

Who Am I

to tell you about diversity and inclusion

Dr Gillian Butcher

IUPAP Vice President with Responsibility for Gender
University of Leicester, UK





Who Am I?

How did I get here?



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How did I get here?

Imposter Syndrome

Term first coined by Clance and Imes 1978

"The Impostor Phenomenon in High Achieving Women: Dynamics and Therapeutic Intervention"

Recent studies indicate it is widespread amongst men and women





Who Am I?

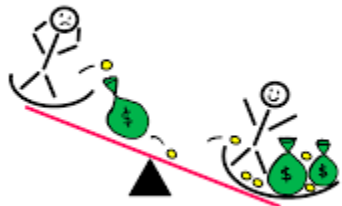
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Accumulation of Advantage/Disadvantage (Matthew Effect)

Term first coined by Merton and Zuckerman 1968

from parable of talents in Matthew's Gospel in Bible

Early studies on inequality in way scientists are recognised for their work

Family Background



Family Background



father
brother

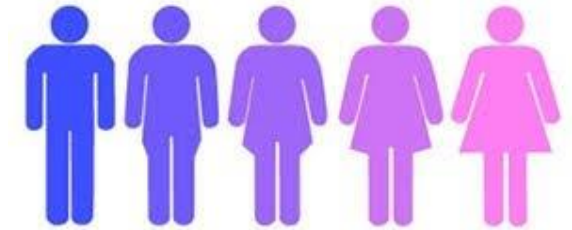
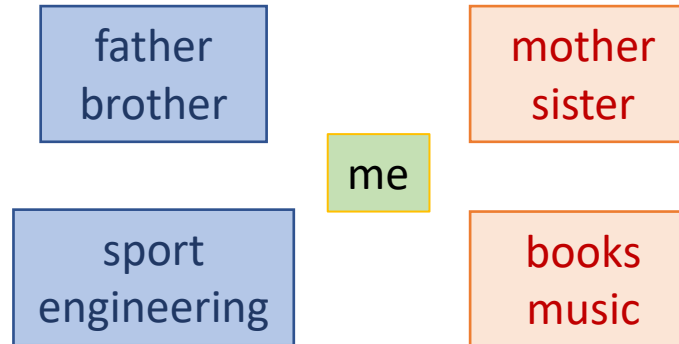
sport
engineering

me

mother
sister

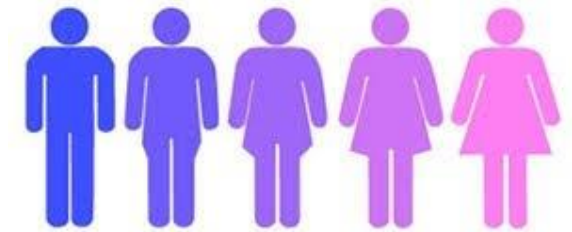
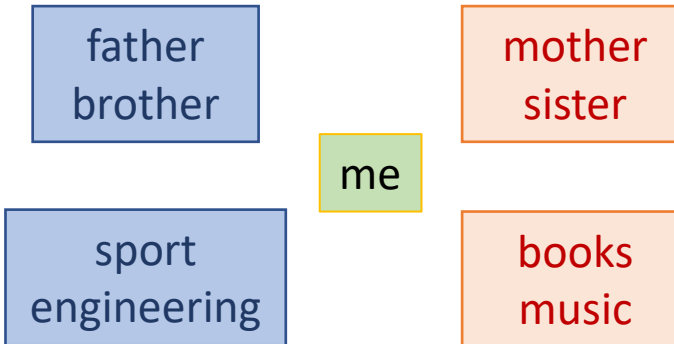
books
music

Family Background



Intersex – individuals born with any of several sex characteristics that do not fit typical binary notions
Upper estimate 1.7% of world population
Fausto-Sterling (2000) “Sexing the Body: Gender Politics and the Construction of Sexuality”
Global estimate: 1-2% have red hair

Family Background



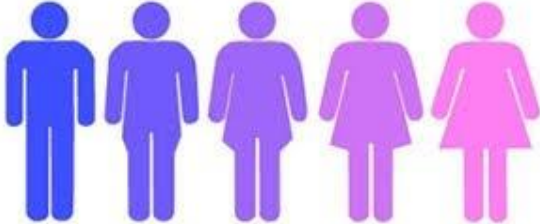
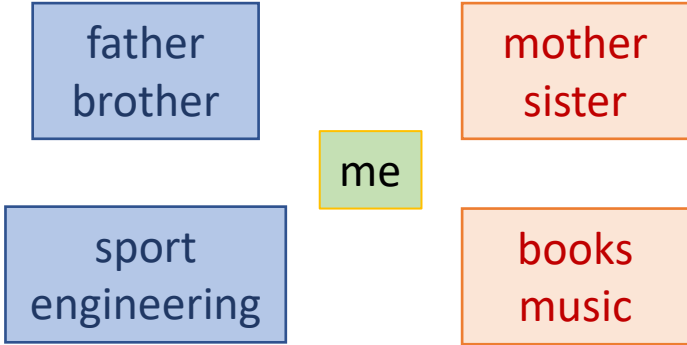
The World Health Organisation
Sex refers to "the different biological and physiological characteristics of males and females, such as reproductive organs, chromosomes, hormones, etc."
Gender refers to "the socially constructed characteristics of women and men – such as norms, roles and relationships of and between groups of women and men. It varies from society to society and can be changed."

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Parental Engagement Research
M. Milner-Bolotin and C.C. Marotto "Parental engagement in children's STEM education" Int J on Math, Science and Technology Education (2018)

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Education

School

broad socio-economic mix

not many went to Uni, but good teachers



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Students from non-disadvantaged backgrounds are around twice as likely to take science or mathematics A levels compared with students from disadvantaged backgrounds. Moreover, there is a clear attainment gap between these two groups, with students from non-disadvantaged backgrounds more likely to achieve a pass (A*-E) and a high grade (A*-A).

[Data \(stem.org.uk\)](http://Data.stem.org.uk)

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broad socio-economic mix
not many went to Uni, but good teachers



University

few women in science classes
good teachers (men)



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Working in Industry



Working in Industry



4 waves of feminism

1st wave mid 19th century to 1920

2nd wave 1960s to 1980s

3rd wave 1990s to 2010s

4th wave 2010s to ...

Working in Industry



NOT
Feminism is a dirty word

Burning Bra myth

Miss America pageant protest 1968
symbolic act of burning items that
oppressed women



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PhD

still no female role models
Started to think of challenges of family and career
Joined Women in Physics Group of IOP (Institute of Physics)

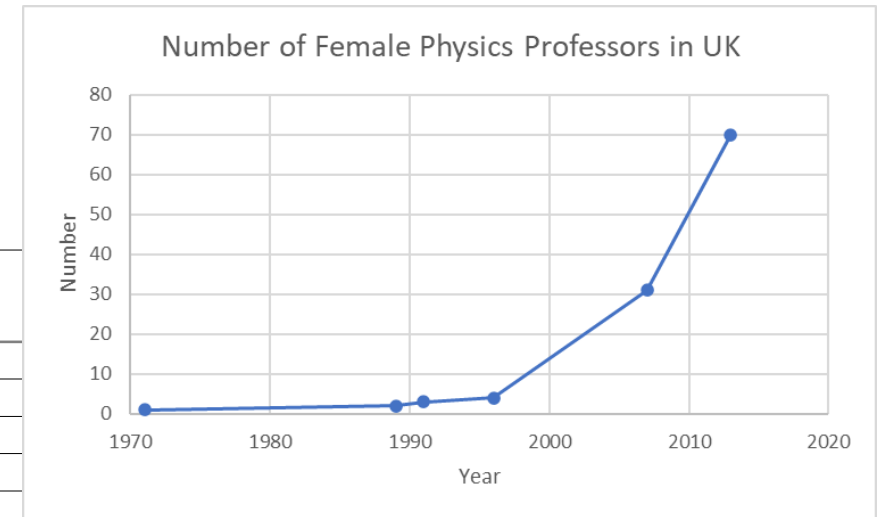
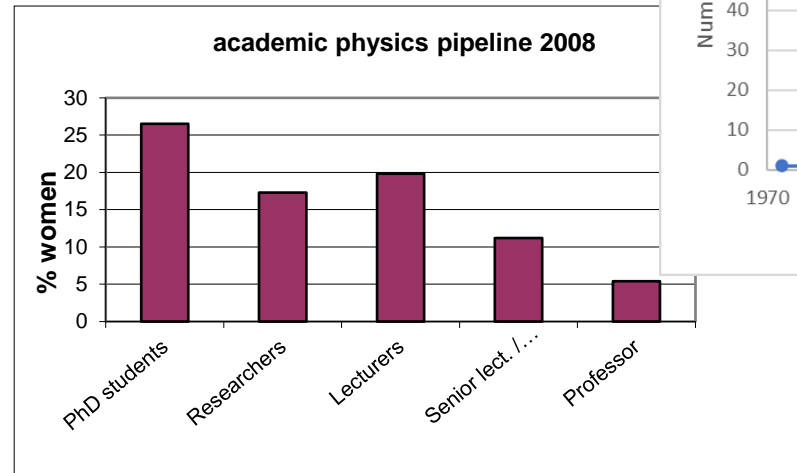


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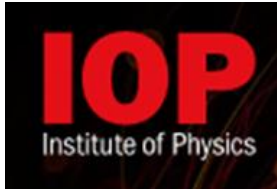
Post Doc

where have all the women gone?



Post Doc

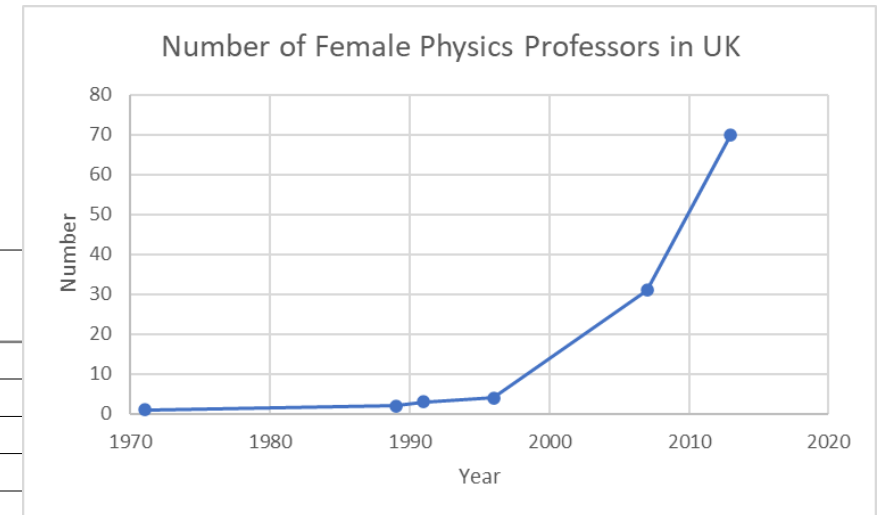
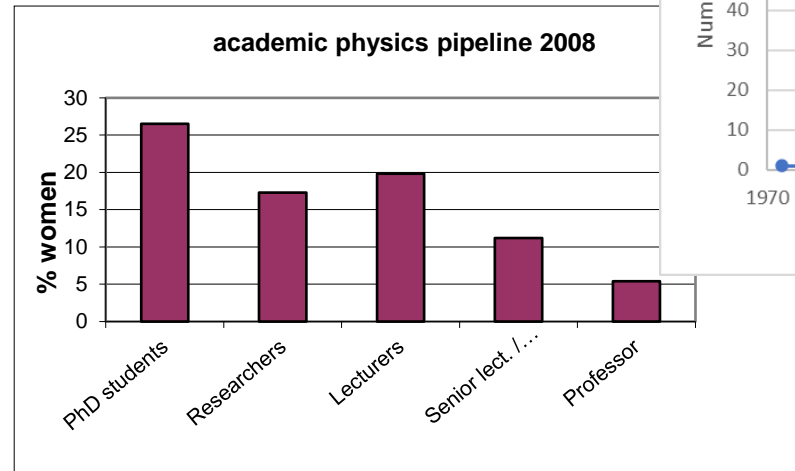
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Women in Physics Group

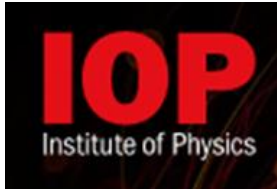
Committee member, Treasurer, Chair

- common issues - “it’s not just me”
- committee meetings “easier”
- diversity of women physicists



Post Doc

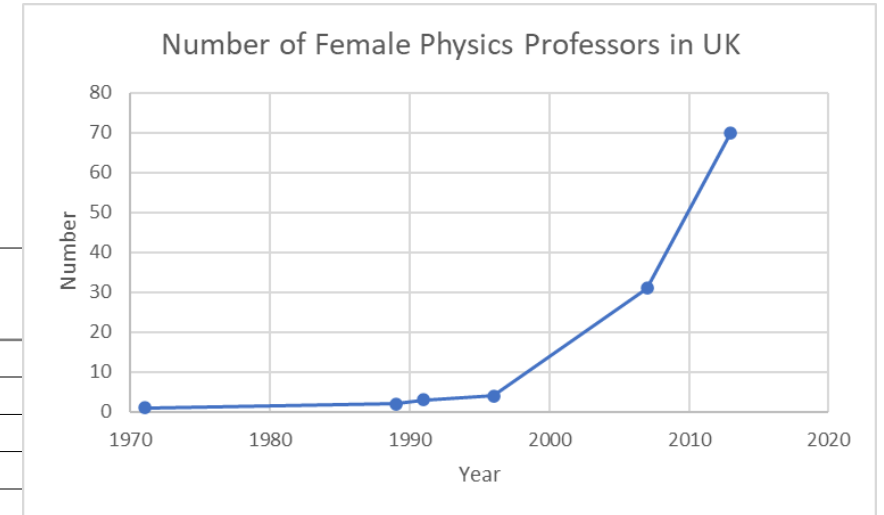
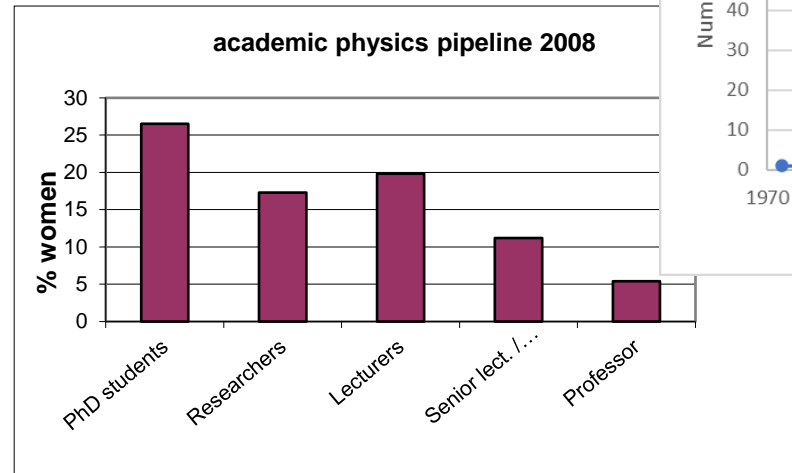
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Equality Charter Mark for Higher Education

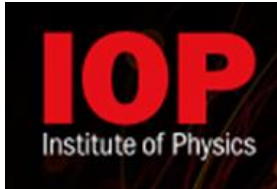
getting university / people engaged

National Steering Committee

linked to funding in Health Sciences

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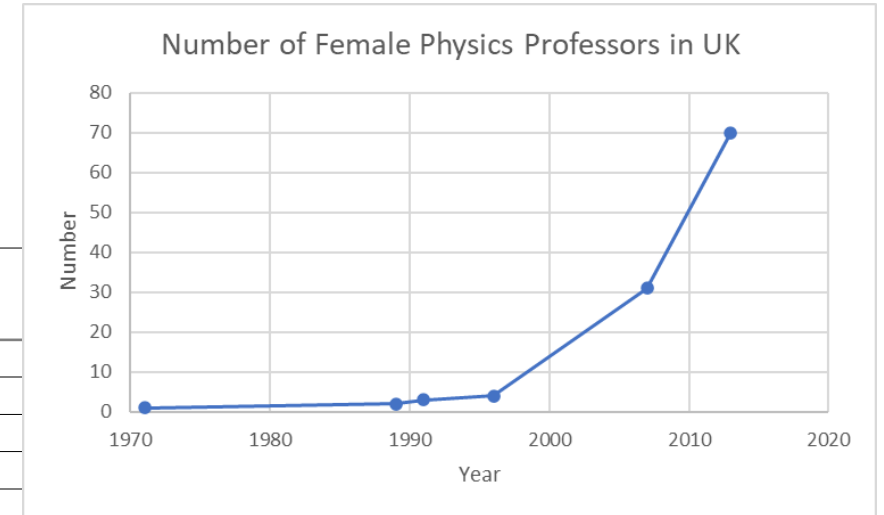
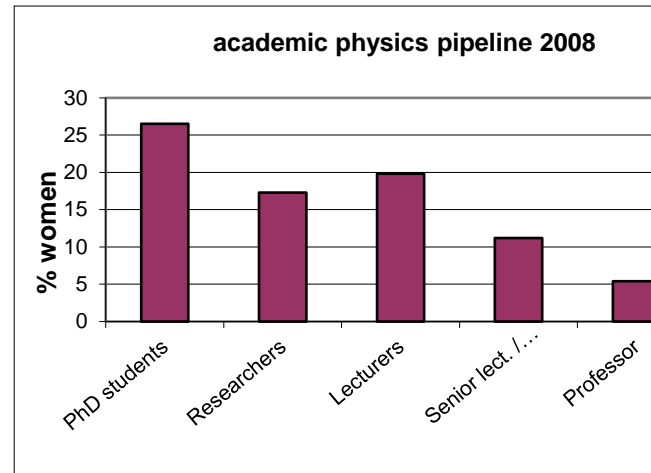
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*“The committee on women’s rights
will now come to order.”*

International Conference on Women In Physics (ICWIP)



2005 Brazil
UK team member



2008 South Korea
UK team leader



2011 South Africa
WG5 member

2017-2021 WG5 Chair

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ICWIP country reports
Albania, Ecuador, Lithuania, Tunisia 40-50%
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“Women just aren’t interested in science / physics”
but
Why, why not, why is it different in other countries?
Has it always been this way?



2011 South Africa
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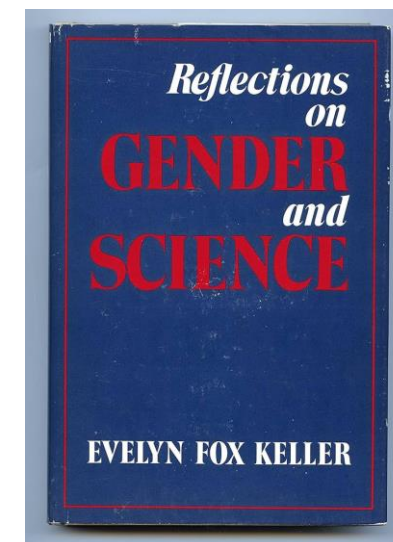


Evelyn Fox Keller (1936-2023)

American physicist, social scientist, author

Gender and science both socially constructed categories

Can't deny the success of "masculine" science - it met its goals
But what if different goals?



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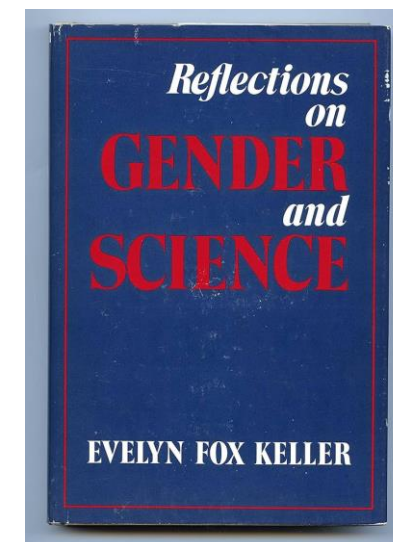
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Who decides what knowledge is important?

Who decides who has access to that knowledge?



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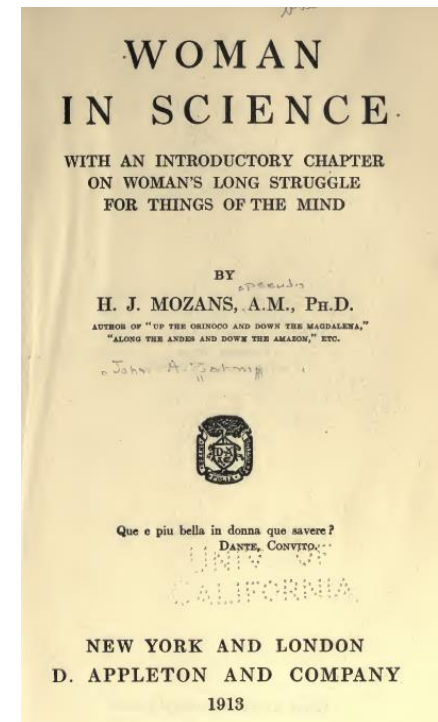
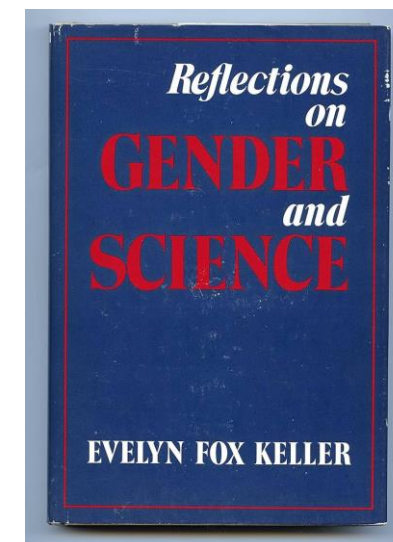
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"Woman's long struggle for complete intellectual freedom is almost ended, and certain victory is already in sight"



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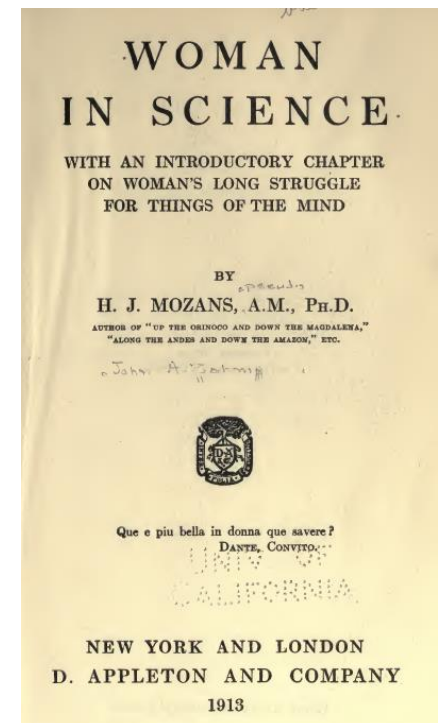
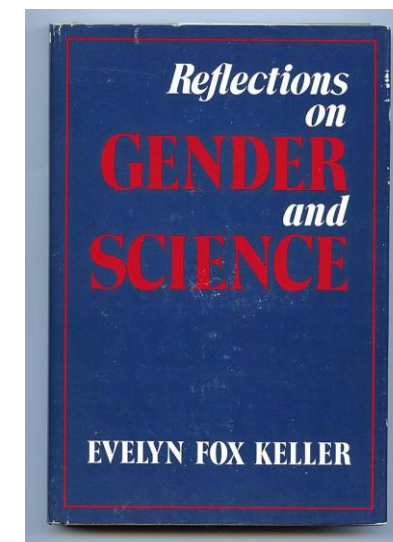
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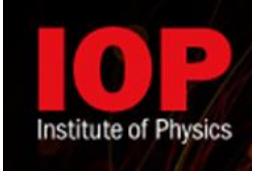
In US, women earning doctorates in physical and biological sciences

1920 14%

dropped to 5% by 1960



Diversity



1989 Women in Physics Committee formed
evolved to become
2004 to **Diversity Committee**

Protected Characteristics



Age



Sex



Disability



Ethnicity



Gender
Reassignment



Religion /
Belief



Sexual
Orientation



Marriage / Civil
Partnership

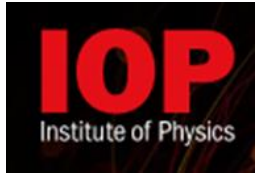


Pregnancy /
Maternity

UK Equality Act 2010

EU Charter of Fundamental Rights Article 21:
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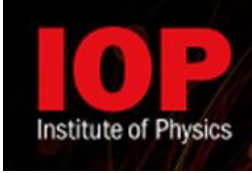


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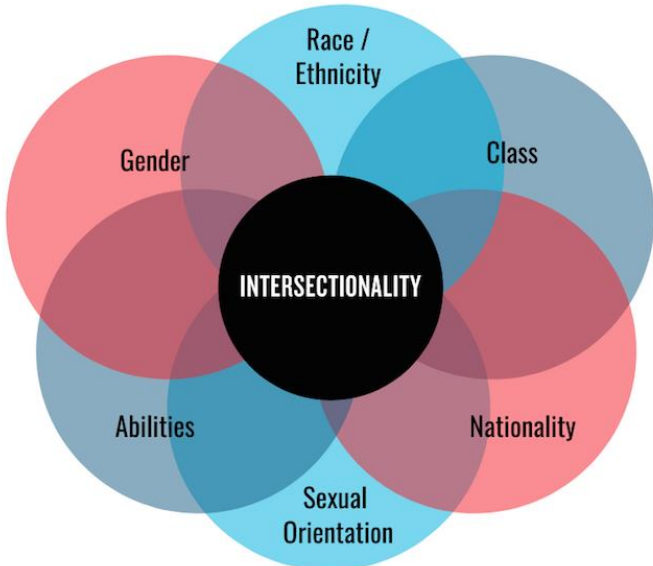


Image: First Book

Intersectionality
coined by Kimberlé Crenshaw 1989

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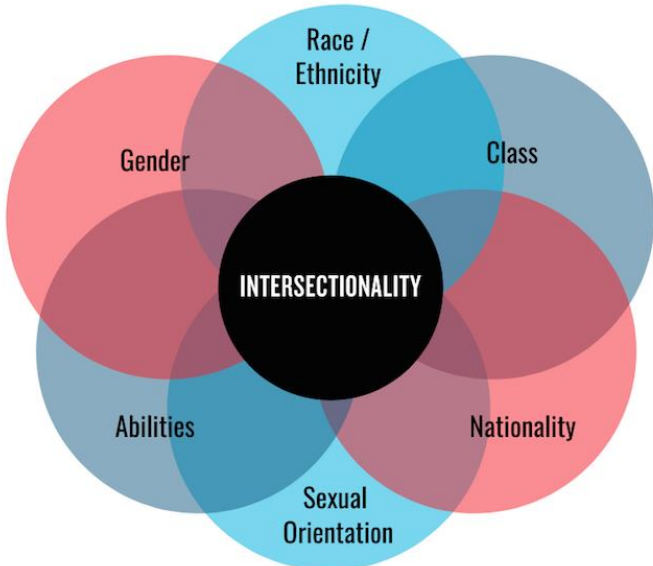


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collective data v individual experiences

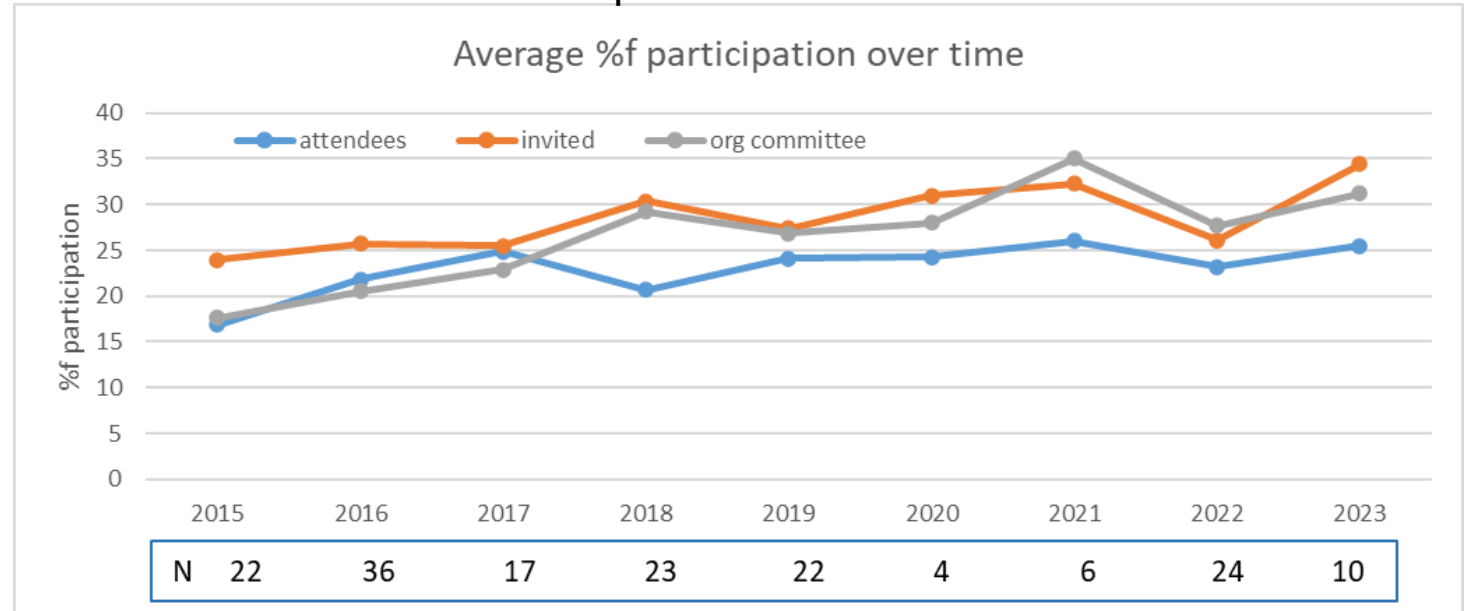


WG5 Women in Physics 25th Anniversary

Gender Champion 2014
became Gender Champion in 2019

IUPAP Sponsored Conferences

Average %f participation over time



Waterloo Charter for Gender Inclusion and Diversity in Physics -

- Guiding principles
- Actions and recommendations

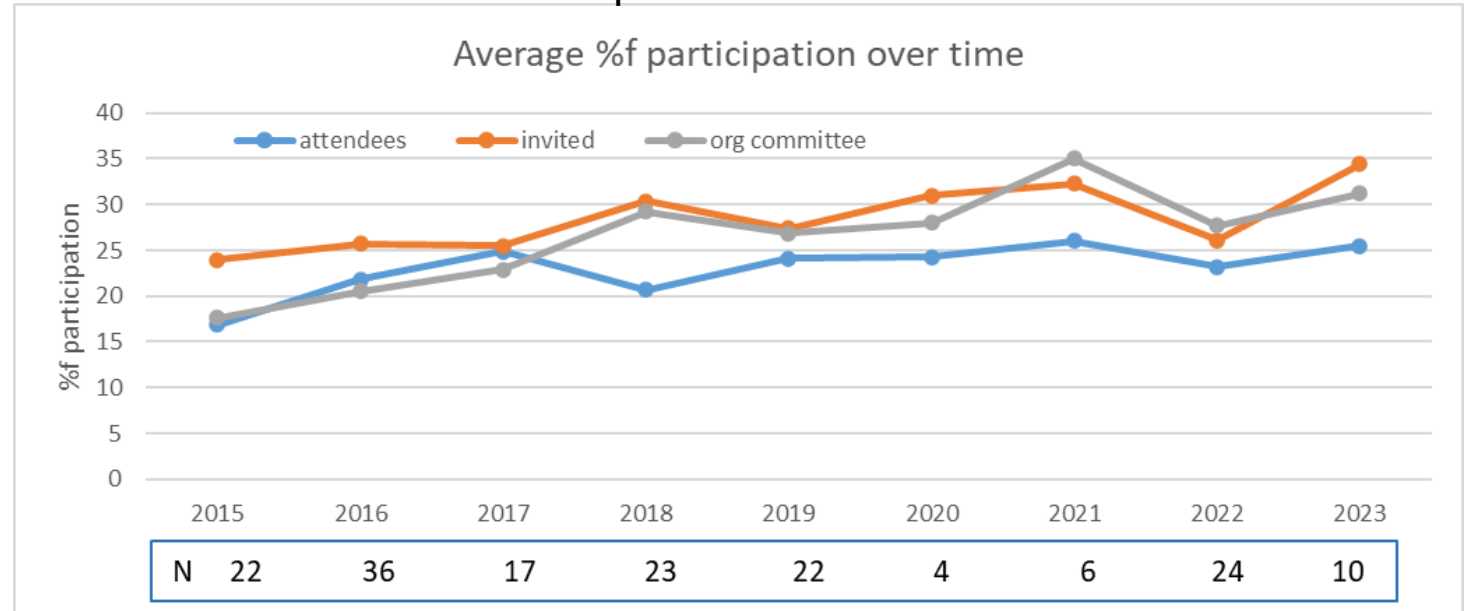


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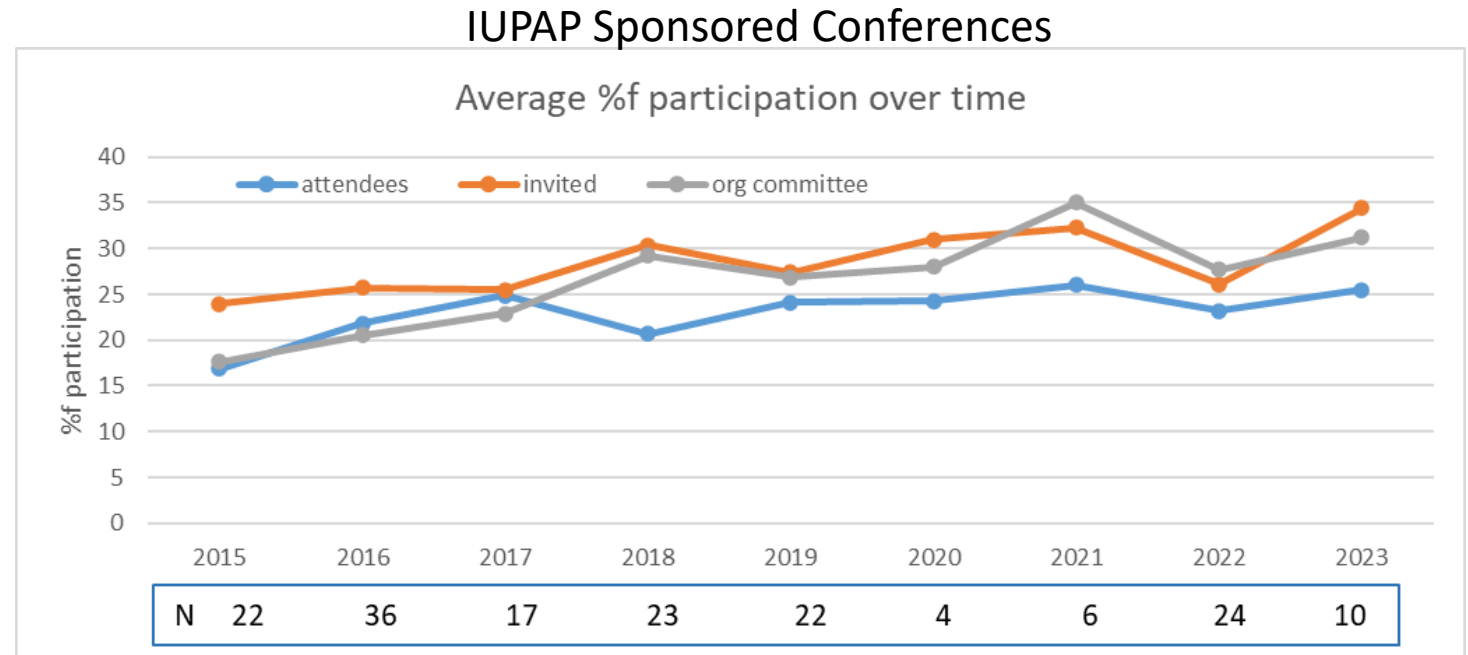
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Sensitivity to international nature

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Isn't everything fine now?

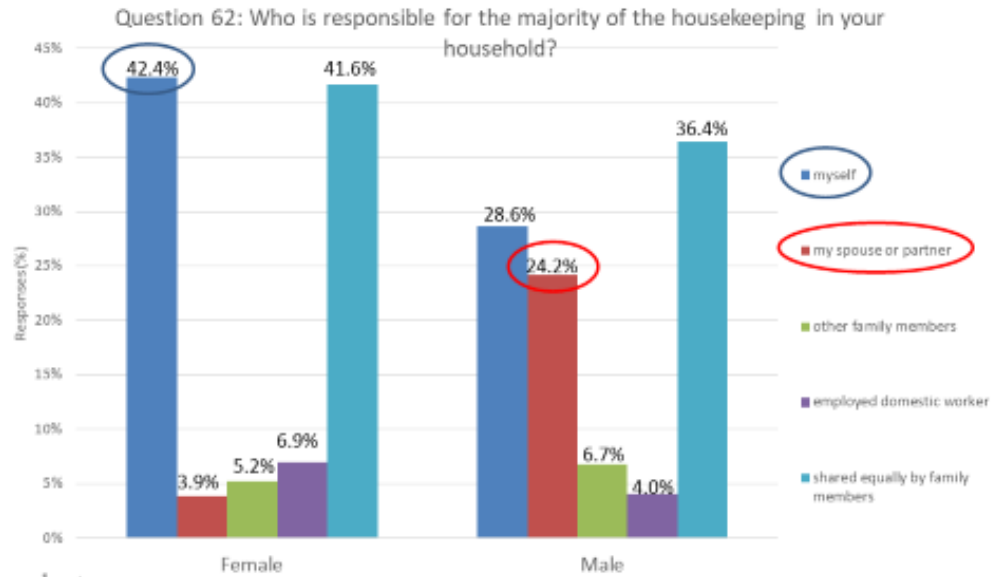
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GENDER GAP IN SCIENCE

A Global Approach to the Gender Gap in Mathematical, Computing, and Natural Sciences: How to Measure It, How to Reduce It?

Physics



Total Respondents
Female : 2510
Male : 4283

Gender of the respondents

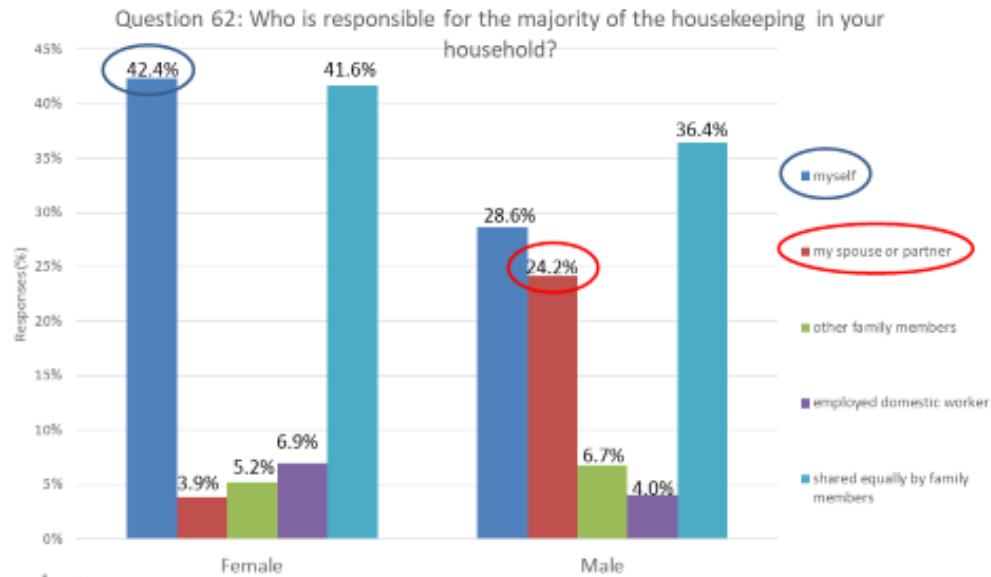
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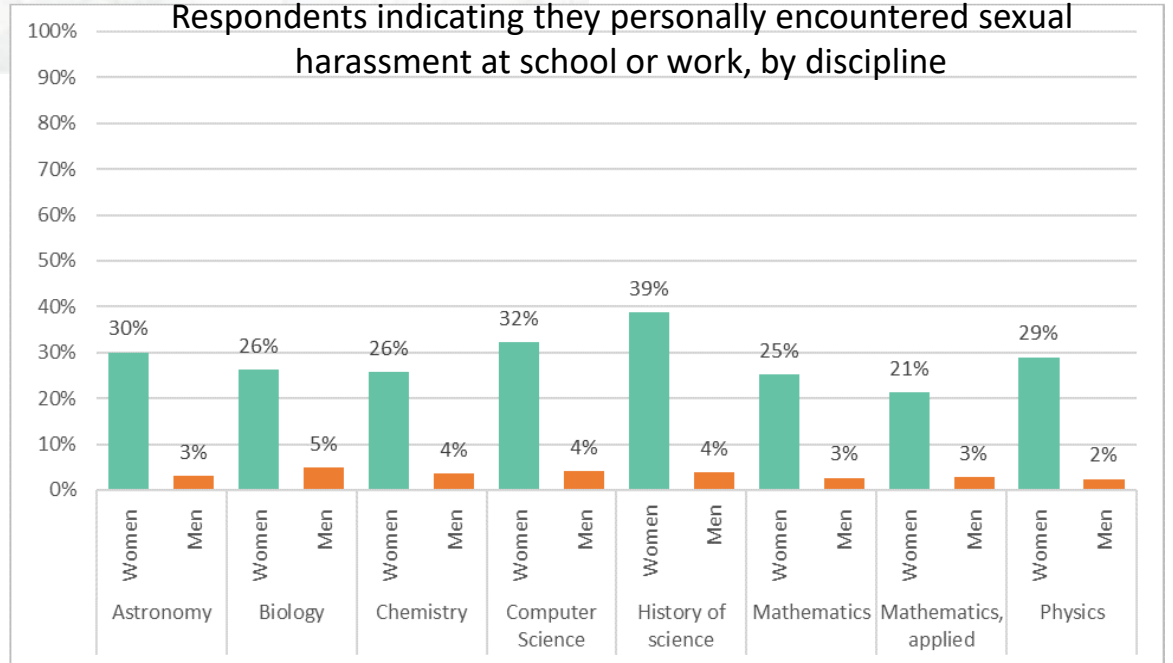
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Respondents indicating they personally encountered sexual harassment at school or work, by discipline



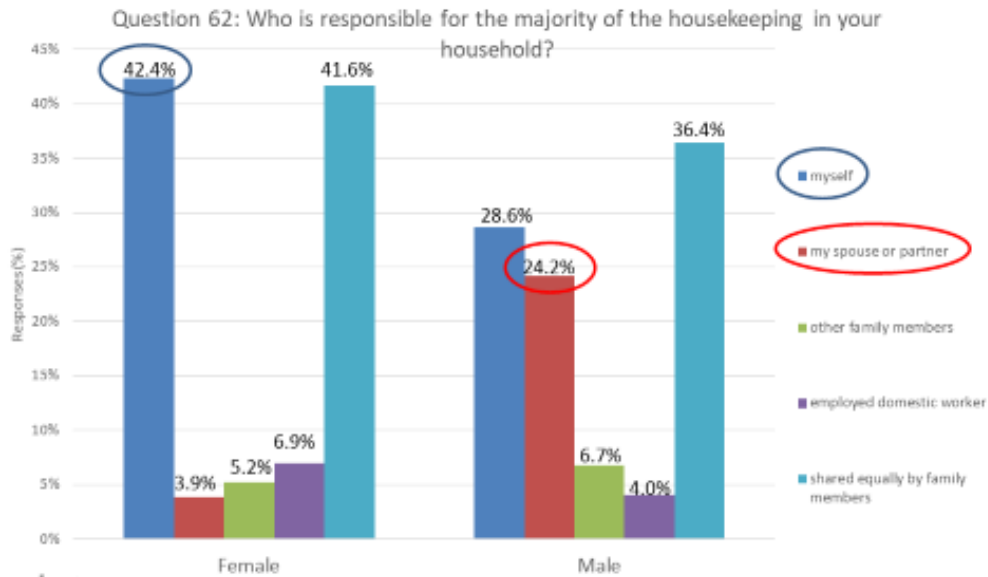
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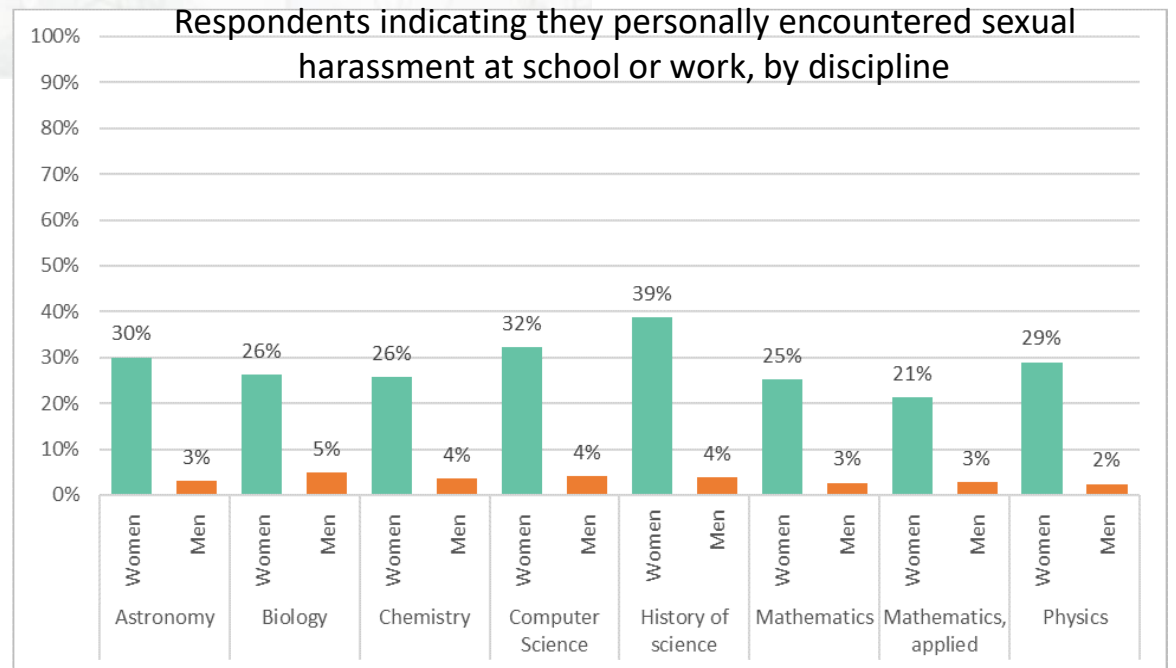
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IUPAP Centenary Celebrations Trieste 2022

- brief mention of diversity concepts
- my personal journey
- power of networks
- data
- evolution of diversity
- experiences of the individual



Isaac Newton's Woolsthorpe Manor



IUPAP Centenary Celebrations Trieste 2022

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“I think even if I tried not to choose physics, it would choose me. It is such a fascinating subject that no matter what other work I did, I would still want to learn about physics”

from Rachel Ivie and Stacy Guo (2006)
Women Physicists Speak Again. AIP



Isaac Newton's Woolsthorpe Manor