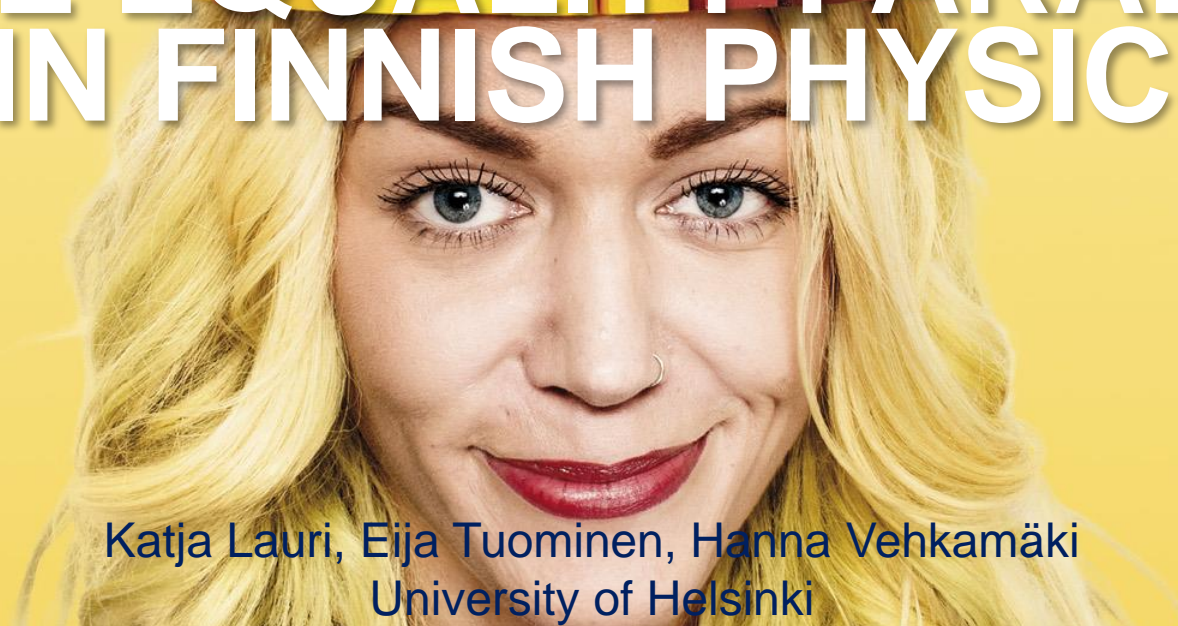




THE EQUALITY PARADOX IN FINNISH PHYSICS



Katja Lauri, Eija Tuominen, Hanna Vehkamäki
University of Helsinki



OUTLINE

- **Finnish Women**
- **Finnish Women in Physics**
- **How to Fight the Equality Paradox in Physics**
- **Why Diversity Matters**

<https://blog.hip.fi/fighting-the-equality-paradox-in-finnish-science/>

By the Finnish NORNDiP Advisory Board Members:

Katja Lauri is research director @ Institute for Atmospheric and Earth System Research

Eija Tuominen is director of Detector Laboratory @ Helsinki Institute of Physics

Hanna Vehkamäki is professor in computational aerosol physics and **vice dean of equality**





FINNISH WOMEN ARE EQUAL

- Finland is #2 in the global equality index.
- E.g., All the five political parties forming the Finnish Government are led by a woman – although this now seems to be changing to $\frac{3}{4}$ female representation.



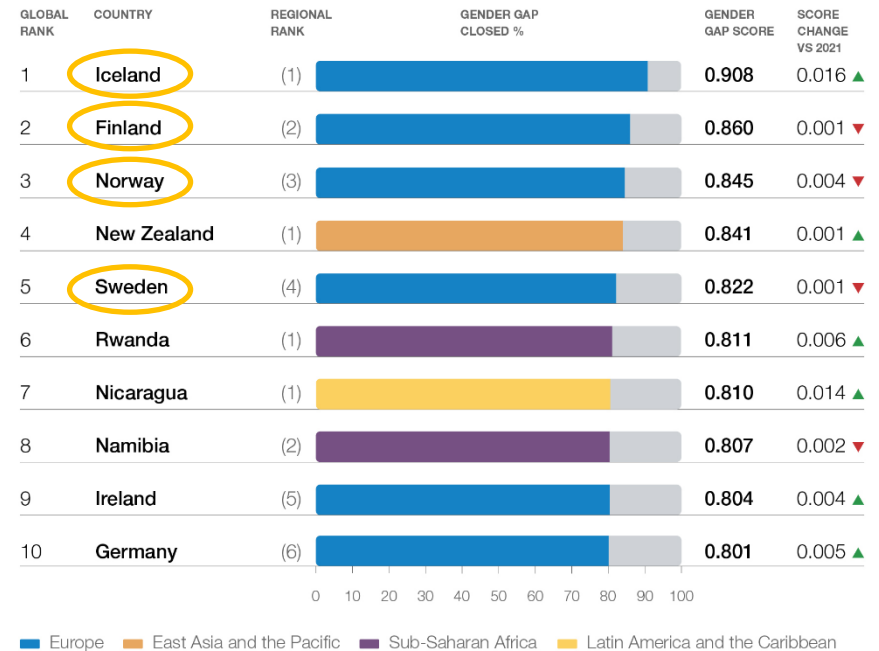
<https://www.is.fi/politi>



son,

Global Gender Gap Index 2022

Global, Top 10



Source: Global Gender Gap Report 2022

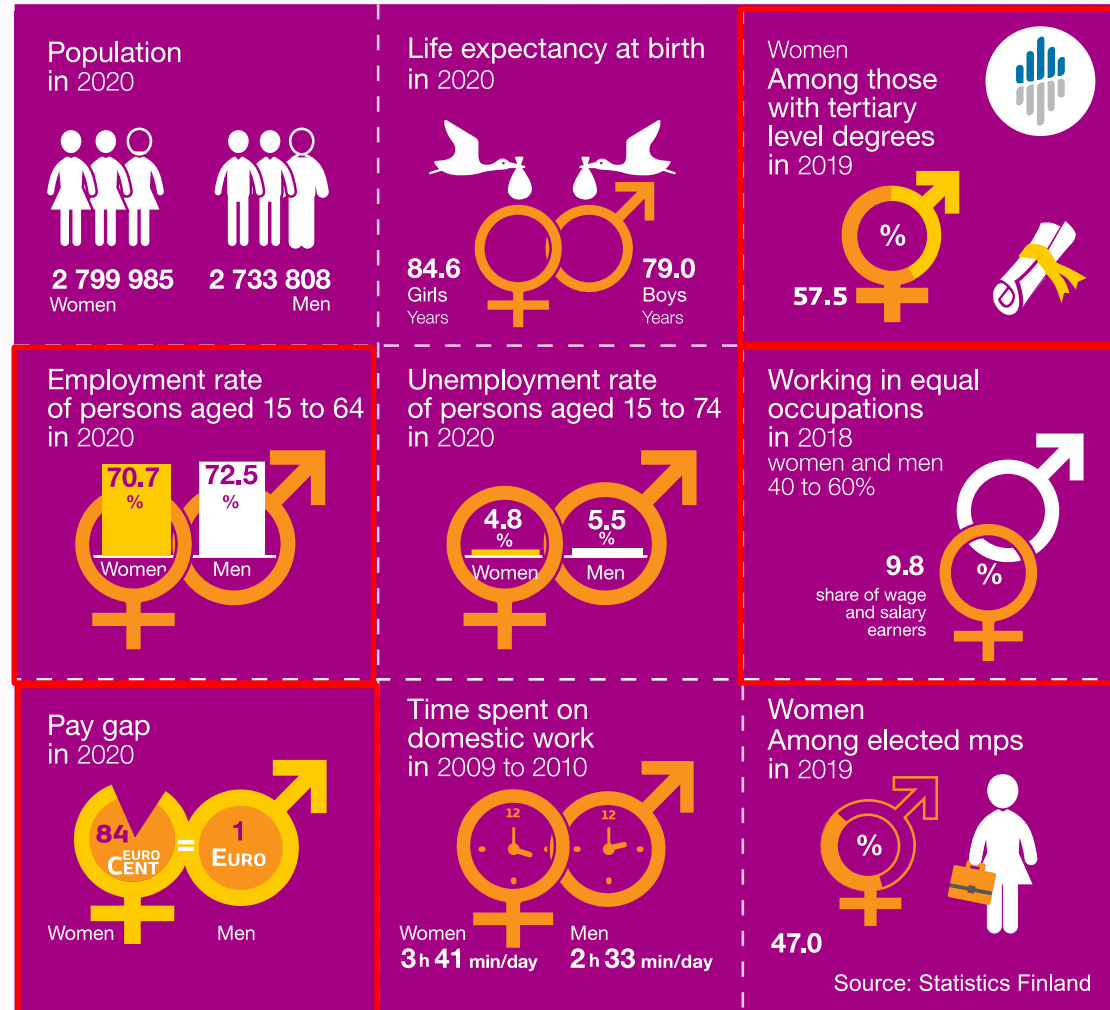
<https://www.weforum.org/agenda/2022/07/gender-equal-countries-gender-gap/>



ARE FINNISH WOMEN EQUAL?

Finnish women in working life:

- Education: women prevail
- Employment: ~same level
- Salary: woman's euro is 84 cents
- NOTE: Finnish working life is extremely divided between women's jobs and men's jobs

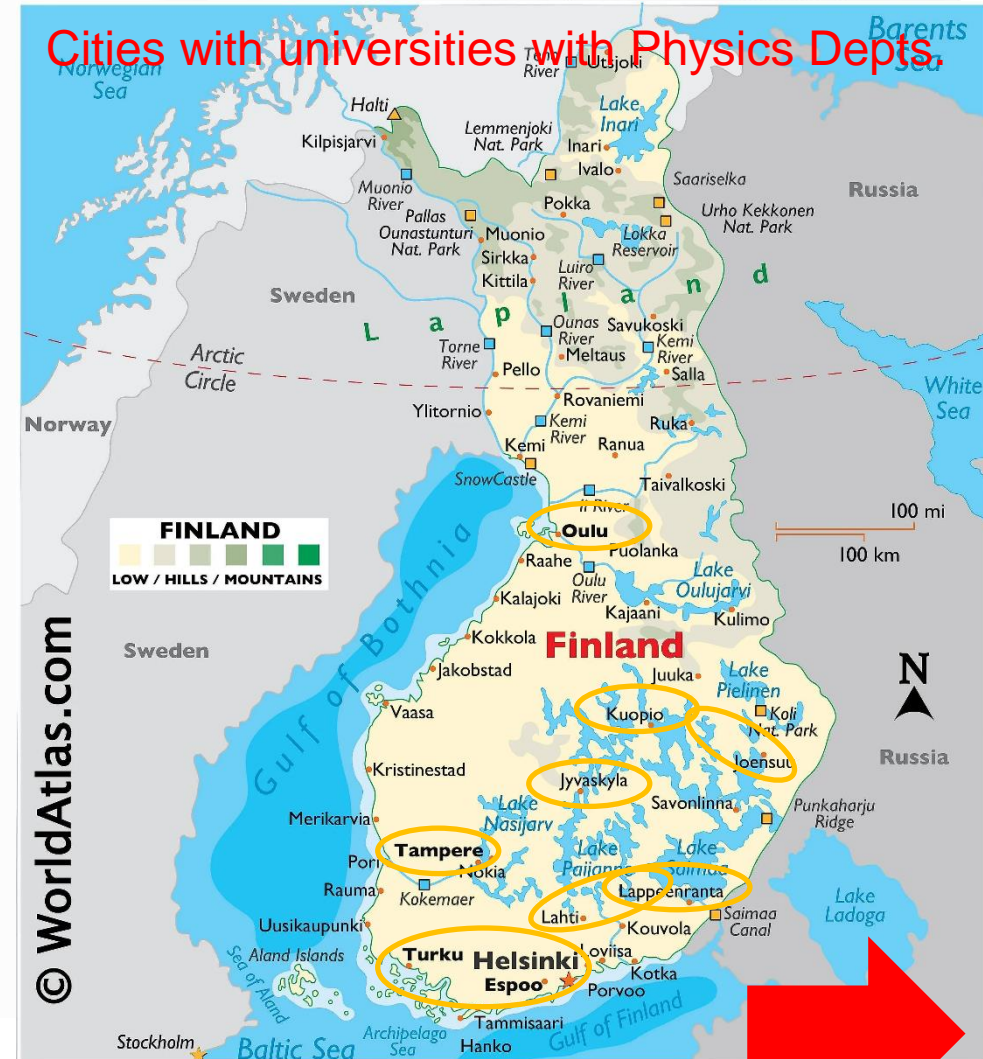


Source: Statistics Finland, Gender Equality in Finland 2021



WOMEN IN PHYSICS IN FINNISH UNIVERSITIES

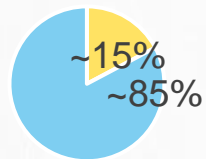
- **Data** is important!
- Data women in physics in Finnish universities is often or difficult to find – but the situation is improving. (“The director did not answer my emails and HR did not dare to share the data.”)
- Luckily, many colleagues are actively working for diversity in physics in their universities.
- Special thanks to Bernadette Gehl-Väisänen (Aalto/Espoo), Anu Kankainen (Jyväskylä), Hanna Nurmela (Helsinki), Panja Luukka (Lappeenranta-Lahti), Tuuli Miinalainen (Kuopio), Milica Todorovic (Turku) and Assa Sasikala Devi (Oulu).





WOMEN IN PHYSICS IN FINNISH UNIVERSITIES

Members of the Finnish Physical Society @ 2021 (718↓)



■ Female ■ Male

FPS Board:

Members: 3/10 female
 Chair Mr. Matti Silveri / Oulu
 Vice-chair Mr. Daniel Price / Helsinki

FPS WG Diversity in Physics Finland

(e.g., gender session in FPS annual meeting)
 Chair Ms. Tuuli Miinalainen
 ~90 members in the mailing list

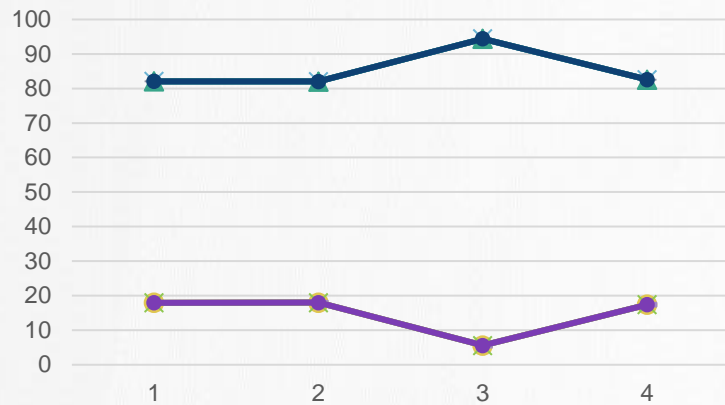
<https://blogs.helsinki.fi/diversityinphysics/>

UNIVERSITY	FEMALE FULL PROFESSORS	
Lappeenranta-Lahti University of Technology	1/4	25 % →
University of Helsinki	6/34	18 % ↓
University of Eastern Finland / Kuopio	2/13	15 % →
University of Oulu	2/9	22 % ↑
Aalto University	4/23	17 % →
University of Turku	1/9	11 % →
University of Jyväskylä	1/16	7 % ↓
Tampere University	2/14	14 % ↑
Åbo Akademi	0/2	0 % →
University of Eastern Finland / Joensuu	1/15	7 % ↑

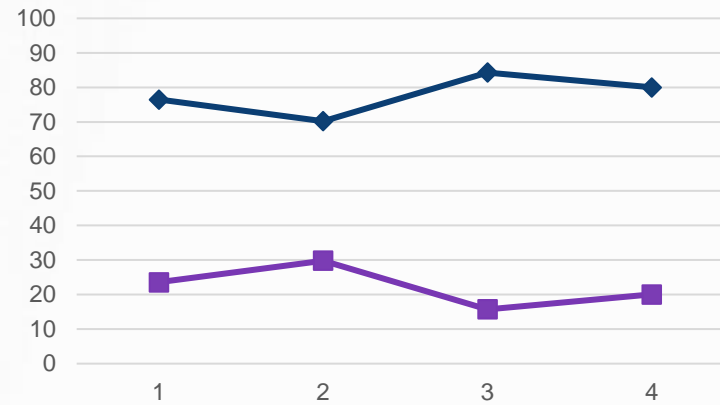


GENDER “TWEEZERS” IN PHYSICS IN SELECTED FINNISH UNIVERSITIES

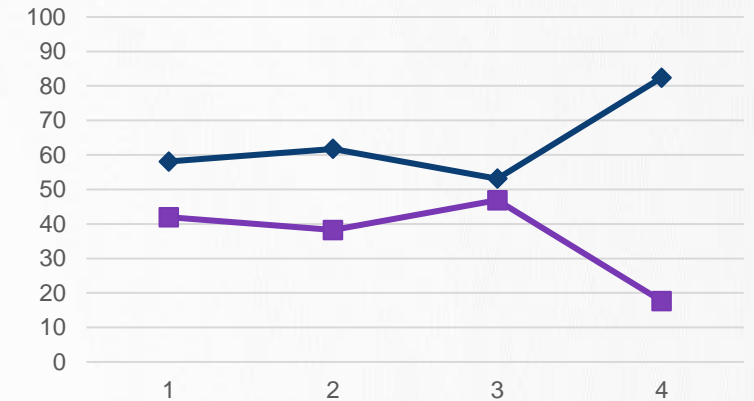
Aalto Physics, n=282



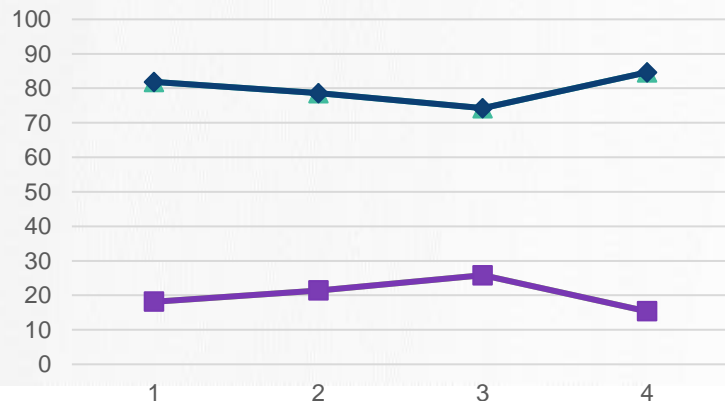
Helsinki Physics + HIP, n=208



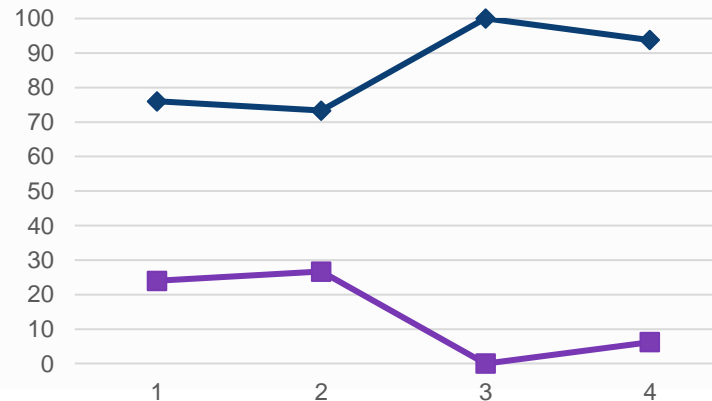
Helsinki INAR, n=145



UEF Kuopio Physics, n=113



Jyväskylä Physics, n=163

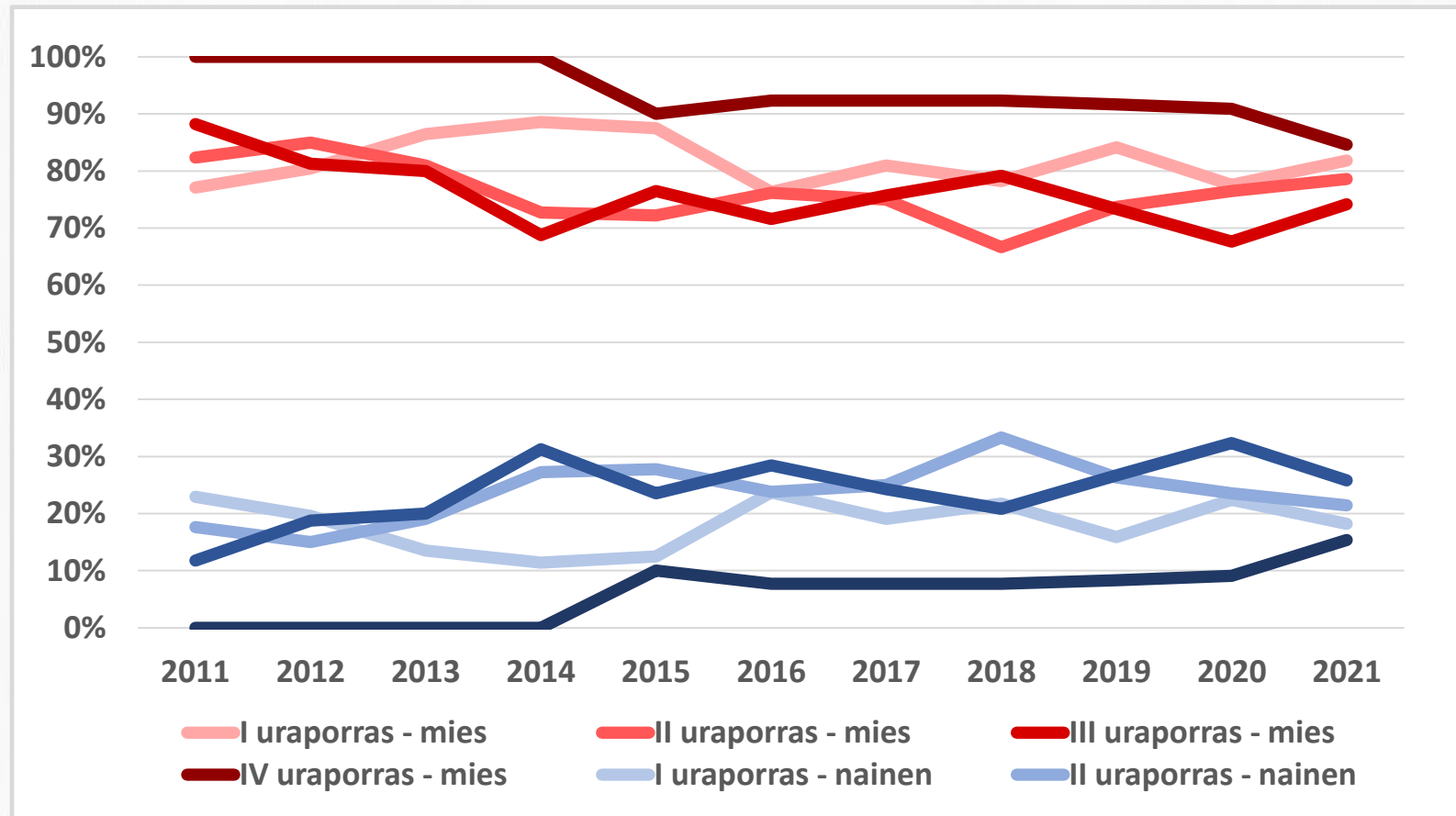


For reference:

Barthelemy, R.S. and Knaub, A.V., 2020. *Gendered motivations and aspirations of university physics students in Finland*. Physical Review Physics Education Research, 16(1), p.010133:
“Despite all of the positive aspects in Finland for women and for science education, our results suggest that Finnish female university students still face challenges that male students do not face.”



LONGITUDINAL DATA FROM UEF KUOPIO

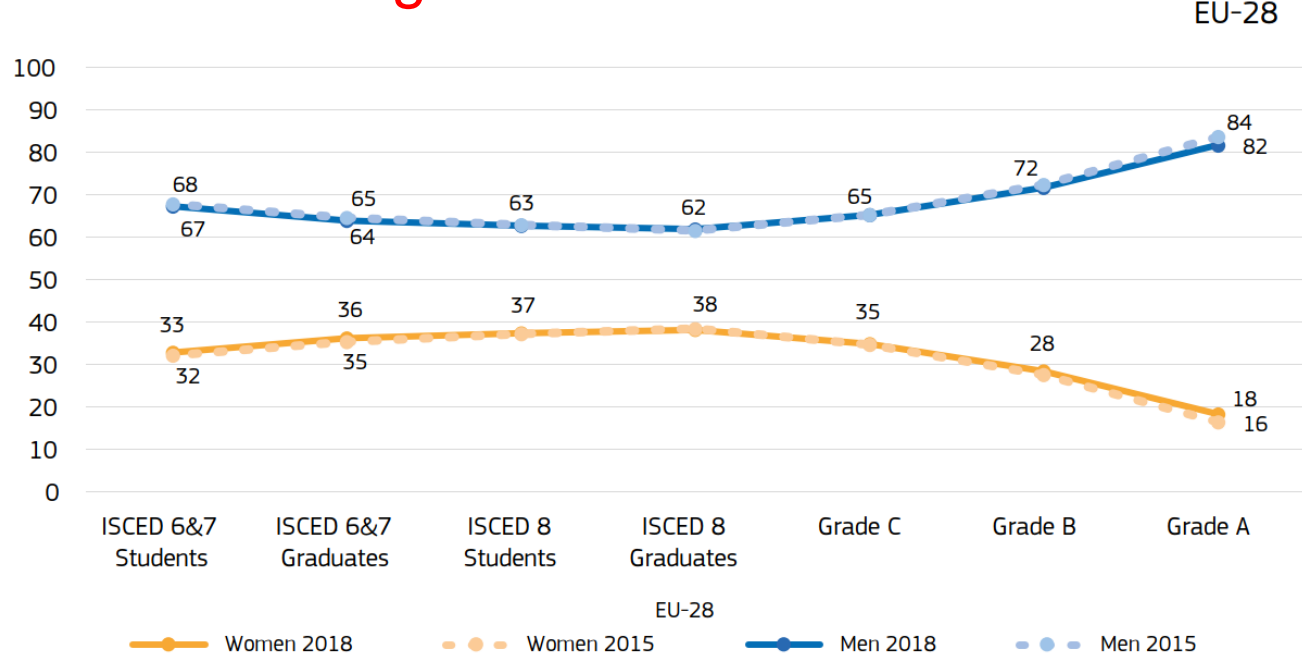




GENDER “TWEEZERS” IN STEM IN EUROPE



EU She Figures 2021: Gender in STEM



https://ec.europa.eu/info/sites/default/files/research_and_innovation/strategy_on_research_and_innovation/documents/ec_rtd_shefigures-2021-report.pdf

Factors influencing women’s career:

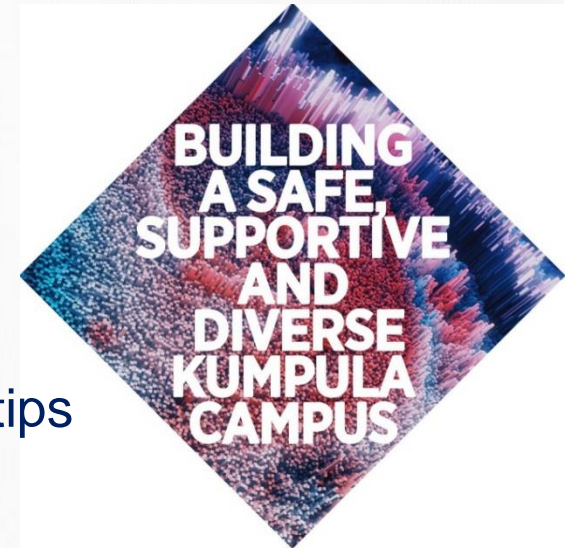
- 1. Hiring:** job advertisements, bias in recommendation letters, bias in recruitment
- 2. Working conditions:** less resources, less mentoring, lower salary, part time jobs
- 3. Career progression:** promotion, evaluation
- 4. Grants:** women’s chances to receive grants are lower

Source: <https://www.leru.org/publications/implicit-bias-in-academia-a-challenge-to-the-meritocratic-principle-and-to-womens-careers-and-what-to-do-about-it>



EXAMPLE: ACTIVITIES INCREASING DIVERSITY @ UH SCIENCE

- **Active discussion**
 - Talks and presentations in meetings, colloquia, and lectures
 - Training events, e.g., about implicit bias and sexual harassment
- **Work well-being**
 - Well-being groups, low-threshold contact points, Code of Conduct, tips for a more inclusive workplace
- **Networking, mentoring, role models**
 - Avoiding being “the only woman in the room”, avoiding “all-male-panels”
- **Work life balance**
 - Understanding family responsibilities, also in job announcements
- **Continuous collection of data**
 - Where we are and where we want to be





EXAMPLE: TOILET NOTES @ UH SCIENCE

KUMPULA CAMPUS IS A SAFER PLACE

WE DO NOT ACCEPT ANY BEHAVIOUR THAT INCLUDES:

- Any sort of discrimination towards someone's ethnicity, nationality, sexual orientation, gender expression, religion, size, socio-economic background, mental health or ability.
- Hate speech or any rude jokes that may insult people around you.
- Catcalling or harassment of any kind.
- Entering someone's personal space – or touching them without their permission.
- Any obtrusive drunken or intoxicated behaviour.

These rules are inspired by Pien Shop.

STAFF

If you experience or witness this kind of behaviour, please contact the Kumpula well-being team through bit.ly/Kumpula-support-staff or this QR code (sign-in to Flamma required):



STUDENTS

If you experience or witness this kind of behaviour, please contact the Kumpula well-being team through bit.ly/Kumpula-support-students or this QR code (link to Studies Service):



KUMPULAN KAMPUS ON TURVALLISEMPI TILA

SE TARKOITTAAN, ETTÄ EMME HYVÄKSY MINKÄÄNLAISTA SYRJINTÄÄ TAI HÄIRINTÄÄ.

Oletko joutunut seksuaalisen häirinnän tai muun epäasianlaisen käytöksen kohteeksi yliopistolla? Tai havainnut jollekin muulle käyneen niin?

TYÖNTEKIJÄ

Ota yhteyttä kampuksen häirintä-yhdyshenkilöihin osoitteessa bit.ly/Kumpula-tuki-henkiloisto tai oheisen QR-koodin kautta (vaatii Flamma-kirjautumisen):



OPISKELIJA

Ota yhteyttä kampuksen häirintä-yhdyshenkilöihin osoitteessa bit.ly/Kumpula-tuki-opiskelijat tai oheisen QR-koodin kautta (linkki Opiskelu-palveluun):



CAMPUS GUMTÄKT ÄR ETT TRYGGARE RUM

DET INNEBÄR ATT VI INTE TOLERERAR TRAKKASSERIER ELLER DISKRIMINERING.

Har du blivit utsatt för sexuella trakasserier eller annat osakligt bemötande vid universitetet? Eller har du sett att det hänt någon annan?

PERSONAL

Kontakta campusets kontaktpersoner för trakasserier via bit.ly/Gumtakt-stod-personal eller QR-koden (kräver att du loggar in på Flamma):



STUDERANDE

Kontakta campusets kontaktpersoner för trakasserier via bit.ly/Gumtakt-stod-studerande eller QR-koden (länk till Studietjänsten):



- Helsinki Association of Women Researchers conducted a survey on sexual harassment (2018): the importance of low threshold contact was obvious (<https://blogs.helsinki.fi/tutkijanaiset/2019/01/17/how-to-erase-sexual-harassment-feedback-from-finnish-academia/>).
- Every toilet in Kumpula Campus has a note with contact information.
- An upset person can look for more information in a quiet place.



WHY DIVERSITY MATTERS?

1. Diverse teams make better science

- Diverse teams bring in diverse experiences, practices, perspectives, values, and motivations
- Diversity increases the quality of the process and effectiveness of scientific inquiry.
- (Reference: abundancy of scientific studies.)

2. Everyone has right to equal opportunities



https://greatergood.berkeley.edu/article/item/how_diversity_makes_us_smarter



SUMMARY

Diversity makes better science!

Increasing diversity needs actions!

Actions make difference!





BACK UP FILES



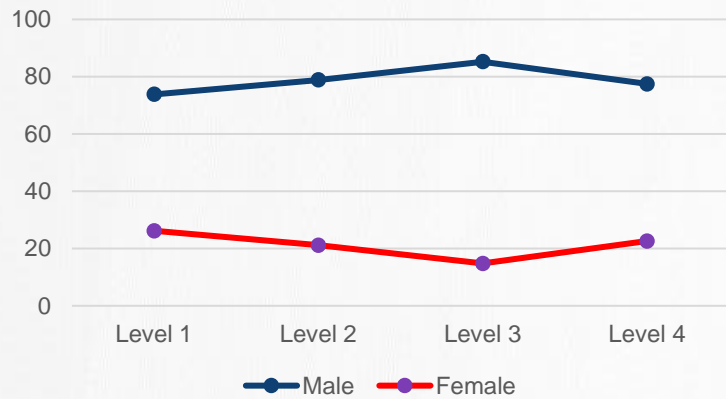
REFERENCES

- Astegiano, J., Sebastián-González, E., & Castanho, C. D. T. (2019). **Unravelling the gender productivity gap in science: a meta-analytical review.** *Royal Society open science*, 6(6), 181566.
- **EU She Figures** (2018). https://ec.europa.eu/info/publications/she-figures-2018_en, accessed 29.7.2020.
- Gvozdanović, J., & Maes, K. (2018). **Implicit bias in academia: A challenge to the meritocratic principle and to women's careers - And what to do about it.** *Technical Report 23. Advice paper.*
- Holman, Luke, Devi Stuart-Fox, and Cindy E. Hauser (2018). **The gender gap in science: How long until women are equally represented?** *PLoS biology* 16.4 (2018): e2004956.
- Hunt, Vivian, Dennis Layton, and Sara Prince (2015). **Diversity matters.** *McKinsey & Company* 1.1: 15-29.
- Medin, Douglas L., and Carol D. Lee (2012). **Diversity makes better science.** *APS Observer* 25.5.
- Nielsen, Mathias Wullum, et al. (2017). **Opinion: Gender diversity leads to better science.** *Proceedings of the National Academy of Sciences* 114.8: 1740-1742.
- Nielsen, Mathias Wullum, Carter Walter Bloch, and Londa Schiebinger (2018). **Making gender diversity work for scientific discovery and innovation.** *Nature human behavior* 2.10: 726-734.
- Quimby, Julie L., and Angela M. De Santis (2006). **The influence of role models on women's career choices."** *The Career Development Quarterly* 54.4: 297-306.
- Schiebinger et al. (2017). **Gender diversity leads to better science,** *Proc. Nat. Acad. Sci.*, 114(8), 1740.
- Stoet, Gijsbert, and David C. Geary (2018). **The gender-equality paradox in science, technology, engineering, and mathematics education.** *Psychological science* 29.4: 581-593.
- Ward, Kelly, and Lisa Wolf-Wendel (2004). **Academic motherhood: Managing complex roles in research universities.** *The Review of Higher Education* 27.2: 233-257.

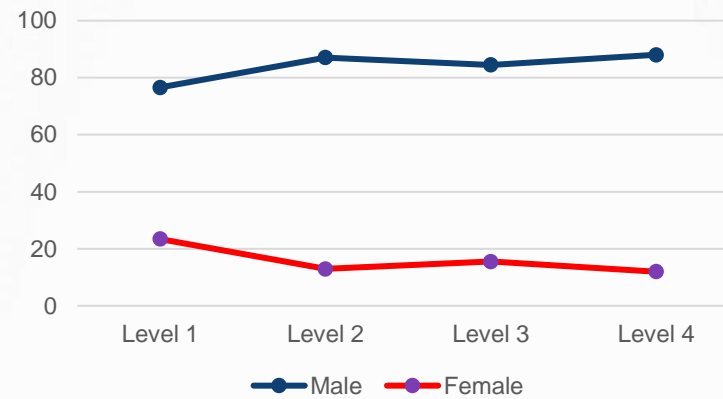


GENDER “TWEEZERS” IN PHYSICS IN SELECTED FINNISH UNIVERSITIES 2022

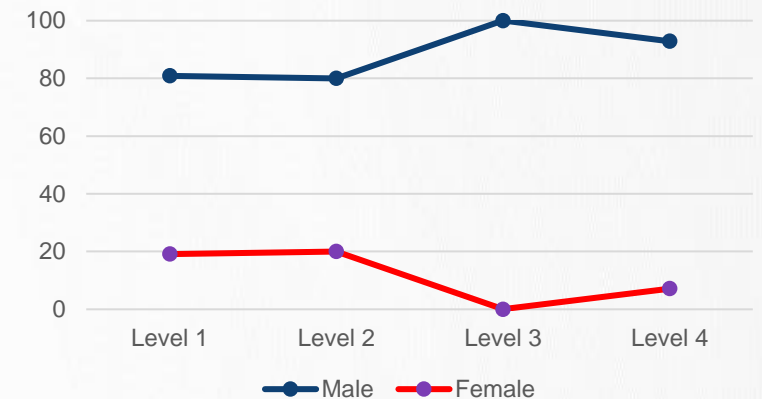
Helsinki Physics, n=221



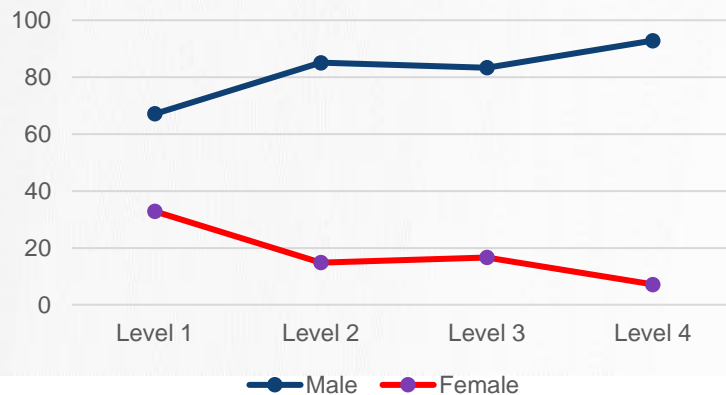
Aalto Physics [%], n=266



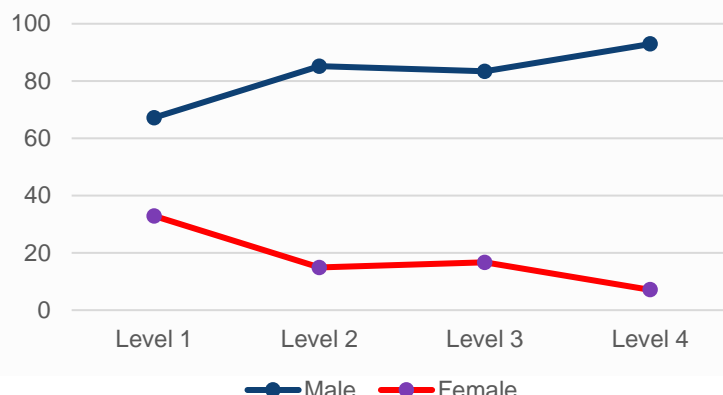
Jyväskylä Physics [%], n=149



Tampere Physics [%]



Kuopio Physics [%], n=113



For reference:

Barthelemy, R.S. and Knaub, A.V., 2020. *Gendered motivations and aspirations of university physics students in Finland*. Physical Review Physics Education Research, 16(1), p.010133:
“Despite all of the positive aspects in Finland for women and for science education, our results suggest that Finnish female university students still face challenges that male students do not face.”



“What’s the matter?
It’s the same distance!”

(Women in Technology (WIT) matters) <wit-matters@cern.ch>