

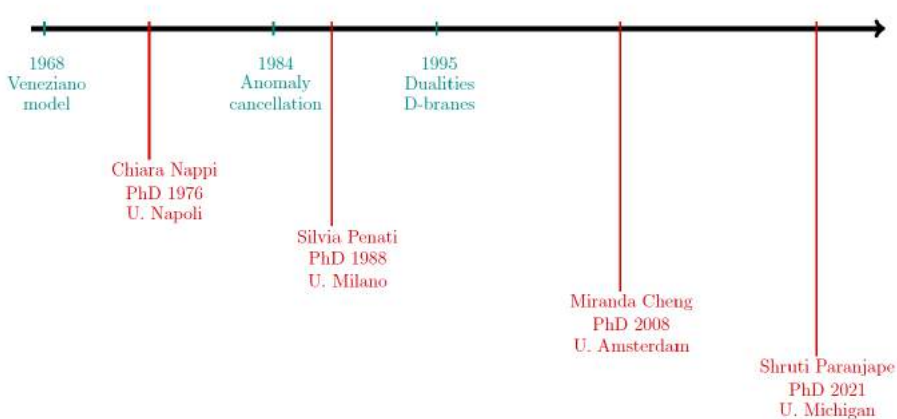
# Strings 2021

## Discussion Session

### 4 Generations of Women in String Theory



## A brief history of time



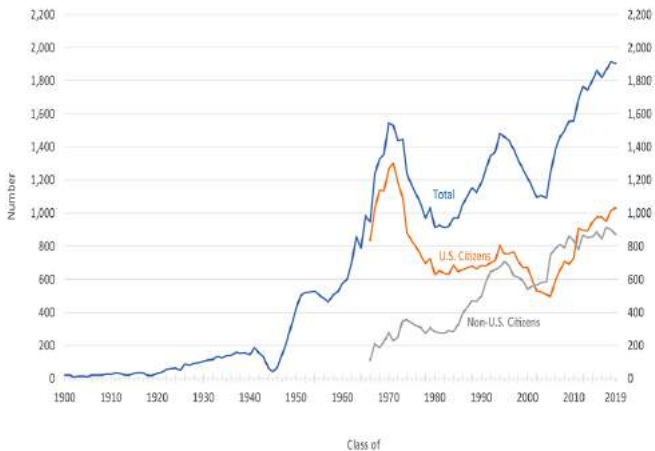
## **Chiara Nappi**

Department of Physics  
Princeton University  
Emerita

## Pipeline into physics: Leaks and Bottlenecks

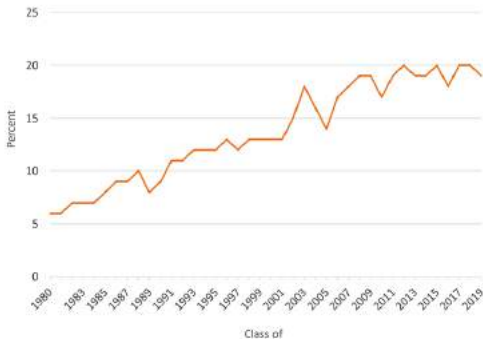
- 1st Bottleneck: The role of the educational system:  
My experience – a comparative study.
- 2nd Bottleneck: Starting your career at a critical time:  
Need of a support system.
- 3rd Bottleneck: Recognition, glass ceiling, etc..

## Physics PhDs Conferred in the US, 1900 through 2019



Sources: ACE (1900-1919), NAS (1920-1961), AIP (1962-2019)

**US**  
Percent of Physics PhDs Earned by Women,  
Classes 1980 through 2019

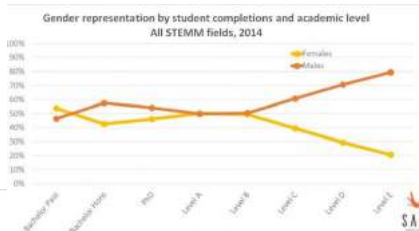


in 2019  
100%=1903

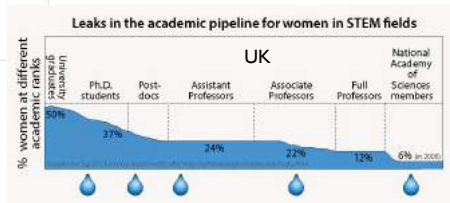
The proportion of non-US citizens among physics PhD recipients who were women is greater than among men. In the class of 2019, non-US citizens represented 53% of the women awarded physics PhDs and 44% of men.

**Silvia Penati**

Dipartimento di Fisica  
Università degli Studi di Milano-Bicocca



Australia







## Solvay Conferences



- (Un)conscious biases and negative stereotypes affect everybody, men and women. These act not only against women, but more generally against all the minorities.
- Lack of support to women at the early stage of their career and lack of right recognition of women's competence and work.
- Sense of isolation or the feeling of not belonging, when there is less than 10% of women, and one is typically the only woman in a group.

## Miranda Cheng

Institute of Physics and Korteweg-de Vries Institute of Mathematics  
University of Amsterdam  
Academia Sinica, Taiwan

I will focus on the section of the leaky pipeline ranging from grad school till the early stage of faculty jobs. I will base my comments on conversations with various colleagues and students.

- **We (still) need a culture shift.**

We need to create (or maintain) a safe, inclusive, and welcoming work environment, and keep curbing our unconscious bias.

- **Work-life balance.**

Academic careers can be tough on families. Statistically, academic careers of women seem to suffer disproportionately from the lack of support on childcare or partner hiring.

- **Urgent: the effects of the pandemic.**

There's evidence that female academics are hurt disproportionately by the pandemic.

Possible concrete actions we could consider taking (and discuss about later):

- **Outreach** activities.
- Installing “**mentors**” for grad students, postdocs, and young faculty members if they wish.
- A low barrier “**contact person**” in the institution whom one can talk to in case of (suspicion of) workspace discrimination or harassment.
- Consider a wider range of **childcare support** e.g. teaching reduction, on-site or customised childcare at workshops or conferences.
- Taking the “**pandemic effects**” into account during hiring and evaluation.
- ...

## **Shruti Paranjape**

Department of Physics  
University of Michigan

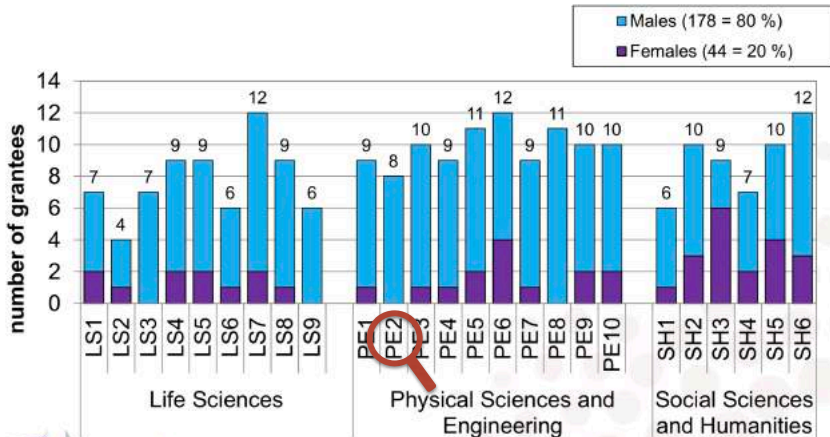
- Educating and motivating students: Because of imposter syndrome, a well-established scientist or a good student might attribute their success to luck or chance, instead of their own skill or effort.
- Mentors and role models: Studying physics can be a pretty solitary experience for some - this can make the difference between success and deciding physics is “not for me”.
- Social pressures: Tensions in career pathways can include lack of social support, negative stereotypes, awareness of minority status, and struggles with work-life balance.

## Backup Data



# ERC Advanced 2018

20% women applicants

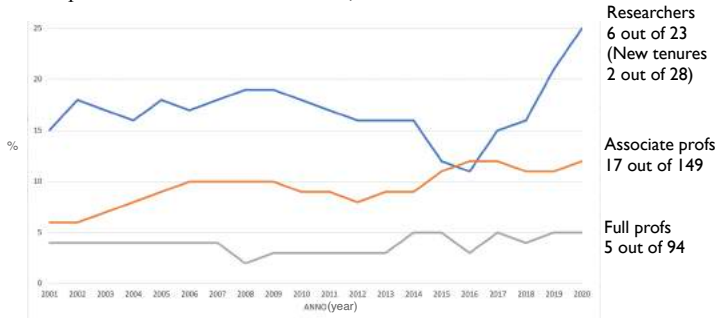


European Commission

Horizon 2020  
European Union Funding  
for Research & Innovation

## Data from the **Italian Ministry of University & Research**

Percentage of **women** in Theoretical Physics with permanent positions in Italian Universities, from 2001 to 2020



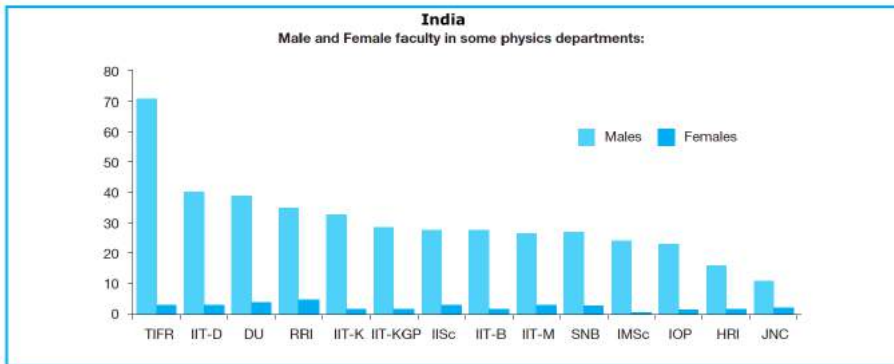
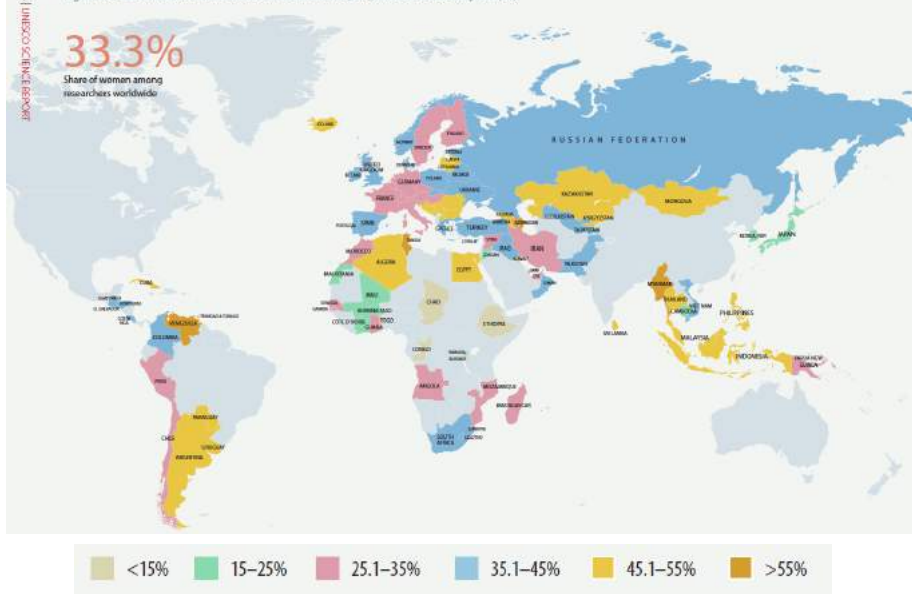


Figure 5. Gender distribution in various physics departments in the year 2008.

source: *Women Scientists in India*, Rohini M. Godbole, Ramakrishna Ramaswamy (2015)

Figure 3.4: Women as a share of total researchers (HC), 2018 or closest year (%)



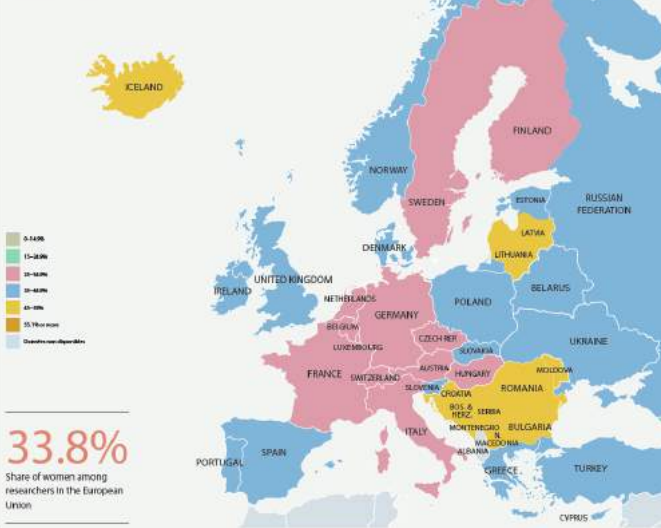
### Regional shares of female researchers, 2018 (%)



Note: Data are for the most recent year since 2015. There are no available data for some of the most populous countries: Bangladesh, Brazil, China, India, Nigeria and USA (this limitation compromises the reliability of the global total and most regional totals). There is no regional total for South Asia or Oceania because data are available for only one or two countries. Eastern Europe excludes countries that are members of the European Union.

Source: UNESCO Institute for Statistics

### Spotlight on Europe



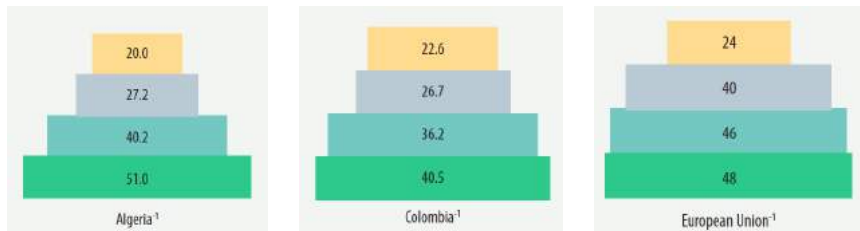
## Gender ratio among active authors during the period 2014–2018

- Argentina
- Brazil
- Mexico
- Canada
- USA
- EU28
- UK
- Portugal
- Spain
- France
- Italy
- Netherlands
- Germany
- Denmark
- Australia
- Japan



source: The Researcher Journey Through a Gender Lens, Elsevier, 2020

## Share of female researchers by seniority grade (HC), 2018 (%)

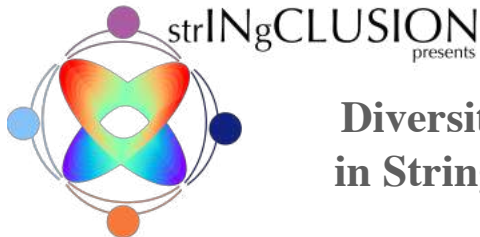


- Category A:** the single highest grade/post at which research is normally conducted. Examples: Director of Research or Full Professor.
- Category B:** researchers working in positions that do not qualify as Category A but are more senior than newly qualified doctoral graduates. Examples: Senior Researcher, Principal Investigator or Associate Professor.
- Category C:** the first grade/post into which a newly qualified doctoral graduate would normally be recruited. Examples: Researcher, Investigator, Assistant Professor or Post-doctoral Fellow.
- Category D:** either doctoral students who are engaged as researchers or researchers working in posts that do not normally require a doctorate. Examples: PhD student or Junior Researcher. Master's students counted as researchers would also fall into this category.

Overall, female researchers tend to have shorter, less well-paid careers. Their work is underrepresented in high-profile journals and they are often passed over for promotion. Women are typically given smaller research grants than their male colleagues and, while they represent 33.3% of all researchers, only 12% of members of national science academies are women.

## Next Events





# Diversity and Inclusivity in String Phenomenology

*Tuesday 13th July at 1900 CEST*

A panel discussion on inclusion  
and representation in the HET  
community

Please register at  
[stringclusion2021.eventbrite.com](https://stringclusion2021.eventbrite.com)



**Marika Taylor**  
University of Southampton



**Silvia Penati**  
INFN & University of Milano-Bicocca



**Meytal Eran Jona**  
Weizmann Institute