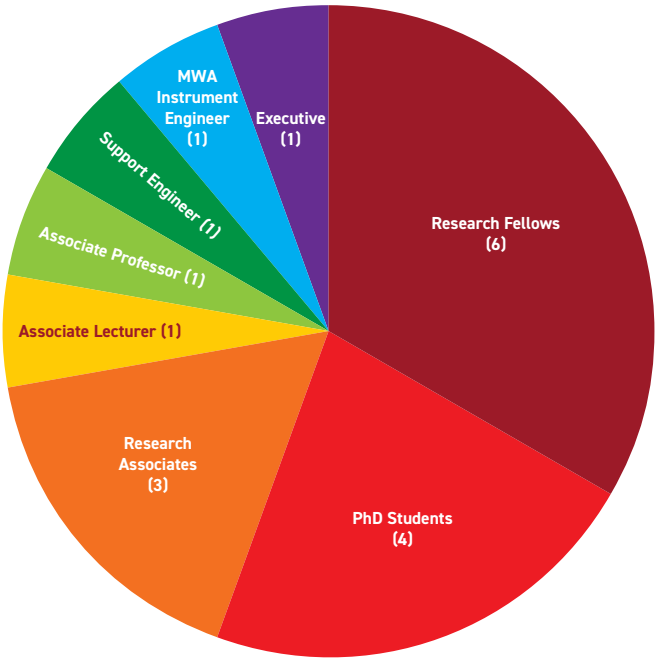
The ICRAR Board and ICRAR Executive are strongly committed to supporting equity and diversity and a better representation of women in leadership positions. Moreover, both the ICRAR Board and Executive are working to improve gender balance within the teams themselves. ICRAR's mission to create a world-leading radio astronomy research centre is contingent on training a new generation of world-class researchers and fostering a collaborative environment for scientists and engineers that will attract top researchers from across the world. To do so, the ICRAR executives are committed to creating equal opportunities for their staff and students, irrespective of gender, age, sexual orientation, culture and origin.

These aims are championed by two committees: The Development, Equity and Inclusion (DEI) Committee at The University of Western Australia (UWA) Node of ICRAR (ICRAR-UWA) and the Development Committee (DevCom) at the ICRAR Node at Curtin University (ICRAR-Curtin). These committees have the same goals and coordinate with one another closely.

Both the DEI and DevCom committees were established in 2014 and include members across various seniority levels, from PhD students to the ICRAR executive.

DEVCOM AND DEI

The main objective of the committees is to foster an environment where all staff can flourish irrespective of role, age, gender, sexual orientation, disability, race, religion. The committees recognise that a way to promote diversity and representation, at all levels, is through development and support of existing, and future, staff and students. They therefore provide initiatives to help the professional development of students and early-career researchers (ECRs) and are also a portal to provide academic and nonacademic staff on career development, progression and recognition. About 50% of their activities are related to gender equity.



DEI AND DEVCOM COMBINED MEMBER STATISTICS

These committees organise several seminars and workshops each year to support women in building their research careers. Further initiatives include the Visiting Fellowship for Women programme, in which a female senior academic external to ICRAR spends 2-3 months in Perth working with staff and students at both nodes. These individuals lead closed discussions with students and ECRs on career challenges and give high-impact public lectures on career related topics (as well as their own journeys and impactful scientific research).

Beyond their activities promoting gender diversity, the committees are a portal to provide advice for academic and non-academic staff on career development, progression and recognition. Furthermore, DEI is also responsible for the training and advertising of so-called DEI Wards, 3 ICRAR members who can be contacted confidentially to report any instances of perceived inequality or misconduct at the workplace.

PHD STUDENT AND PASIONATE WOMEN IN STEM ADVOCATE KAT ROSS

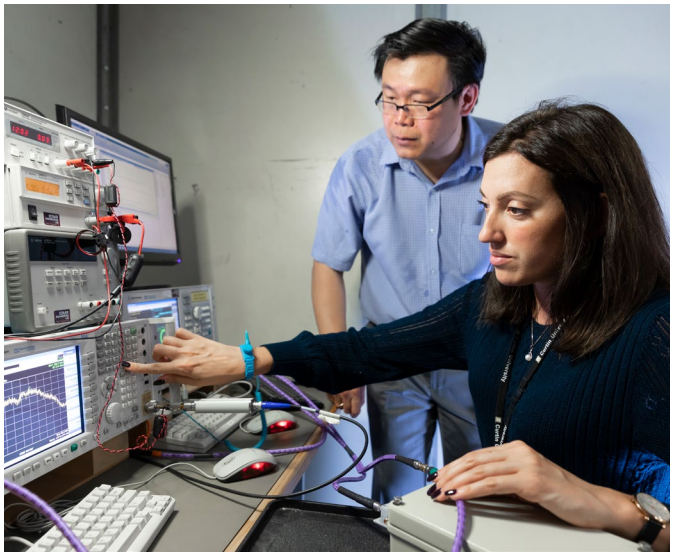
OPPORTUNITY 1: LEADERSHIP

PROFESSOR PETER QUINN,
EXECUTIVE DIRECTOR, ICRAR

"ICRAR recognises the need for action on many fronts to address the representation and participation of women in astronomical research and STEM careers in general. Actions that promote and enable girls at school to participate in, and succeed at STEM subjects, begins a pathway to greater equality. That pathway must also address biases at many levels, the particular challenges of raising families and the needs of couples in an international and volatile job market. ICRAR, through its DEI and DevCom committees, is actively working on all these areas to ensure we offer a supportive, successful and empowering environment for women in astronomy."

ICRAR is leading the country in many aspects of equity and diversity; the Curtin node of ICRAR was presented with a Silver Pleiades Award and the centre's UWA node was the only institute in Australia to achieve a Gold Pleiades Award in the 2019 round, which recognised our 'exceptional and sustained demonstration of equity in the workplace', along with an 'ongoing commitment to advancing diversity and inclusion in Astronomy' nationally. Furthermore, Curtin and UWA have both been awarded internationally recognised Athena SWAN Bronze Awards for their commitment to gender diversity in the STEM subjects of science, technology, engineering, maths and medicine.

2019 KEN AND JULIE MICHAEL PRIZE WINNER MENGYAO XUE



ICRAR ENGINEERS DR MARIA KOVALEVA AND DR BUDI JUSWARDY

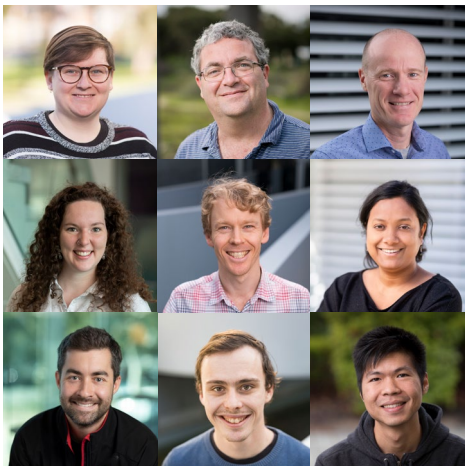
"ICRAR, in its ten years journey has created an inclusive environment that values diversity, enables growth and supports dignity of all. ICRAR offers equal opportunities to its staff and students with additional support and flexibility available to those who need it. One of ICRAR's core values is to support and advance women in STEM and ICRAR is strongly committed to it. The STEM Decadal Plan will guide and enable ICRAR to build further on its commitment."

DR RENU SHARMA
ASSOCIATE DIRECTOR,
CHIEF OPERATING OFFICER, ICRAR

OPPORTUNITY 1: LEADERSHIP

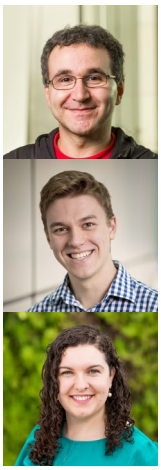
"I am proud of the work ICRAR has done to support not only women but all minorities within the centre, and I am delighted to continue working with DEI and DevCom to push our goals even further. The STEM Decadal Plan allows us to continue this work and build upon the achievements of ICRAR with regards to increasing equity, diversity and inclusion."

DR CHRISTENE LYNCH,
CHAIR OF THE DEVCOM COMMITTEE, ICRAR-CURTIN



DEVCOM MEMBERS

DEI MEMBERS



DEI WARDS

"Thanks to the support of ICRAR's management, as well as staff and students, it's extremely exciting to see that every year we are able to actively contribute to making our working environment more and more inclusive and supportive for women, as well as other minorities, in astronomy. The STEM Decadal Plan has provided us with a unique opportunity to be even more ambitious for the future."

ASSOCIATE PROFESSOR LUCA CORTESE,
CHAIR OF THE DEI COMMITTEE, ICRAR-UWA

ICRAR STAFF AND STUDENTS CELEBRATING 'WEAR IT PURPLE DAY' 2020

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OPPORTUNITY 2

EVALUATION

ICRAR recognises the need for continual self-reflection and evaluation when it comes to promoting opportunities for women in STEM.

OPPORTUNITY 2: EVALUATION

ICRAR is committed to continuously evaluating the conduct of the organisation with respect to equity and inclusion. The DEI and DevCom use a series of feedback tools in order to monitor and judge the impact of initiatives. These tools include:

THE ANNUAL CLIMATE SURVEY

Each year, the committees issue ICRAR-wide anonymous surveys that allow all staff and students to evaluate their experience within the organisation. These surveys have been carried out since 2016 and provide an overview of the workplace environment at each node. They also provide a means of examining how initiatives are improving the general climate of the institution year by year.

DEI AND DEVCOM WARDS/CONTACT POINTS

The Wards are a dedicated team of trained ICRAR members who act as contact points for staff, students and visitors. They are available for consultation and information in the event of any issue that may arise within the workplace. They can be contacted confidentially to report any instances of perceived inequality or misconduct in the workplace. Comments or complaints can also be submitted to the Wards via an anonymous process (either via a pigeon hole or an anonymous feedback form online).

The number of complaints reported since 2014, the nature of the complaint (misconduct or not) and the resolve time is published online.

DEI WARD LEAD: LUCA CORTESE

DEVCOM CHAIR: CHRISTENE LYNCH

DEI WARD: RYAN BUNNEY

DEVCOM DEPUTY CHAIR: ANDREW WILLIAMS

DEI WARD: KIRSTEN GOTTSCHALK

WORD CLOUD CONSTRUCTED USING THE 2019 UWA ANNUAL CLIMATE SURVEY RESPONSES

OPPORTUNITY 2: EVALUATION

THE PLEIADES AWARDS

The ICRAR nodes, Curtin University and the University of Western Australia, each hold Silver and Gold Pleiades Awards respectively. The Pleiades Awards are given by the ASA Chapter for Women in Astronomy to organisations in the Australian astronomical community that take active steps to advance the careers of women.

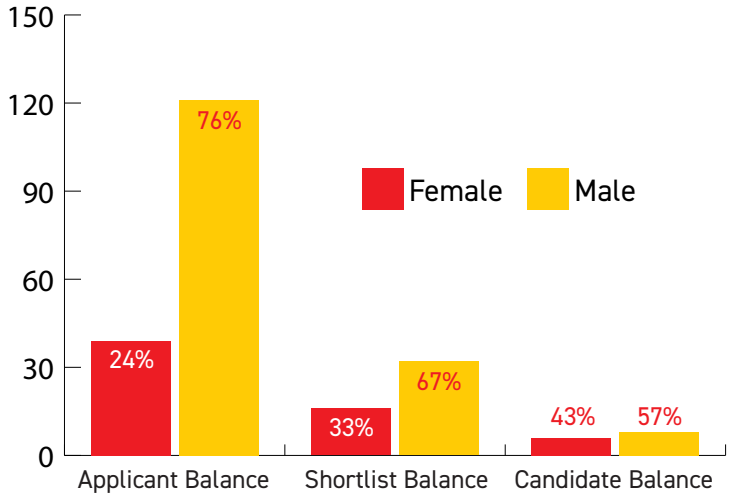
These awards, and the evaluation and reporting that go along with preparing their applications, signify that ICRAR is critical of its own conduct, determined to improve its equity and inclusivity, and to promote best practices both within and outside of the organisation.

Both nodes will be submitting applications for the ASA's Pleiades Awards in 2020; ICRAR-UWA will be striving to maintain it's Gold rating, while ICRAR-Curtin will be applying to reach this Gold standard.

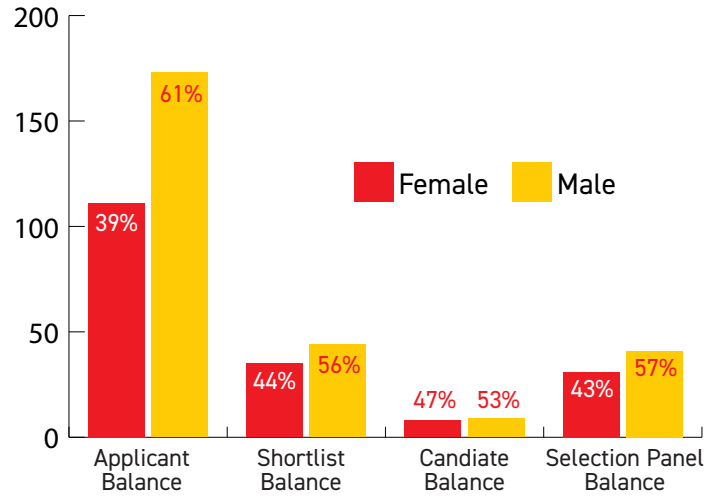
HIRING PROCESSES AND GENDER RATIO STATISTICS

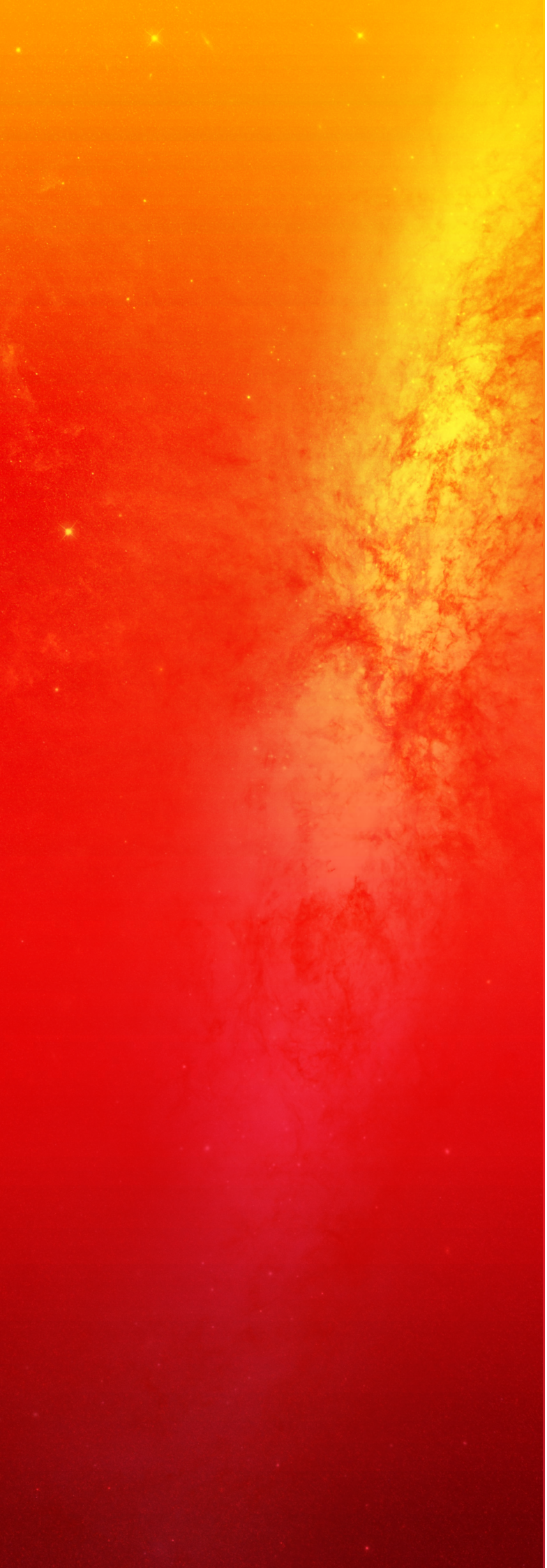
ICRAR publishes statistics on hiring processes which includes the gender ratios at each stage of the hiring process, allowing us to monitor the number of female applicants we are receiving for each role, along with their subsequent success/ failure rate at the initial application review and during the interviews. This includes both at the student level and the staff level.

HIRING STATISTICS FOR ICRAR CURTIN (EXTERNALLY ADVERTISED) ACADEMIC ROLES (2016-2019)



HIRING STATISTICS FOR ICRAR UWA (2016-2019)





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OPPORTUNITY 3

WORKPLACE CULTURE

ICRAR has worked hard over the last 10 years to create a culture that is both supportive and diverse.

OPPORTUNITY 3: WORKPLACE CULTURE

ICRAR maintains equitable and fair guidelines for meetings and conferences, encouraging input from less senior members, such as students, ECRs and minority groups. The guidelines can be viewed online. Further initiatives have been put in place in order to encourage and celebrate ICRAR's women. These are each described below.

WOMEN-ONLY PERMANENT POSITIONS

In an effort to address the under-representation of Women in Science, Technology, Engineering and Mathematics, ICRAR has offered several high level, women-only permanent academic positions. This was part of a wider effort led by The ARC Centre of Excellence in All Sky Astrophysics in 3 Dimensions (ASTRO 3D).

ICRAR (UWA) provided two Women-only permanent academic positions in 2018, following the application process for a single role due to the very high quality of applicants. Similarly, at ICRAR (Curtin), an expression of interest has been issued this year for highly experienced female applicants who are interested in potential opportunities across all academic levels in the Faculty of Science and Engineering.

HIRING OF COUPLES

Within academia, it is common that researchers move around the world every few years. This can be difficult for couples and families, especially for women whose traditional gender role has been to follow their partner. ICRAR has taken the initiative to support couples and families throughout this process by providing joint opportunities for both members of a partnership.

ICRAR has proactively supported couples and families by facilitating the joint hiring of partners. Six couples have been employed within each of ICRAR's teams (engineering, science and outreach), including four ECR post-doctoral couples of which one couple had children.

CHILDCARE PROVISION AND NURSING ROOMS

In keeping with meeting guidelines, Childcare provision is provided at all ICRAR conferences. For example, at our annual retreat, ICRAR-con, free child-care support is provided. Similarly, part-time friendly schedules are followed for group meetings and seminars to allow for the fact that parents may need to collect their children from school.

Nursing rooms have been installed at both ICRAR (UWA) and ICRAR (Curtin) as a safe and clean space for new mothers to breastfeed their children. This allows mothers the option to return to work after having a baby. These rooms are private, but easily accessible for staff members and have a privacy lock and table, along with a powerpoint to assist breastfeeding parents. At Curtin these rooms serve a dual purpose as a private area for daytime prayers. Moreover, ICRAR (Curtin) updated their toilets to include change tables to assist parents with young children.

PRIMARY CARER SUPPORT SCHEMES

In 2019, ICRAR (UWA) allotted a portion of money to two support schemes to provide support to members with primary carer responsibilities. These schemes include:

Primary Carer Conference Support Scheme: ICRAR recognises that primary carer responsibilities present a barrier when attending and presenting at conferences. This barrier can reduce networking opportunities and the visibility of an individual's work. In order to alleviate this, the Primary Carer Conference Support Scheme provides financial support for individuals to facilitate conference attendance.

Long Leave Support Scheme: In the case of Parental and Carer's leave, ICRAR recognises that an extended period of time away from work can have an impact on an individual's career progression beyond the time lost while on leave. For example, a woman who is expecting is more likely to be excluded from upcoming grant applications; from important decisions made about projects which they are involved in while on leave; and, after returning to work, may need an extended period of time to re-establish their networks and productivity. This scheme is set to provide financial support to help offset this effect.

International Centre for Radio Astronomy Research

OPPORTUNITY 4

VISIBILITY

Supporting women in STEM means promoting their work both within academia and in industry. ICRAR has a number of initiatives in place to enhance the visibility of women across all levels of the organisation.

OPPORTUNITY 4: VISIBILITY

ICRAR is committed to advancing the careers of a diverse population and providing opportunities for under-represented groups to achieve recognition for their work and ultimately achieve high level positions inside and outside of Astronomy. A key initiative we have implemented to achieve this goal is the introduction of a 'Visiting Fellowship for Women in Astronomy', detailed below.

VISITING FELLOWSHIP FOR WOMEN IN ASTRONOMY

This fellowship is aimed at providing an opportunity for female senior scientists, engineers and data scientists working within the field of astronomy to visit ICRAR and interact with researchers and graduate students over the course of 2-3 months. The main objectives of this role is to create opportunities for students and ECRs at ICRAR, particularly women, to learn about career development and work-life balance strategies from more senior role models.

This fellowship has been running for the last six years and has included both closed discussions with students and ECRs on career challenges and high-impact public lectures on career related topics (as well as their own journeys and impactful scientific research).

- Dr Andreea Font (Fellowship Recipient 2014)
- Assoc/Prof Vernesa Smolcic (Fellowship Recipient 2015)
- Dr Francesca Primas (Fellowship Recipient 2016-17)
- Assoc/Prof Anna Frebel (Fellowship Recipient 2017-18)
- Professor Lilia Ferrario (Fellowship Recipient 2019)

This programme has been commended by staff and students and will be continued to 2024. For more information, visit the fellowship website.

DR FRANCESCA PRIMAS, ICRAR VISITING FELLOW 2016-17

"The ICRAR Fellowship has been a very positive and rewarding experience, with gender equality, diversity and inclusion at its core. When I look back at my times at ICRAR as a Visiting Fellow, I still feel the warmth of its staff and their genuine interest in gender equality, diversity and inclusion and lots of mentoring opportunities for the younger generations of astronomers. Nice and inclusive atmosphere, lively discussions and exchanges on best practices, which are the result of the commitment of all ICRAR staff, from the junior to the most senior ones."

"I visited ICRAR in 2019 as the ICRAR Visiting Fellow for Senior Women in Astronomy. I found the work environment at both the nodes of ICRAR to be very inclusive, supportive and encouraging. The Gold Pleiades award to the UWA node of ICRAR and the Silver Pleiades award to the Curtin node are a testimony of the opportunities that ICRAR is offering to under-represented groups. This is a great achievement showing that ICRAR is already at the forefront of diversity and inclusion issues on the Australian astronomical scene. Despite these, ICRAR is not complacent and striving to achieve higher goals."

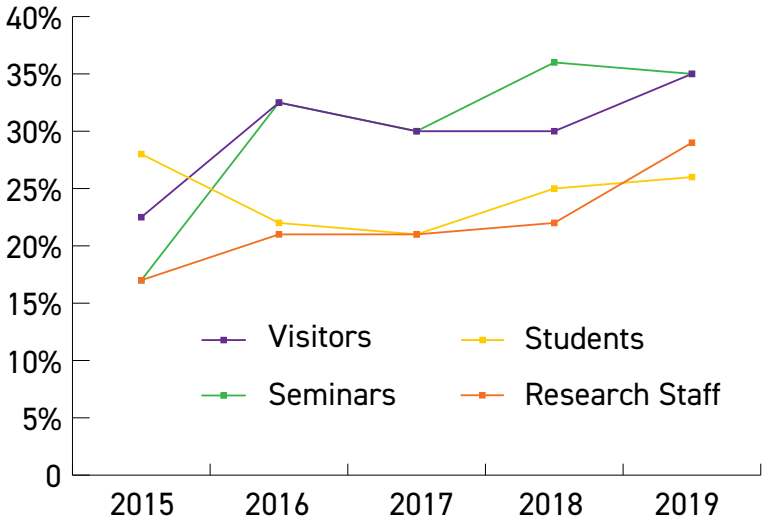
PROFESSOR LILIA FERRARIO ICRAR VISITING FELLOW 2019

OPPORTUNITY 4: VISIBILITY

KEEPING TRACK OF PARTICIPATION OF WOMEN

ICRAR collects information annually to help encourage better participation of women, including keeping track of women research staff, students, visitors and seminar speakers. We note the number of women at ICRAR in these different categories has gone up substantially, e.g. women student numbers have increased from 12 in 2015 to 25 in 2019, however the percentage increase does not reflect this due to the overall growth of ICRAR. ICRAR will continue to monitor these numbers and encourage better participation of women moving forward.

ICRAR PERCENTAGE OF WOMEN 2015-2019

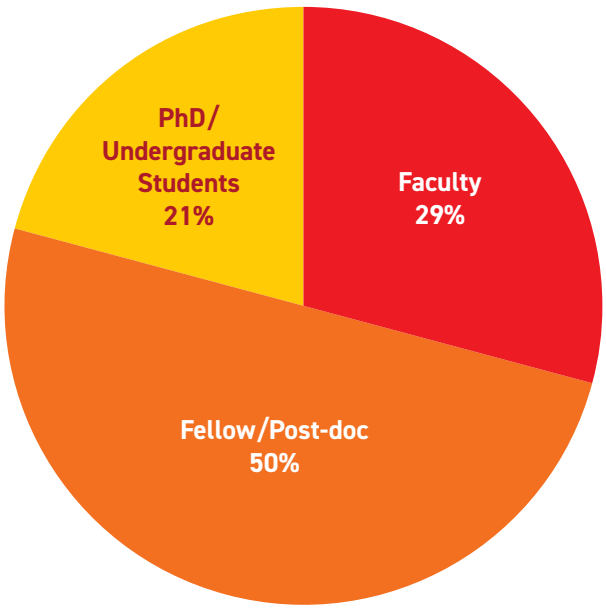


Over the next decade ICRAR is committed to increasing the number of women in each category (research staff, students, visitors, and seminar speakers). This will be done by defining a minimum fraction of female researchers to aim for at each level of employment.

EQUAL OPPORTUNITIES FOR SEMINAR SPEAKERS AND VISITORS

The weekly seminars held between the two ICRAR nodes offer an excellent platform to promote early career researchers. Over the past year (July 2019 - July 2020) 40% of the speakers were female and of those, 50% were Fellows/ Post-doctoral Researchers and 21% were PhD/ Undergraduate students.

ICRAR SEMINAR STATISTICS (BOTH NODES)



DR SABINE BELLSTEDT PRESENTS HER RESEARCH GROUP'S UPDATE AT ICRAR-CON 2019

OPPORTUNITY 4: VISIBILITY

PRESS RELEASES

The fraction of women leading, mentioned, or quoted in press releases has been increasing between 2015-2019. However, there is still more work to do in terms of achieving gender balance (see the 2015-2019 combined statistics below).

	Women	Men	Total	Women (%)	Men (%)
People quoted	41	118	159	26%	74%
People quoted OR a press contact	44	138	182	24%	76%
Listed as a press contact only	3	20	23	13%	87%

ICRAR is committed to increasing the percentage of press releases delivered by female researchers by 10 percentage points (targeting 35%) over the next decade.

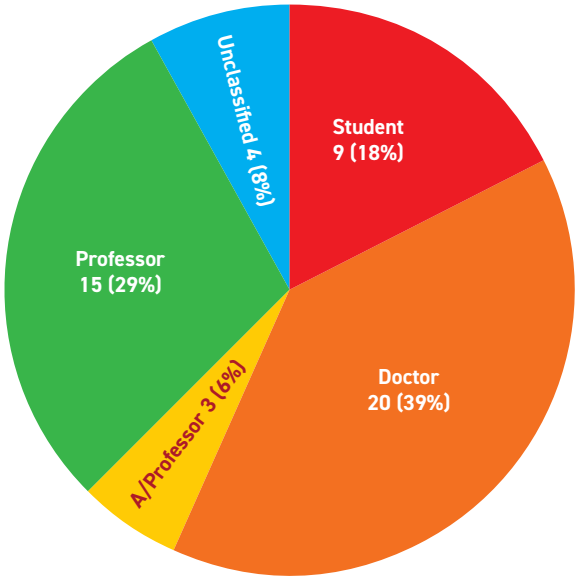
ASTROFEST

ICRAR is a principal sponsor and chair of the organising committee for AstroFest; an annual public astronomy festival that celebrates and showcases ongoing Australian astronomy research. In 2019 the festival was attended by over 4000 people and is therefore a great place to highlight the work by female astronomers. In 2019 a series of talks collectively entitled "The History of the Universe through ICRAR research" were given by 6 female researchers. Moreover, between 2015 - 2019, 44% of the speakers at AstroFest were female and talks were given by researchers at a range of seniority levels (see the table below).

THE HISTORY OF THE UNIVERSE THROUGH ICRAR RESEARCH PRESENTION, INCLUDING A/PROF CATHRYN TROTT (PICTURED SPEAKING), DR GEMMA ANDERSON, DR ADELA KAWKA, AND DR CHRISTENE LYNCH, AS WELL AS DR NATASHA HURLEY-WALKER AND TERESA SLAVEN-BLAIR (NOT PICTURED). CREDIT: ASTRONOMY WA ASTROFEST.

ASTROFEST SPEAKER STATISTICS (2015-2019 INCLUSIVE)

	Female	Male
Number	24	30
Percentage of total	44%	56%



International Centre for Radio Astronomy Research

OPPORTUNITY 5

EDUCATION

ICRAR is committed to encouraging the participation of women in STEM from the ground level up, starting from the moment a child enters a classroom.

OPPORTUNITY 5: EDUCATION

ICRAR is committed to contributing to the STEM education of young students, particularly girls. Every year ICRAR participates in national/international initiatives with the goals of exposing school-aged girls in WA to the fields of Science and Engineering, and inspiring them to future careers in STEM, such as:

- Girls in Engineerings Days
- The Science Cafe
- Innovator's Tea Party (ICRAR is a sponsor of this event that reaches over 100 female high school participants yearly)

ICRAR IN SCHOOLS

ICRAR also leads its own initiatives to bring STEM to local schools; visits and talks by ICRAR researchers are offered to schools on a general basis and we emphasize content that promotes ICRAR's diversity and inclusivity. Talks in girl schools reach at least 50 girls every year.

Our joint outreach program with ASTRO 3D focuses on student self efficacy in under-represented areas in STEM, including women. By engaging in astronomical imaging using the SPIRIT remote optical telescopes, students build their self image as capable STEM practitioners and might even begin to change their future goals.

We also work with all-girl schools, specifically the Iona Presentation College use the SPIRIT telescopes for imaging and astronomical research with about 40 girls every year.

WORK EXPERIENCE STUDENTS

ICRAR has accepted a total of 53 high school work experience students since 2015; 50% were female.

STUDENT LED INITIATIVES

Recently, a group of five ICRAR masters and PhD students who dub themselves the 'GALaxies' have created an outreach talk aiming to encourage more women and diversity in STEM by showing secondary students what it's like to work in astronomy, as well as sharing their love of all things space in an engaging way. The GALaxies have started offering their talk to regional WA schools, as well as schools in metropolitan Perth who are part of the 'Aspire Program' for schools with high proportions of students from low SES backgrounds and underrepresented demographics in higher education.

THE 'GALAXIES', KATY PROCTOR, PHILIPPA PATTERSON, MADELEINE MCKENZIE, JESS THORNE AND JENNIFER HARDWICK

International Centre for Radio Astronomy Research

OPPORTUNITY 6

INDUSTRY ENGAGEMENT

ICRAR has a strong track record in delivering real-world projects, from telescopes on the ground in Western Australia's harsh outback to data-intensive algorithms tested on the world's fastest supercomputer.

OPPORTUNITY 6: INDUSTRY ENGAGEMENT

ICRAR will continue to focus strongly on its core strengths; astronomy, engineering and data science. On top of this, the Centre will enhance its industry engagement, focusing on translation and impact (T&I). Over the past ten years ICRAR has developed strong relationships with industry and will continue to develop and nurture these relationships going forward, generating beneficial outcomes for industrial partners.

ICRAR wants to allow industry to capitalise on the Centre's expertise in engineering, data science and astronomy, and make use of the innovative ideas ICRAR researchers have developed on the path to building the SKA. The Centre wants to find opportunities where radio astronomy skills might be translatable to a broad range of industries that are important for WA's and Australia's future.

Going forward, one of the primary focuses of the T&I team will be to promote the work of female researchers to industry partners.

CASE STUDIES

A number of case studies highlighting specific examples where ICRAR researchers have engaged with industry are displayed on the ICRAR website.

PROFILES

LOUISA QUARTERMAINE, PROJECT MANAGER

As a Project Manager within ICRAR's Data Intensive Astronomy (DIA) group, Louisa Quartermaine's primary role is to keep the team on track to deliver key work packages for the SKA telescope, Australian SKA precursor instruments and the scientific community. A new and emerging aspect of Louisa's role is the engagement with national and international industry partners to undertake collaborative research projects. Industry engagement is a key aspect of Translation and Impact (T&I), an official program of work at ICRAR. Louisa is a member of the ICRAR-UWA T&I team assisting in the development of frameworks to support TI activities as well as maintaining current industry partnerships within the DIA domain and looking to foster new opportunities that deliver mutually beneficial results beyond academia.

DR NIPANJANA PATRA, RESEARCH FELLOW

As a Research Fellow in the Engineering group at ICRAR Curtin, my primary focus is to develop small and advanced precision radio telescopes combined and data interpretation strategies for cosmological observations. Recently I began to investigate the translational application of these techniques in the MedTech field, particularly for pregnancy monitoring to improve the outcomes of premature birth. My team is collaborating with the obstetricians and neonatologists in the King Edward Memorial Hospital for Women the largest maternity hospital of WA and one of the leading pregnancy and neonatal healthcare providers of Australia. A significant contribution came from the Curtin School of Molecular and Life Sciences who donated an Ultrasound machine for this project. Other additional funding is provided by ICRAR Curtin as a part of T&I initiative.

CREDITS

DOCUMENT

The creation of this document was led by Dr Lilian Garratt-Smithson & Dr Andrew Williams, with significant contributions from Dr Kate Harborne, Dr Elisabete da Cunha and A/Prof Randall Wayth, along with the DEI and DeVCom committees and the ICRAR executive team.

Document layout by Kirsten Gottschalk based on a report design by Mario Alberto Design.

IMAGES

PAGE 02

Pulsar J0002+6216
Credit: Composite by Jayanne English, University of Manitoba; F. Schinzel et al.; NRAO/AUI/NSF; DRAO/Canadian Galactic Plane Survey; and NASA/IRAS.

PAGE 03

Pleiades Award graphics credit ASA IDEA Chapter.

PAGE 04

NGC 2264 including the Christmas Tree star cluster and the Cone Nebula
Credit: ESO

PAGE 08

NGC 2467 and surroundings
Credit: ESO

PAGE 10

Pleiades Award graphics credit ASA IDEA Chapter.

PAGE 11

The Cigar Galaxy - M82
Credit: NASA, ESA, and The Hubble Heritage Team (STScI/AURA)
Acknowledgment: J. Gallagher (University of Wisconsin), M. Mountain (STScI), and P. Puxley (National Science Foundation)

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The Helix Nebula
Credit: ESO

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The Eagle Nebula
Credit: ESO

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The Carina Nebula
Credit: ESO

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