A brief history of time

1968
Veneziano model

Chiara Nappi
PhD 1976
U. Napoli

1984
Anomaly cancellation

Silvia Penati
PhD 1988
U. Milano

1995
Dualities
D-branes

Miranda Cheng
PhD 2008
U. Amsterdam

Shruti Paranjape
PhD 2021
U. Michigan
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)

source: Trends in Physics PhDs, Patrick J. Mulvey, Starr Nicholson, Jack Pold (2021)
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.

Solvay Conferences

1911

1927

2011
(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
Data from the **Italian Ministry of University & Research**

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

- Researchers: 6 out of 23 (New tenures 2 out of 28)
- Associate profs: 17 out of 149
- Full profs: 5 out of 94
Figure 5. Gender distribution in various physics departments in the year 2008.

source: *Women Scientists in India*, Rohini M. Godbole, Ramakrishna Ramaswamy (2015)
Regional shares of female researchers, 2018 (%)

<table>
<thead>
<tr>
<th>Region</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southeast Europe</td>
<td>51.2</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>49.8</td>
</tr>
<tr>
<td>West Asia</td>
<td>48.3</td>
</tr>
<tr>
<td>Central Asia</td>
<td>44.9</td>
</tr>
<tr>
<td>Arab States</td>
<td>42.6</td>
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<tr>
<td>Eastern Europe</td>
<td>41.8</td>
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<tr>
<td>European Free Trade Association</td>
<td>36.6</td>
</tr>
<tr>
<td>European Union</td>
<td>33.8</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>33.5</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>26.3</td>
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</tbody>
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**Spotlight on Europe**

33.8% Share of women among researchers in the European Union.

Note: Data are for the most recent year since 2013. 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 Oceanic 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.
Gender ratio among active authors during the period 2014–2018

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

Marika Taylor
University of Southampton

Silvia Penati
INFN & University of Milano-Bicocca

Meytal Eran Jona
Weizmann Institute