

## THE IAU-WOMEN IN ASTRONOMY WORKING GROUP AND INCLUSIVITY

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### ABSTRACT

The International Astronomical Union Women in Astronomy (IAU WiA) working group (WG) is a part of the IAU Executive Committee that supports the needs and endeavours of women astronomers and initiates actions to advance equality of opportunity for women and men in astronomy. The new organizing committee of the IAU WiA WG was set-up in August 2021 with a 4-point plan, to enhance (i) awareness & sustainability via surveys, (ii) training and skill building, (iii) fundraising & (iv) communication via dissemination of results in conferences, WG Magazines, newsletters, etc. to facilitate the career of women in astronomy. In this publication we provide an overview of IAU WiA WG activities with a special focus on the Training and Skill Building efforts that can be adapted for differently-abled and marginalised women researchers.

### RESUMEN

El grupo de trabajo (WG) de Mujeres en Astronomía de la Unión Astronómica Internacional (IAU WiA) es parte del Comité Ejecutivo de la IAU que apoya las necesidades y los esfuerzos de las mujeres astrónomas e inicia acciones para promover la igualdad de oportunidades para mujeres y hombres en astronomía. El nuevo comité organizador del IAU WiA WG se estableció en agosto de 2021 con un plan de cuatro puntos para resaltar (i) la conciencia y la sostenibilidad a través de encuestas, (ii) la capacitación y el desarrollo de habilidades, (iii) la recaudación de fondos y (iv) comunicación vía difusión de resultados en congresos, GT magazines, newsletters, etc. para facilitar la carrera de mujeres en astronomía. En esta publicación, brindamos una descripción general de las actividades del IAU WiA WG con un enfoque especial en los esfuerzos de capacitación y desarrollo de habilidades que se pueden adaptar para mujeres investigadoras marginadas y con capacidades diferentes.

*Key Words:* inclusive astronomy — sociology of astronomy — STEM — women in astronomy

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### 1. THE GENESIS

At the XXV IAU General Assembly in Sydney (Australia) in 2003, the IAU Executive Committee (EC) set up a Working Group (WG) for Women in Astronomy (WiA) to address the issue of deficit of women in research, the need for attention from the international community, and efforts to be taken to improve the gender imbalance situation in Astronomy (Emberlin 1977; Greenstein 1993; Kidwell 1990;

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Kozłowski 2022; Sobel 2016). Following this meeting of 2003, the IAU WiA WG, under their 3-year term, has organized several activities in order to create an awareness of the hurdles faced by Women astronomers during their careers (IAU WiA WG Triennial Report (Primas et al. 2018; Norman et al. 2021).

The present IAU WiA WG was set up in August 2021 at the IAU XXXI General Assembly, with Mamta Pommier as Chair and Priya Hasan as Co-Chair. The activities of the IAU WiA WG are managed by the Organizing Committee (OC) of 15 members from the IAU WiA WG, representing different continents. The OC also includes IAU EC member, Daniela Lazzaro, who acts as the liaison person between the IAU EC and the WG and the advisor, Dara Norman. The WG reports directly to the IAU EC through the EC liaison person and/or via the IAU General Secretary. The OC also organizes a suite of events at the IAU General Assemblies (e.g., Women's Luncheons, Student Mentoring Sessions, Special Talks) (Pommier et al. 2021). The IAU WiA WG has recently conducted a worldwide survey to provide statistical information about the current situation and to plan a way to increase the representation of women in astronomy. According to this survey, a mere 21% of the 12,000 members of the IAU are women, with only 1.6% of members participating in the WiA WG activities (see Fig. 1 in Pommier et al. 2021).

These results clearly point towards the need for global efforts to increase the proportion of women in Astronomy and to attain gender balance in the workplace. It is also necessary to develop links with global women in STEM organisations and create awareness about the prevailing situation.

In this proceedings, in Section 2 we discuss our four-point action plan followed by the activities organized at various levels in Section 3. In Section 4, we discuss about our future plans with a special focus on the training and skill building efforts adapted for differently-abled and marginalised women astronomers and students in STEM fields.

## 2. THE FOUR-POINT ACTION PLAN

The OC of the IAU WiA WG decided to organise activities in a four-point action plan as listed below (IAU WiA WG newsletters)

1. Awareness and Sustainability- to conduct surveys on the working situation of women researchers, gather statistical data from all over the world and highlight gender balance issues

within the IAU members and worldwide astronomical community. These survey results are regularly presented in WG magazine, ENSEMBLE, and yearly reports in order to build a self-supporting and sustainable community.

2. Training and Skill Building- to develop resources and collect materials available from other IAU offices and conduct regular training programs for skill-building and development of female students and early career researchers worldwide.
3. Fundraising- to raise funds and provide financial support to women researchers in crucial stages of their careers.
4. Communication and Dissemination- to encourage participation of worldwide women researchers by setting up communication channels on social media and organizing regular seminar series by experts, permanent, non-permanent members, and OC members (female and male) from a geographically distributed team with different levels of experience.

## 3. FIRST STEPS

Since September, 2021, the WiA WG has organized several activities (ref. IAU WiA WG newsletters) such as the setting up of a website to increase the visibility of the WG (Fig. 2), bring together the global community, and coordinate activities such as seminar series, training programs, surveys, communication channels on social media like facebook, twitter, and YouTube, to provide recordings of the events to the worldwide astronomical community (<https://sites.google.com/view/iau-women-in-astronomy/home>).

Activities have been coordinated at national level and the OC invited members to join the WiA WG as National Representative (NR) for their country. The NR could then help to collect data and translate messages to their local language to improve interaction and communicate information about the activities of the WG<sup>17</sup>

The first IAU WiA WG seminar series focused on creating awareness about the challenges faced by women astronomers at work and efforts being carried out at the national and international level to improve the gender balance in Astronomy and STEM. This

<sup>17</sup> Slack channel  
Twitter page  
Facebook page  
Youtube Channel.

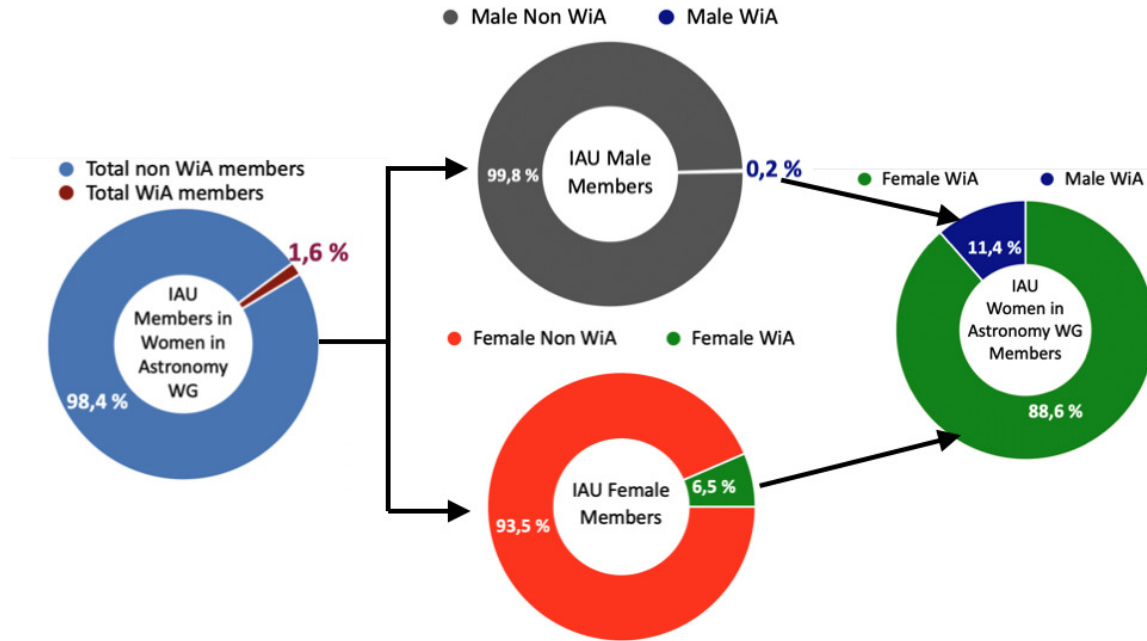


Fig. 1. IAU members and participants of WiA WG, adapted from Pommier et al. (2021)



Fig. 2. Women in Astronomy Website.

seminar series was followed by two Training Program series on ‘Essential Skills for Astronomy Research’. The program involved hands-on sessions on Python, Astropy, Overleaf, ADS, introduction to solar image analysis software, Twitter for scientists, and TOP-CAT. The participants were provided practise assignments and participation certificates.

A survey focused on Women’s Careers in Astronomy was also conducted with the participation of 750 researchers (of all genders) from 50 countries (Pommier et al. 2021). The results were published in the first issue of IAU WiA quarterly magazine, ENSEMBLE, released in December, 2021. The magazine also showcased the achievements of the WG members, survey statistics, problems faced by WiA, events and programs organized for Women researchers and students at the national and international level. The first WiA interview series, with the outstanding lady

astronomer, Prof. Jocelyn Bell Burnell was also published in the First issue of the ENSEMBLE Magazine ((Pommier et al. 2021).

#### 4. FUTURE PROSPECTS AND INCLUSIVITY

The IAU membership statistical data, Fig. 1, shows women constitute a mere 21% women of the membership, with no data available yet on the proportion of women researchers with disabilities in astronomy. This lack of representation of women astronomers and members with disabilities is a clear indicator that there is a need for efforts to support and develop the activities for women researchers and students with disabilities. In order to promote inclusivity, it is equally important to adapt to new pedagogical skills and training programs for visually impaired participants and members with other disabilities. The IAU WiA WG plans to extend their training and skill-building activities for female participants with disabilities through the following efforts:

- delivering talks in local, vernacular languages that would be accessible to non-English speaking audiences;
- the introduction of braille star maps to include the visually impaired in sky watch programs;
- the introduction of tactile (touch) friendly models of the Sun, Moon, planets, constellations, stars, black-holes, mergers of black-holes, etc.

to facilitate ‘visualisation’ of astronomical objects, their features and phenomenon.

- the sonification of astronomical signals using instruments like the tabla (an Indian percussion instrument). One of the authors, P. Hasan, has a specialization in playing this instrument. There are also projects to translate astronomical data into sound (<https://chandra.harvard.edu/photo/2020/sonify/>). similar measures required to be made for inclusion in astronomy to include minorities and other under-represented groups.
- the taking of special care to ensure that venues hosting outreach events are accessible for people with disabilities.

We plan these measures to promote inclusion in astronomy for the visually impaired and members with other disabilities. We also plan to organize further activities to include minorities and other under-represented groups. We invite suggestions and recommendations and hope to make a difference.

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