



Women in astronomy and the IAU

Ewine F. van Dishoeck
Past President IAU 2018-2021

Women in Astronomy WG4 meeting
August 8, 2022
IAU General Assembly 2022 Busan

Many photos taken
from IAU web + archive
www.iau.org
www.iau-100.org



What is the IAU?

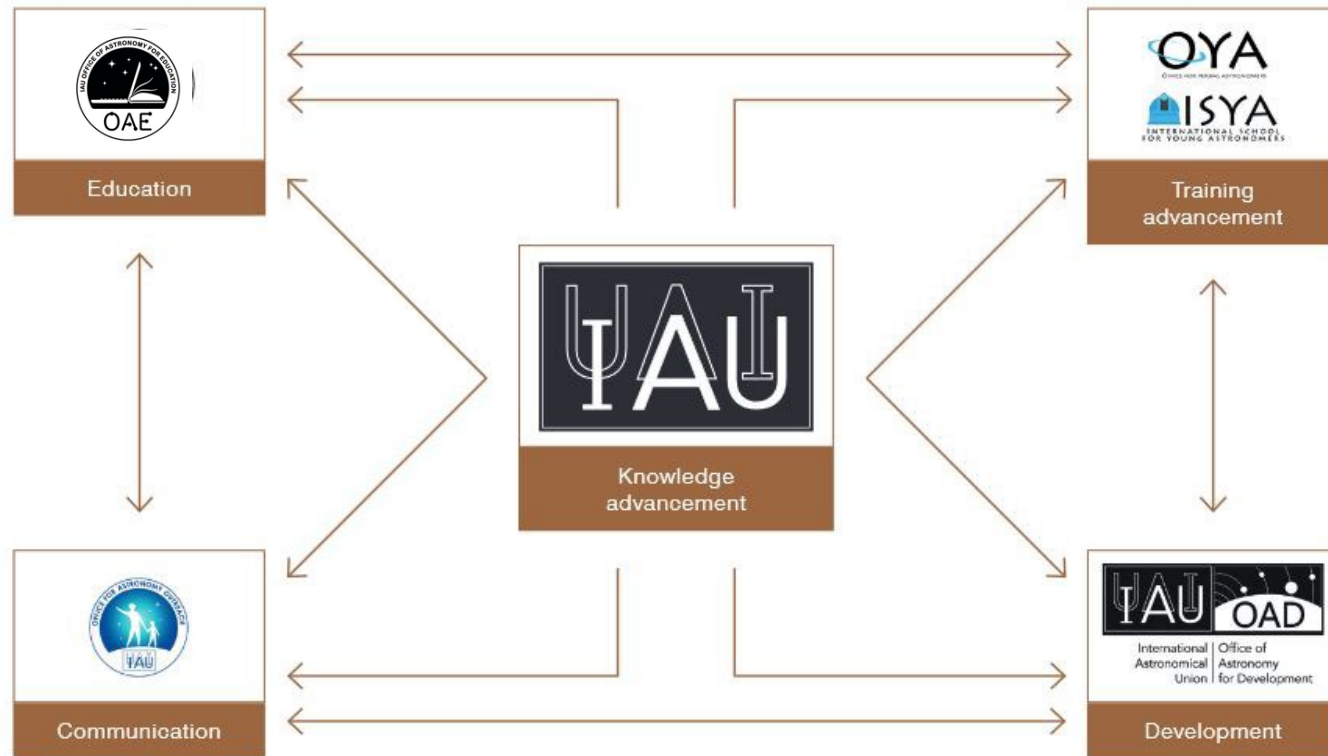
- Worldwide union of all professional astronomers

Promote and safeguard astronomy in all its aspects (including research, communication, education, and development) through international cooperation

- Founded in 1919
- 12000+ members with >100 nationalities; 85 member countries
 - Divisions, Commissions, Working Groups
 - Increasing diversity, including junior members
 - Only 21.8% women



The IAU and its Offices



Approved GA 2018



IAU Divisions and Commissions

- Div A: Fundamental astronomy
- Div B: Facilities, technologies and data science
- Div C: Education, outreach and heritage
- Div D: High energy phenomena and fundamental physics
- Div E: Sun and heliosphere
- Div F: Planetary systems and astrobiology
- Div G: Stars and stellar physics
- Div H: Interstellar matter and local universe
- Div J: Galaxies and cosmology

9 Divisions, 38 Commissions, 53 Working Groups



Division Presidents 2021-2024



Daniel
Hestroffer



Gabriele
Giovannini



Richard
de Grijs



Isabelle
Grenier



Cristina
Mandrini



Antonella
Barucci



Andrej Prsa



Monica Rubio



Kim-Vy Tran

5/9 Women



IAU Executive Committee working groups

- Women in Astronomy
- Junior Members
- Diversity and Inclusiveness
- Dark and quiet skies
- Global coordination of large facilities
- Pro-Am relations
- Naming of celestial bodies



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Strategic Plan Goal 2

The IAU promotes the inclusive advancement of the field of astronomy in every country.

Action

- The IAU will continue to increase the level of actions to promote diversity, encourage and retain women and minorities in astronomy, and support astronomers with special needs.
- WiA and ICSU will cooperate on the Gender Gap in Science study and similar future studies to promote best practices for achieving gender parity.
- IAU-sanctioned events will follow anti-harassment guidelines.





Some IAU history

General Assembly Leiden 1928

**Executive
Committee:**

**All men!
(very famous)**



A few women present

Book IAU 50yr
A. Blaauw

General Assembly Cambridge USA 1932





First IAU (assistant) General Secretary



Book A. Blaauw

Edith Mueller: AGS 1973-1976; GS: 1976-1979: first female (A)GS
Nel Splinter: first Assistant Secretary (“Miss IAU”)

Executive Committee



Book
A. Blaauw

General Assembly Moscow 1958



wikipedia

Polish stellar astronomer

First female vice president: Wilhelmina Iwanowska 1973-1979



Second female vice president: from China



www.womenofchina.cn

Ye Shuhua
1988-1994





Second female vice president: from China



www.womenofchina.cn

Ye Shuhua
1988-1994



Hyesung Kang 2021-2027





Female statistics IAU members

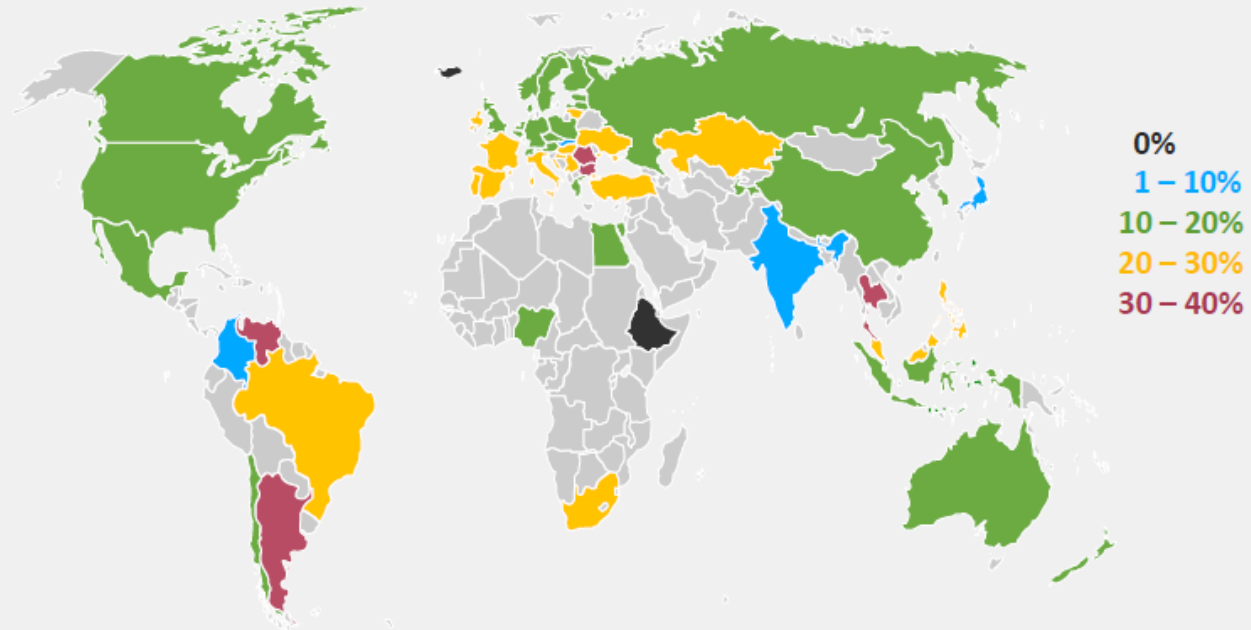
Year	Percentage female
1939	10.8
1948	10.3
1957	10.7
1969	8.8
1978	8.8
1987	9.6
1999	11.5
2008	12.9
2016	16.3
2018	18.0
2021	21.2

Some increase in recent years, but overall fraction still disappointingly low
Younger generation now at 35-40%.



Gender distribution 2015

IAU gender-geographical distribution (Adhering countries)



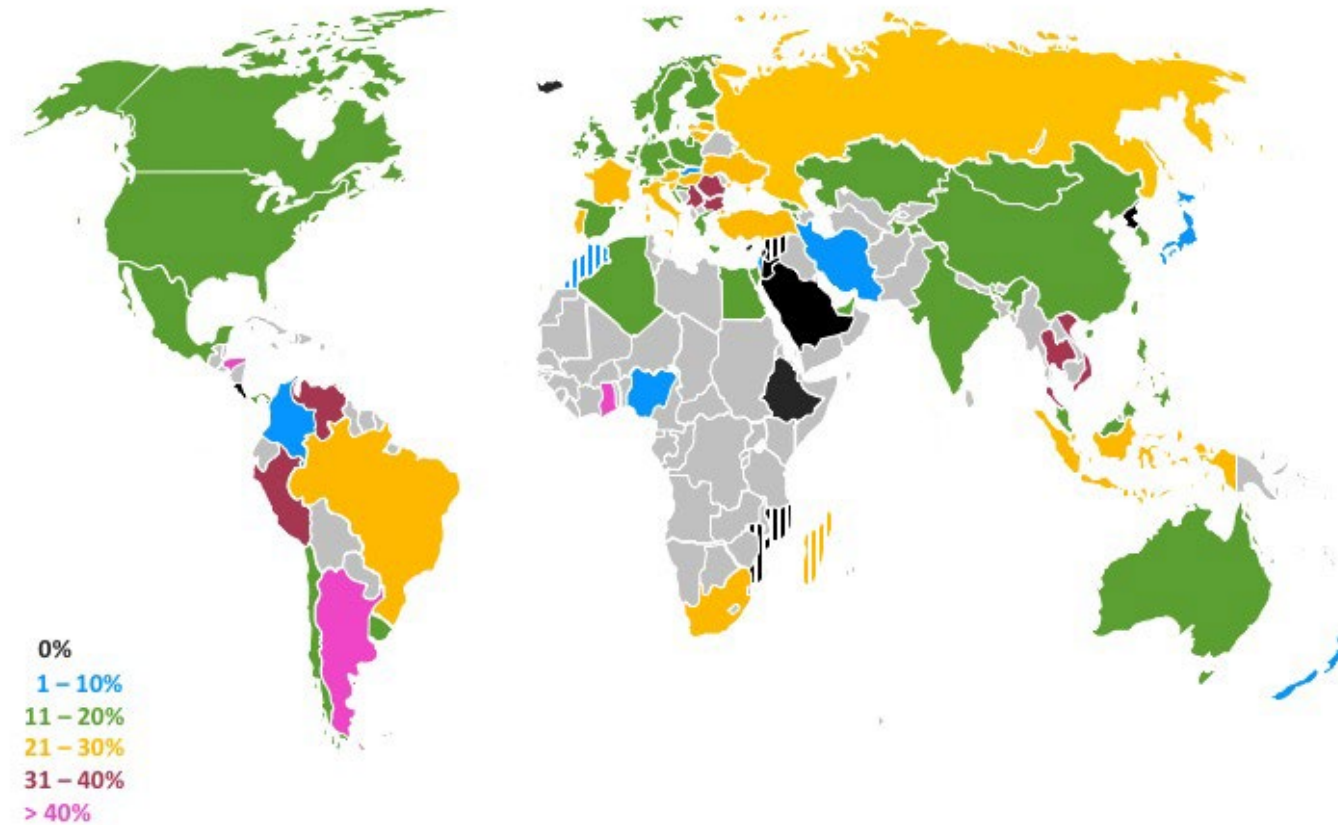
Wide range: from 7-8% Colombia/Japan ... to the 35-40% Bulgaria/Thailand/Argentina

From 3 to more than 2000 IAU members per country!
Largest contributors: **USA** (22%), **F/I/D/UK/JP** (5.5-7%)

Credit:
F. Primas



Gender distribution 2018



IAU gender distribution – April 2019
(excl. Terminated; Observers – striped)

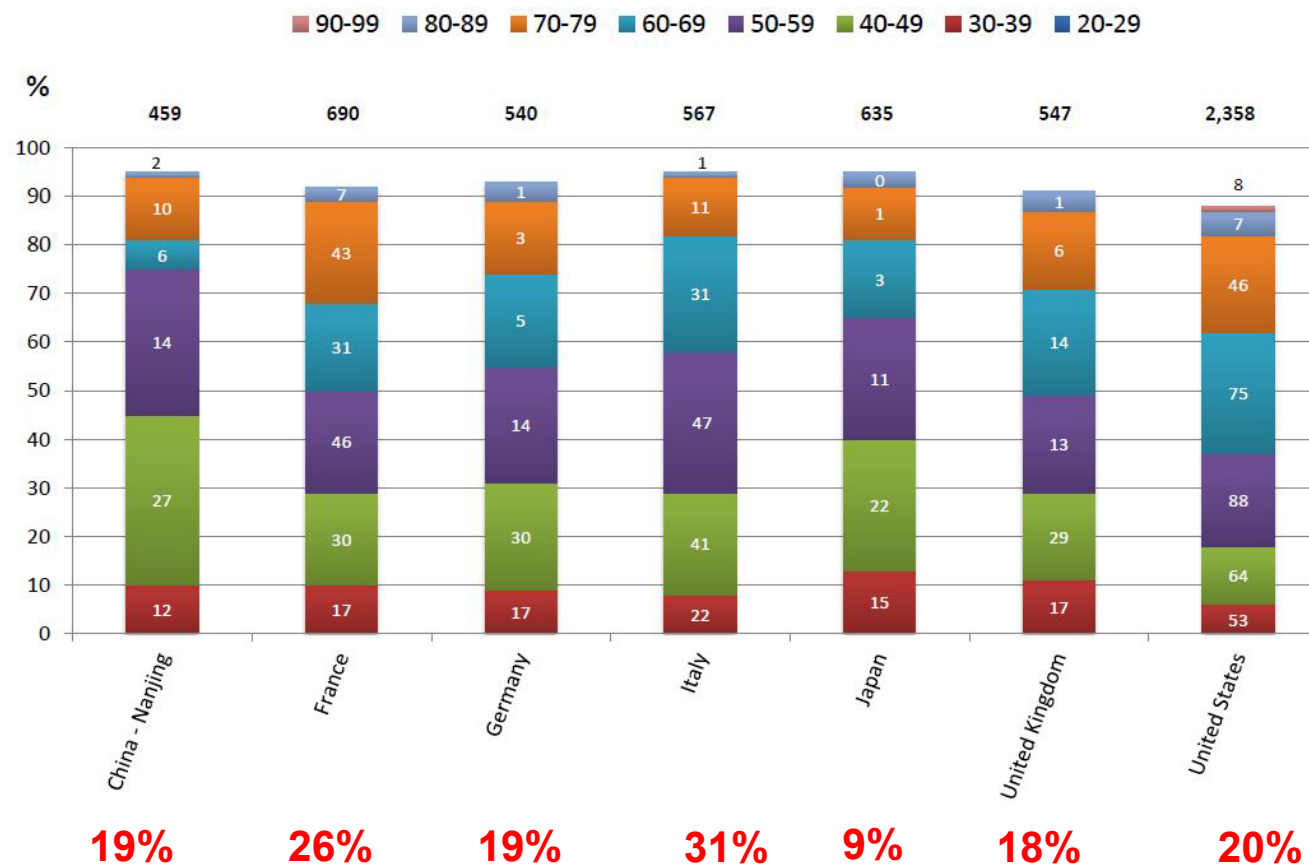
2022 South Korea: 159M, 41F: 20% F



The big countries

Active Members from Countries with 400+ Members

- In black above each graph: number of members per country
- In white within graph: number of women per country in a given age-range





Gender distribution by age

AGE RANGE	Number of WOMEN	Number of MEN	% of WOMEN	% of MEN
25-30	23	34	40.4	59.6
30-35	161	301	34.8	65.2
35-40	321	583	35.5	64.5
40-45	402	872	31.6	68.4
45-50	311	940	24.9	75.1
50-55	293	1057	21.7	78.3
55-60	243	1091	18.2	81.8
60-65	217	974	18.2	81.8
65-70	162	871	15.7	84.3
70-75	119	842	12.4	87.6
75-80	105	790	11.7	88.3
80-85	56	480	10.4	89.6
85-90	19	172	9.9	90.1
90-95	7	65	9.7	90.3
95-100	2	16	11.1	88.9



Actions to promote women

- More women in high IAU positions
- IAU WiA Working Group reports directly to Executive Committee
- Actions to attract more women and making them more visible
 - Speakers at symposia
 - Women in astronomy lunches
 - Mentoring
 - Schools
 - Junior Members
 - Gender Gap study
 -



Female IAU Presidents



Catherine Cesarsky
2006-2009



Silvia Torres-Peimbert
2015-2018



Ewine van Dishoeck
2018-2021



Debra Elmegreen
2021-2024



IAU officers 2015-2018



2015-2018

President: Silvia Torres-Peimbert
President-elect: EvD

GS: Piero Benvenuti
AGS: Teresa Lago

Vice Presidents: ~50%, Division Presidents: ~35-55%



Female (Assistant) General Secretary



Jacqueline Bergeron 1988-1994



Teresa Lago 2015-2021



Diana Worrall 2021-2027



IAU Executive Committee

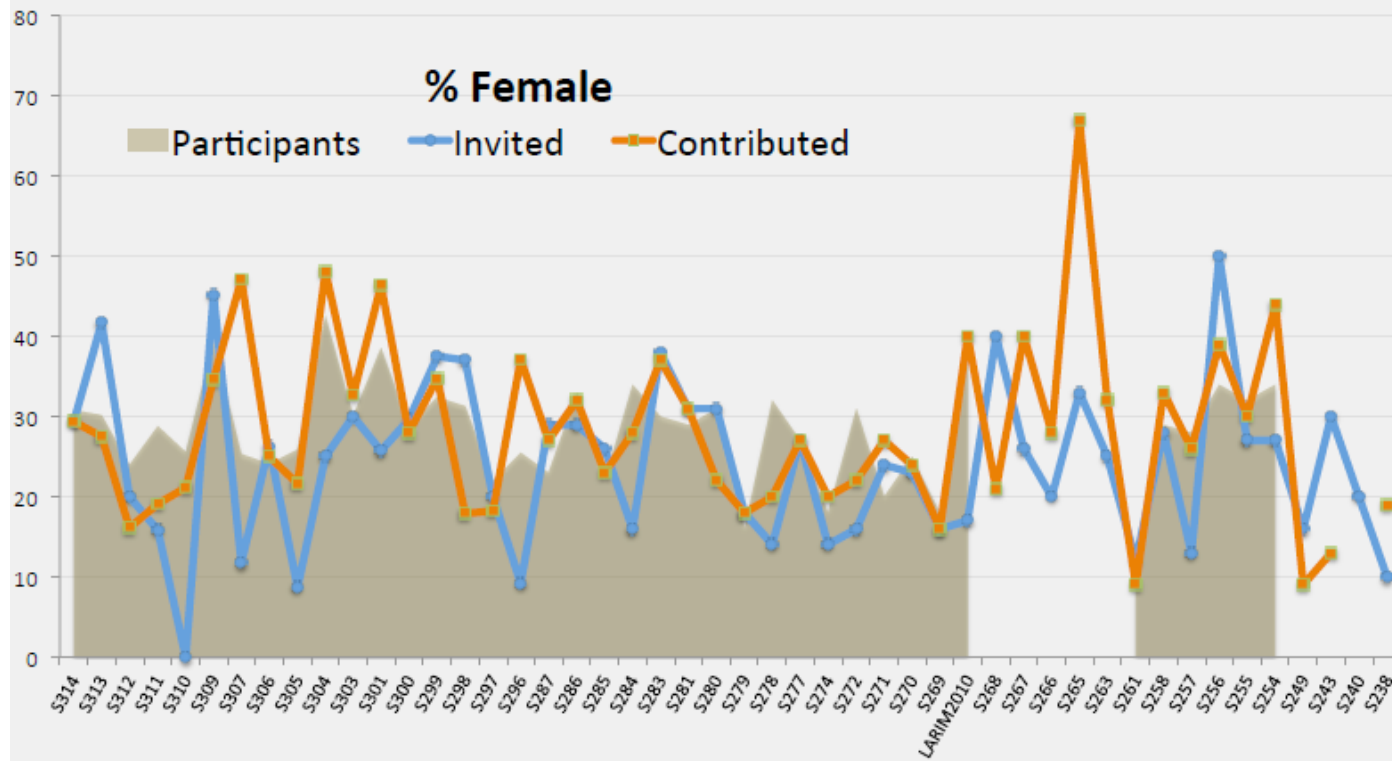


Mexico City May 2016

3/6 Vice Presidents
~35-50% Division Presidents

Female speakers IAU symposia

Gender equality in scientific meetings



Credit
F. Primas



Women in astronomy lunches





International Schools for Young Astronomers





PhD prize each year in each Division

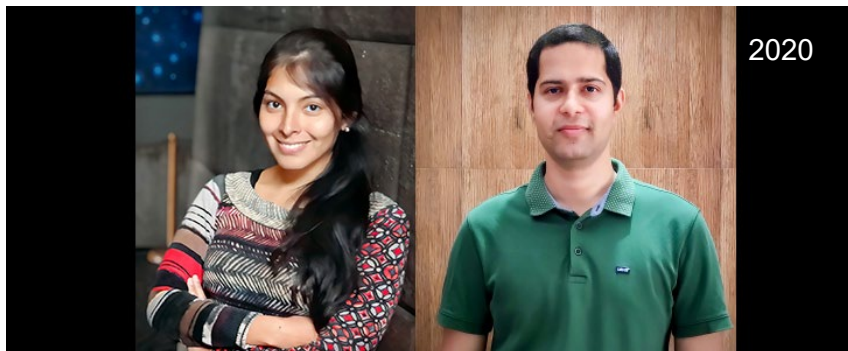


- Prize for best PhD thesis in each Division
- *Deadline: December 15 each year*



Gruber fellowship for young astronomers

Proposal deadline March 31 each year!



k\$25-50 research funding



IAU100 Women and Girls in Astronomy



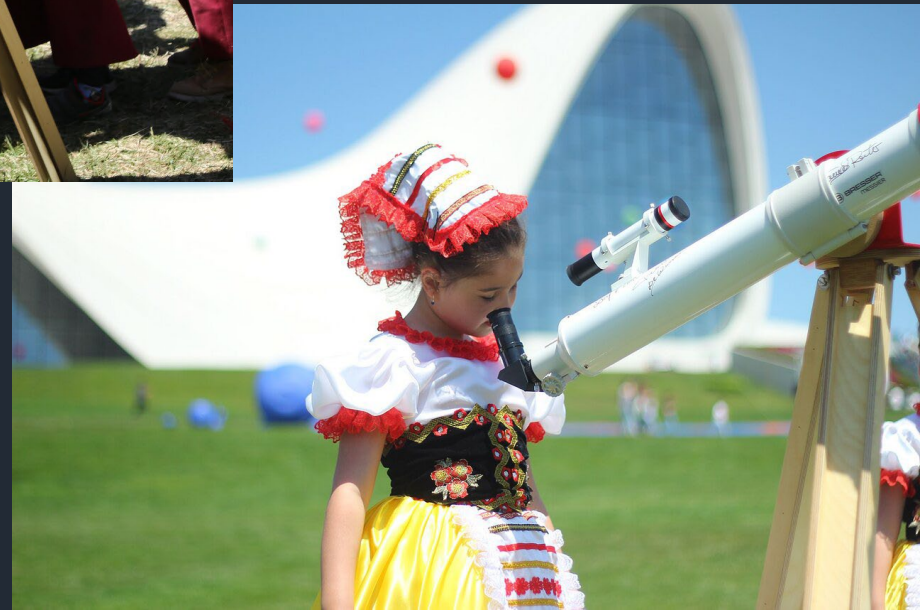
www.iau-100.org

In 2019: over 260 activities in 70 countries highlighting role-models in astronomy and encouraging STEM careers reaching >200000 girls; **Annual Week**



Einstein Schools

200 schools in 45 countries enrolled organising activities around gravity in 2019



Stars Shine for Everyone: Telescopes for All Competition



IAU Actions to promote women

- Fraction of women in IAU still low
- Fraction of women in high IAU positions is now high
- Actions to attract more women and making them more visible
 - *Suggestions welcome!*
- Women can grow within IAU to leadership positions
 - WG, Commission, Division Steering committees
 - Organizing IAU Symposia
- Actions to increase diversity



Statistics are important

- IAU cannot collect them, needs to be done nationally
- Present here some statistics on PhD students in the Netherlands



Some statistics for the Netherlands

■ Compiled by Netherlands Research School for Astronomy NOVA

- Scientific Director: Amina Helmi (2022-now), Ewine van Dishoeck (2007-2021)
- Thanks to Hanneke Woudenberg, Mason Carney, Nienke van der Marel

■ Overall statistics NL universities 2021

- Permanent + TT Staff: 26%
- Postdocs: 30%
- PhD students: 35-40%

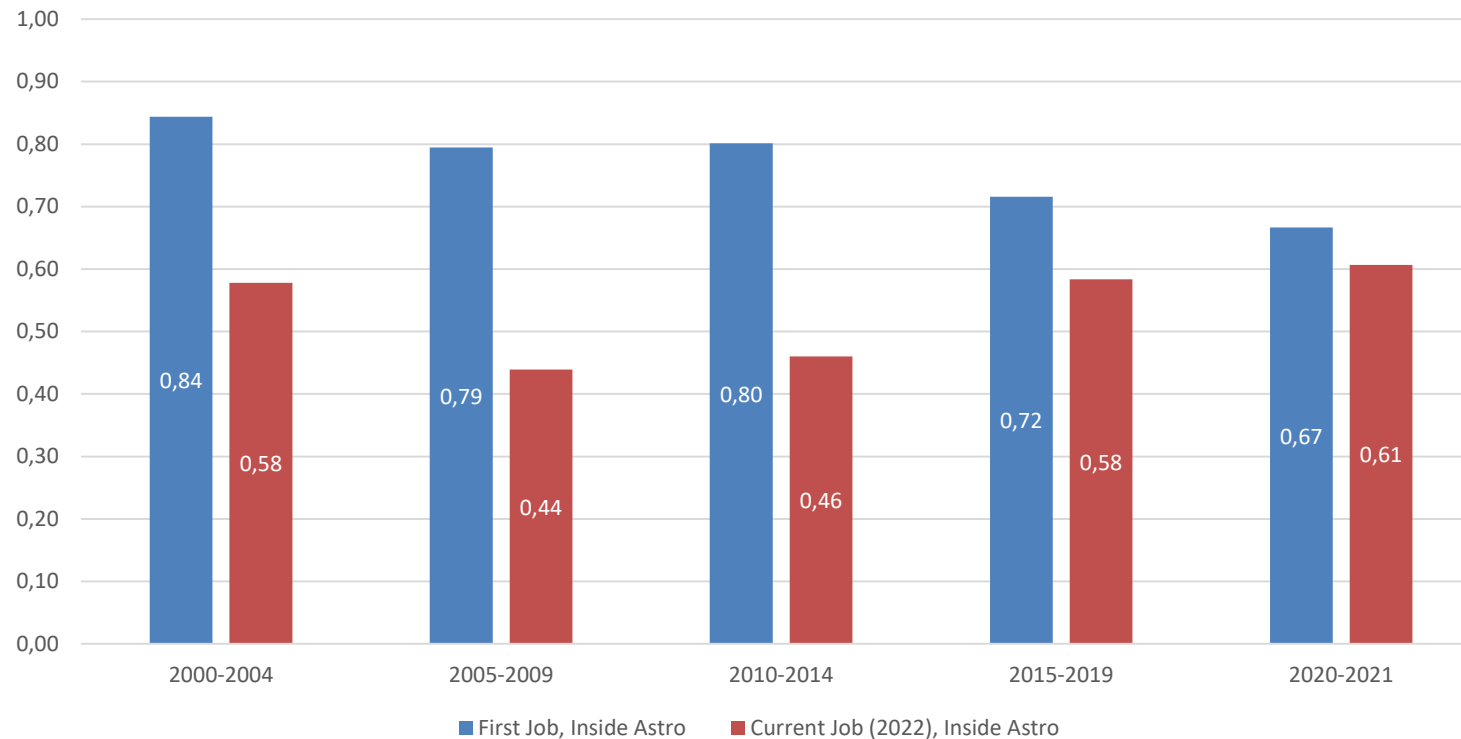
■ Longitudinal study of all PhD students since 2000

- More than 600 PhD students, ~20-40 PhDs/yr
- Nationalities from around the world
- Binned in 5 yr periods

Where do our PhDs go?

Entire group 2000-2021 (601 PhDs)

Comparison % working Inside Astronomy:
First Job after PhD versus Current Job (2022)



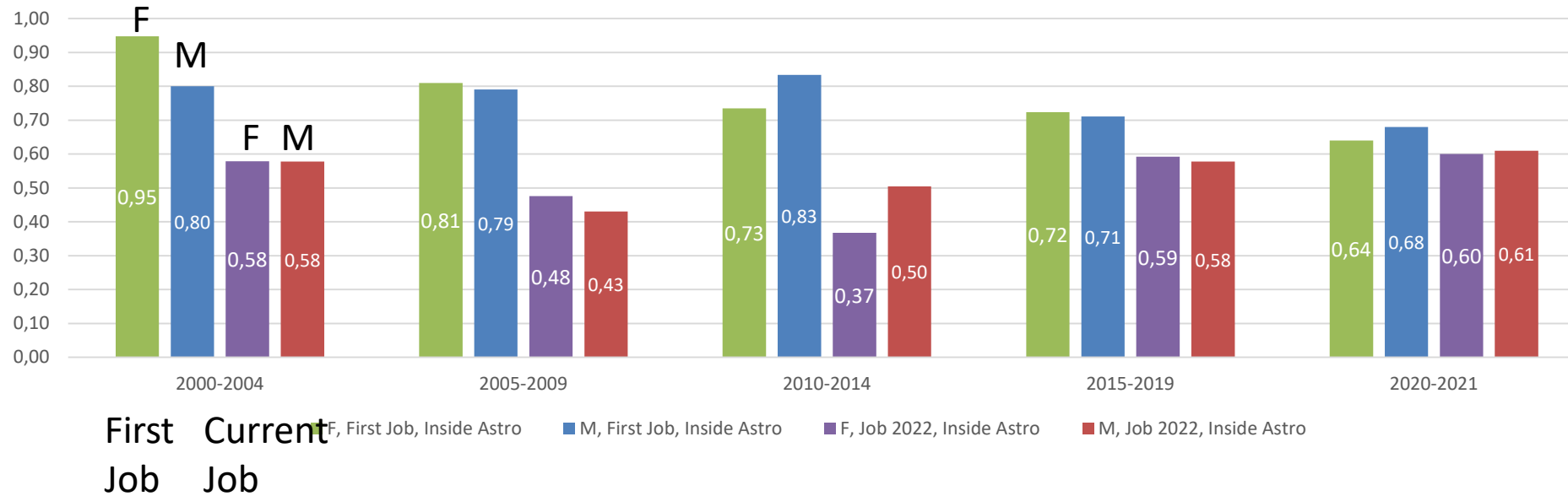
- 70-80% of PhDs stay in astronomy for first postdoc
- 20-30% transition to another career after first postdoc(s)



Gender distribution PhDs inside vs outside astronomy

Entire group 2000-2021 (601 PhDs)

Comparison % M/F working Inside Astronomy:
First Job after PhD versus Current Job (2022)

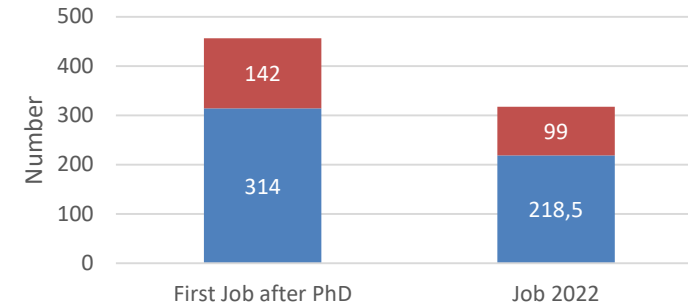


**No significant difference in career path M vs F
(2010-2014 cohort TBD)**



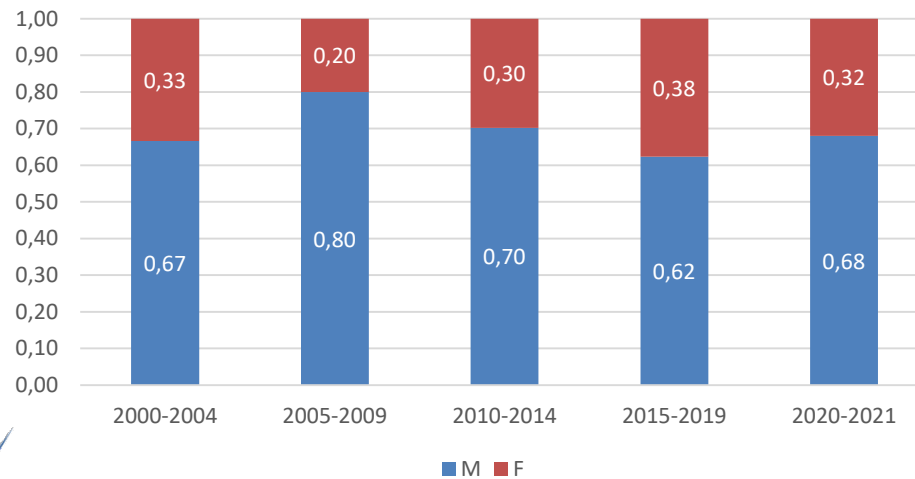
Gender distribution PhDs: inside astronomy only

Number of former PhDs 2000-2021
working Inside Astronomy: Gender
Distribution



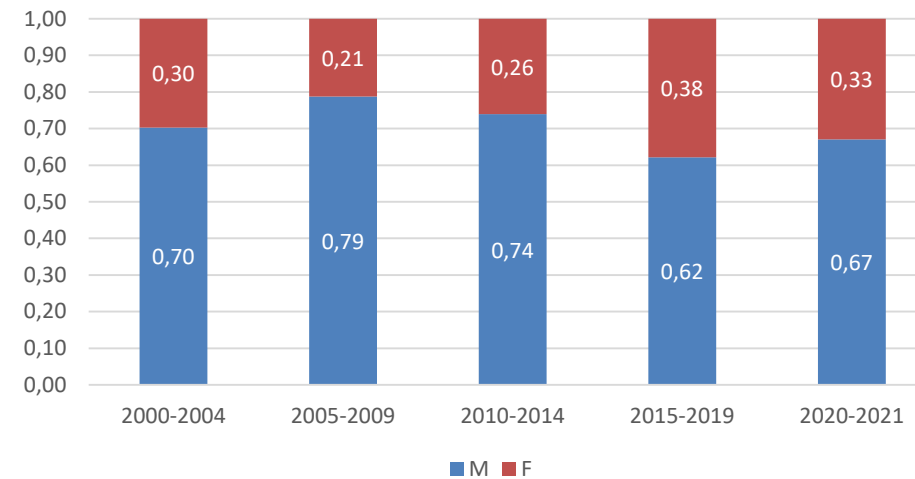
First Job

Gender Distribution former PhDs working Inside
Astronomy: First Job after PhD

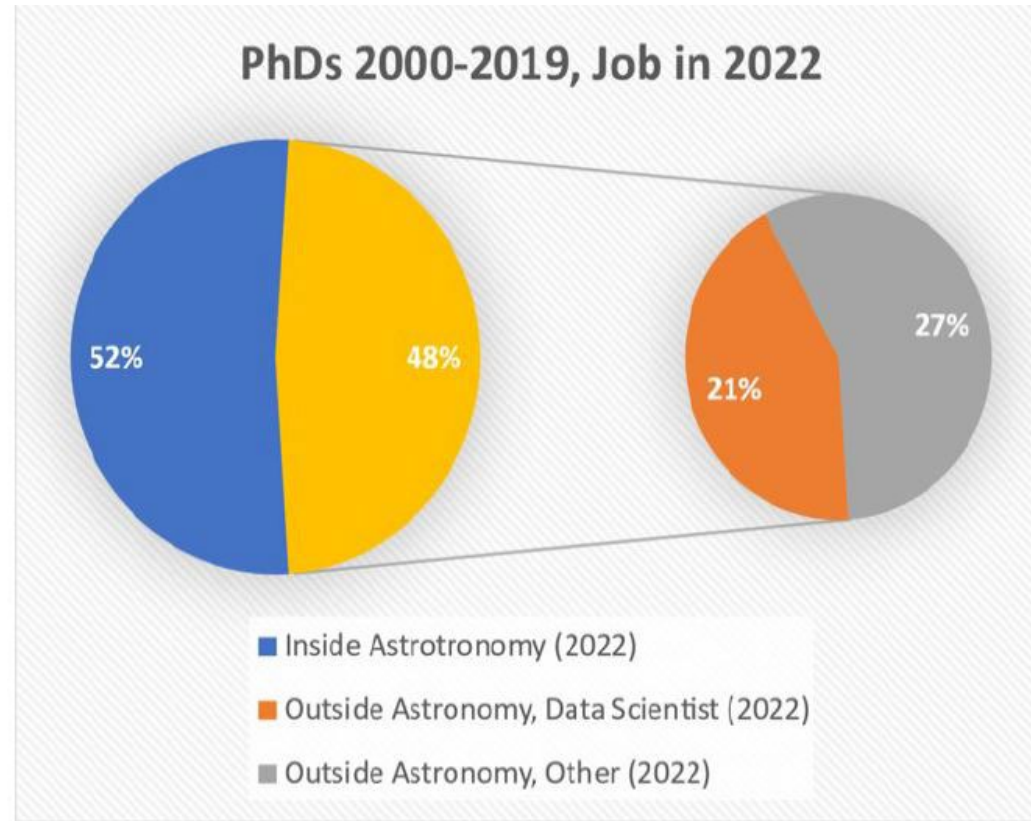


Current Job

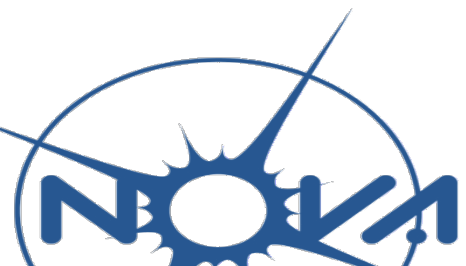
Gender Distribution former PhDs working Inside
Astronomy: Current Job (2022)



Where do our PhDs go?



Increasing fraction of PhDs goes into data science





Final remarks



Some advice to young scientists

- Make sure you excel in one area
 - Better to do one topic very well than lots of topics average
 - Often involves hard work, but make sure to take vacations!
- Be passionate about your science
- Seize opportunities
- Balance opportunities with your partner
 - Including work-life balance, household activities
- Have fun in your work, enjoy life!