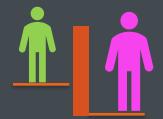




# Diversity and equitable opportunities Highlights!







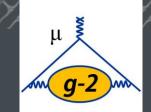
Tracey Berry

ATLAS D&I Contact (2022-24), Vice-Dean EDI for EPMS (5 Depts) @ 42<sup>nd</sup> ICHEP, July 2024, Prague











### Motivations for Talk



Why do we need talks on "Diversity and equitable opportunities"?

**Everything is fine** 

It's nothing to do with me!

There are so many barriers

We need things to improve!

**Everything is fine for me .... but I see barriers for others** 

### **Diversity & Inclusion**





### Your journey to the conference!



Being at this conference indicates that you have been given opportunities

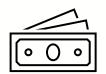
- invitation for talk or poster selection process
- register approval by group lead
- travel visa/passport
- transport funds
- home arrangements caring repsonsibilities













### Your journey to the Conference!



### Diversity!... But equitable opportunities?

### Each step can be easier/harder

Being at this conference indicates that you have been given opportunities

- invitation for talk or poster selection Career Stage/ Nationality/ Gender
- register approval by group lead
  Biases: gender/ethnicity/age/caring
- travel visa/passport Nationality/Mobility/Health/Age/Religion/LGBTQ+
- transport funds funding biases? gender/ethnicity
- home arrangements caring responsibilities Gender/Age/Ethnicity

### Your journey to the Conference!



Before the conference indicates that you have been given opportunities

### Different for everyone - Diversity!

- How achieve your position? -job applications/CV/reference letter/interviews
- ➤ How did you get your PhD placement given advice/CV/interview
- ➤ How did you choose your UG University guess/advice/visit Unis/school
- Did your family help support your career choices? mental/financial/physics
- How/when/where did you even hear of particle physics/LHC/neutrinos?– opportunities/outreach











### Career Progress/Success



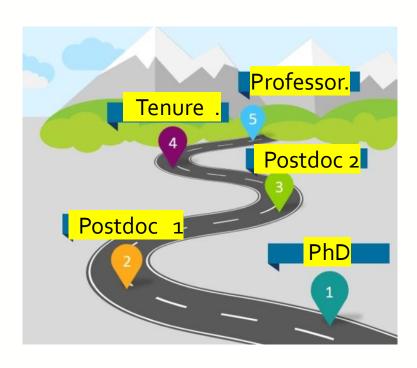
Progress/Success in your career....

- > Self-determined, lonely path
- > Clear path & support



Best way...





### Every step is harder: Nature



minorities
Fig. 1: The leaky pipeline of women in STEM.

From: How the entire scientific community can confront gender bias in the workplace

Women are less likely to be employed as graduate students postdocs in male PIs' labs, which represent over 70% of labs<sup>17</sup>

Women are half as likely to get 'excellent' letters of recommendation 18,19

> and 10-20% less likely become an independer PI than men<sup>21,22</sup>

> > Women submit fewer grants overall, fewer renewal or simultaneous grants and are less likely to have renewals funded than men<sup>3–8</sup>





Female last authors are 6.4% less likely to have their manuscripts accepted by an all-male panel of reviewers 12

Start-up funds for male

PIs are over US\$500,000 more

than start-ups for female PIs<sup>24</sup>

communications physics

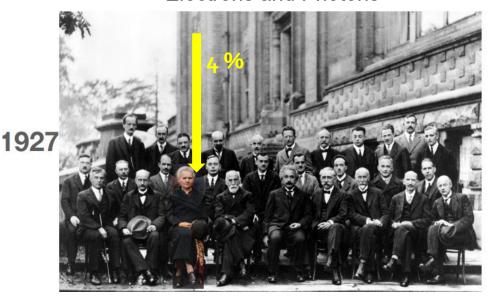
#### Wasted talent: the status quo of women in physics in the US and UK

### **Evolving Diversity in Physics**



### Original studies focused on gender

5<sup>th</sup> Solvay Conference on physics "Electrons and Photons"



2024

- ➤ Attendees included: Neils Bohr, Born, de Broglie, Marie Curie, Dirac, Albert Einstein, Heisenberg, Pauli, and Schrödinger.
- ➤ 17/29 attendees were or became <u>Nobel Prize</u> winners, including <u>Marie Curie</u> who, alone among them, had won Nobel Prizes in two separate scientific disciplines.



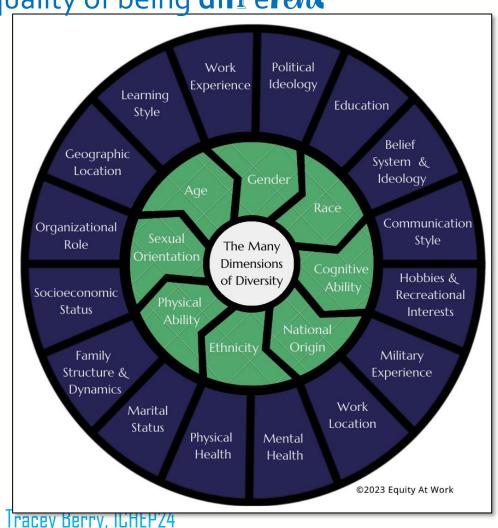
### **Dimensions of Diversity**



Diversity: the quality of being different

### last 10 years focus also on:

- > Race
- **≻** Ethnicity
- > Sexual Orientation
- ➤ Gender identity
- ➤ Disability
- ➤ Neurodiversity
- > Age



## What are PP collaborations/research councils/Universities doing?

## Diversity and equitable opportunities





### Tiered Diversity and Inclusion Research Labs





### **EDI Parallel Sessions**







#### **Topic Talks**





Ukraine



Funding £/\$



Girls into **Physics** 

**ECR** 



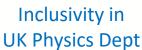






Community Agreement





Invisible **Dimensions** 





Club B https://indico.cern.ch/event/1291157/sessions/543526/#20240720.detailed

vurturing Inclusivity in Physics Departments: Lessons from Achieving Juno Champion Status

CERN Diversity & Inclusion: Beyond Gender & Nationality and our invisible Dimensions

Training on inclusivity and cultural diversity in ALICE collaboration

Club B

Club B

09:00

10:00

11:00

12:00

ATLAS Early Carreer Sch

10:45 - 11:02

11:19 - 11:36

11:36 - 11:53

11:53 - 12:10

12:10 - 12:27

Victoria Martin

Louise Carvalho

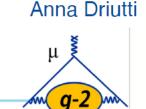
Sami Sakari Rasanen

### Collaboration and Funders Aims



The **mission of the collaboration** is to measure with unprecedent precision (goal: 140 ppb) the **anomalous magnetic moment of the muon**.

Have a **diverse collaboration** with a variety of backgrounds is an asset to solve the complex problems we encounter, and an **inclusive and equitable environment** help us to maximize the productivity of the collaboration.



2

# Fermilab



EVERY EARLY CAREER SCIENTIST HAS EQUAL OPPORTUNITIES INDEPENDENT OF THEIR BACKGROUND

Christian Appelt,



Funding opportunities for frontier science Ensuring equal treatment of applicants

Luis Fariña Busto.



### What are PP collaborations doing?

### **Diversity**

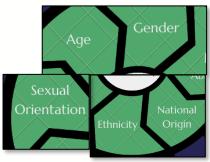


### What are PP collaborations doing? **Diversity**

Assessing/monitoring



- Acknowledging Diversity
  - $\triangleright$  Monitoring  $\rightarrow$  Showing diversity  $\rightarrow$  Celebrating it
  - Broadening minds
    - each person has (only) their own lived experience
    - inclusivity/cultural events
  - Training unconscious bias





#### Author and Fraction of Women\* Data Collection \*Fraction of women\* authors 24.1% (23% in 2022) \*Fraction of women\* author over 35 years: 20.7% (19.7% in 2022) CMS collects data on variety of variables \*For CERN (2022): Fraction of women\* (CERN staff & fellows): 22.5% for all its members Gender (binary: male or female) 5000 members: women 2015-2021 Run2 + LS2 2010-2014 Run1 + LS1 Citizenship (some people have many) Career level ATLAS Preliminary June 2024 Age diversity Working country Members Member: someone who belongs to the collaboration. Author: someone that has been registered in CMS as 2022-2024 Run3 2015-2021 Run2 + LS2 2010-2014 Run1 + LS1 scientist (physicist or engineer) or as doctoral student for at least 12 months and has contributed the necessary EPR (experimental physics responsibilities) work to obtain authorship, which is currently 6 months 2016 2017 2018 2019 2020

### What are PP collaborations doing? **Diversity**







- Monitoring
- Broadening minds
  - each person has (only) their own lived experience
  - inclusivity/cultural events
- > Training unconscious bias



Orientation

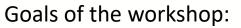




Training on inclusivity and cultural diversity in ALICE collaboration

Sami Räsänen,

New Workshop: Collaborating in Culturally Diverse Teams
First run in ALICE week (March 4 - 10, 2024)



Recognize tie between unconscious bias and cultural awareness.

Understand the impact of cultural differences on ease of collaboration

#### **Diversity Day Events**









### What are PP collaborations doing? **Diversity**

Rachel Bartek Sami Rasanen





- ➤ Monitoring → Proud of diversity
- Broadening minds
  - each person has (only) their own lived experience
  - inclusivity/cultural events







CERN Globe of Science and Innovation 9 February 2023 from 2pm to 4pm

On the occasion of the nternational Day of Women and Girls in Science

### Workshops

brought to you by:



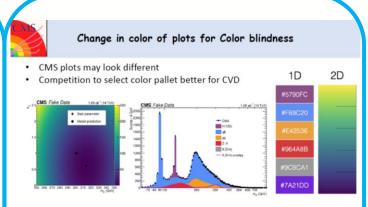






Training for management roles to promote inclusivity at ALICE (offered yearly), **funded by ALICE** (2020-).

Tracey Berry, ICHEP24



Color palette for color blindness (2024): Enforcing a CMS style that ensures plots are accessible to people with color blindness.

### What are PP collaborations doing?

### Equitable opportunities



### What are PP collaborations doing? **Equitable opportunities**



- Creating equitable opportunities
  - Outreach/increasing accessibility/awareness
  - > ECR Groups and Mentoring
  - ➤ Grants
  - > Code of Conduct/ Community Agreement





### **Physics Project Days**

### Addressing the start of the pipeline

before

Yes



#### Goals of the Workshop

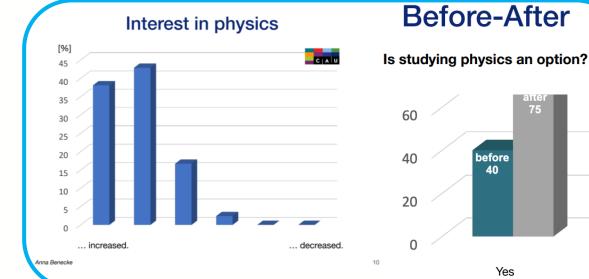
encourage female high school students to study physics





#### Time table

Wednesday	Thursday	Friday	Saturday
	1. Project phase	3. Project phase	5. Project phase
	Joint lunch		
Arrival & Check-In	2. Project phase	Study Q&A 4. Project phase	
	Coffee break		Kolloquium
Welcome	2. Project phase	4. Project phase	Departure
	Team	CAMPUS- Tour	
Reception	building	Joint dinner	



#### Anna Bennecke

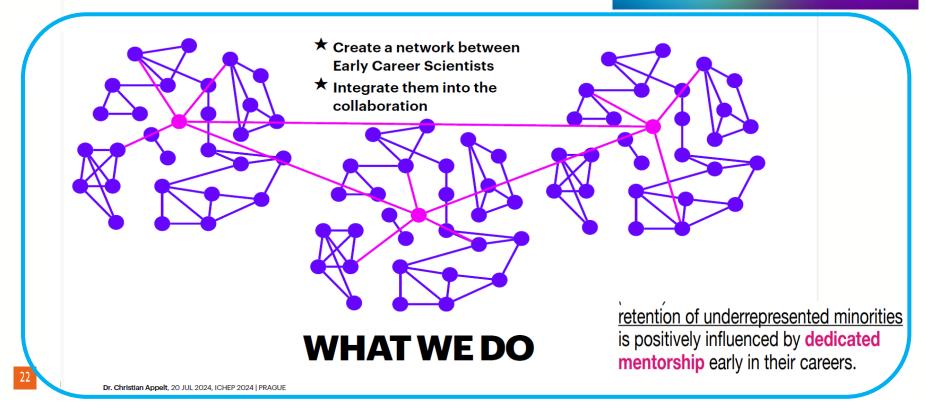
### What are PP collaborations doing? **Equitable opportunities**Ease transition



- Creating equitable opportunities
  - Outreach
  - ECR Groups and Mentoring





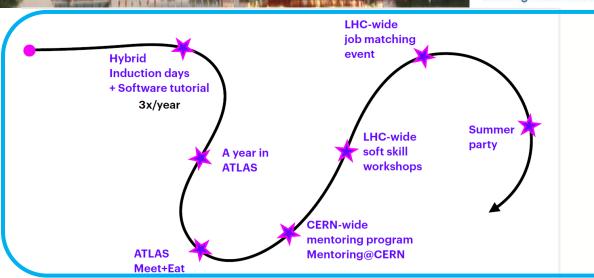


### **ECR & EDI Groups**

### Support career paths









### What are PP collaborations doing? **Equitable opportunities**Sto

Staying well

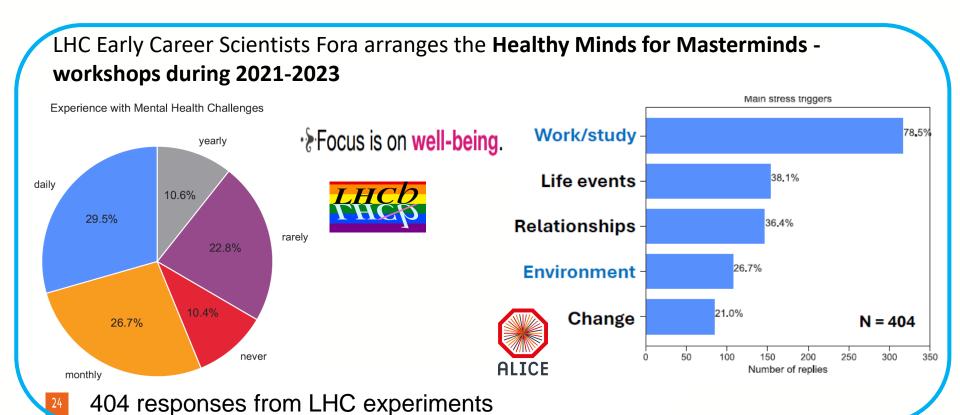




- ➤ Outreach
- ECR Groups and Mentoring



Sami Rasanen



### What are PP collaborations doing? **Equitable opportunities**

Funding Tips



- Creating equitable opportunities
  - > Outreach
  - > ECR Groups and Mentoring
  - **➢** Grants





### Gave us tips on how to get money - all levels!



propelled and competent, don't give up, try again!

but don't lose non-specialists, avoid hype, as PI you are self-

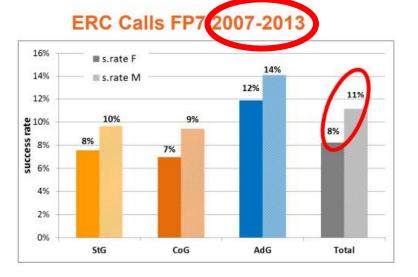
### **ERC Success Rates**

### Funders working to create equitable opportunities

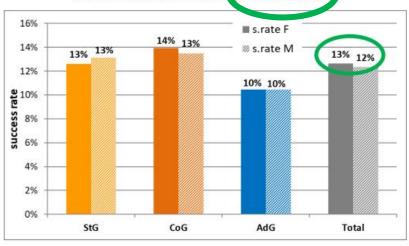


### Success Rate by call type

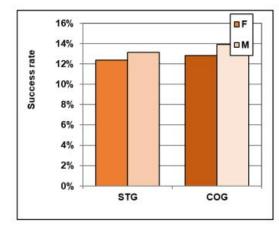
Data kindly provided by Department A



ERC calls H2020 (2014-2020)



ERC Horizon Europe calls 2021, 2022





Showed more plots by country

### What are PP collaborations doing?

### Equitable opportunities Working Environments

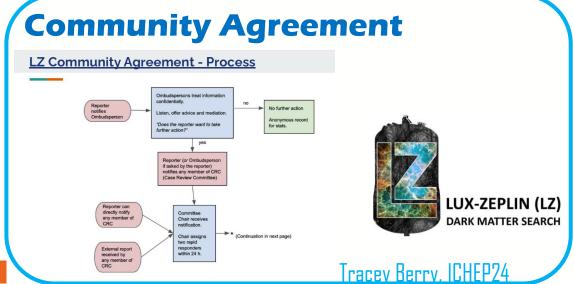


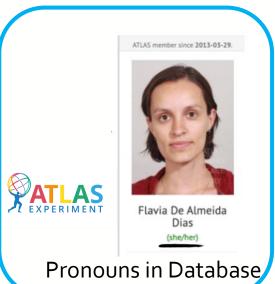


CMS/ CODE OF CONDUCT

- Creating equitable opportunities
  - Outreach
  - > ECR Groups and Mentoring
  - ➢ Grants
  - Code of Conduct/ Community Agreement

- Hugh Lippincott
- > Frameworks: Speakers committees, collaboration boards







### **Ukraine Talk**





Equity, Diversity and Inclusion at International Conference on High **Energy Physics** 

ICHEP was held in Kyiv

#### in years 1959 and 1970! Selected internationally known scientists born in

### Ukrainian contribution to particle physics: historical perspective and prospects

Tetiana Hryn'ova: LAPP, Annecy Igor Kostiuk: Nikhef, Amsterdam Denys Timoshyn: Charles University, Prague

20.07.2024

#### $XV_{th}$ INTERNATIONAL CONFERENCE ON HIGH ENERGY PHYSICS

(Kiev, August 26 - September 4, 1970)



V. Veksler (Zhytomyr, 1907) invention of microtron & development synchrotron,

G. Breit

1899)

(Mykolaiv,

Relativistic

Breit-Wigner

Breit-Wheeler

process, Breit

distribution.



G. Budker (Murafa, 1918) invented electron cooling and proposed experiments on colliding



(Dubrovytsia, 1924) was awarded Nobel Prize in Physics for invention of multiwire proportional chamber, ...



M. Goldhaber (Lviv, 1911) established that beta particles are identical to electrons. determined nelicity of the



G. Gamow Odesa, 1904 developed the Big Bang Theory of the universe explained nuclear alpha

#### A few highlights



Lead tungstate crystals (PbWO4) discovered in the Institute for Single Crystals, Kharkiv in 1960s by Ludmyla Nagornaya are used for calorimeters of the ALICE and CMS detectors. Kharkiv scintillators were used in BaBar ECAL and ATLAS MBTS, are in Belle II ECAL, CMS HCAL and other detectors.



Kviv University (TSNUK) - ISMA -KIPT contributed to technology proposal, simulation and prototyping, beam tests, innovative aging studies for the new LHCb luminometer.



**Dmitrij Volkov** (center), Vladimir Akulov (right) and Vvacheslav Soroka from KIPT played a crucial role in the development of supergravity and supersymmetry.

#### **Future projects**



New EC office in Kviv will help Ukrainian scientists to better integrate into international community.



CERN-Ukraine 2024 meeting held in Kyiv in May to organize preparations of Ukrainian contribution to the update of the European Particle Physics Strategy







Ukrainian institutions participate in ongoing efforts for future HEP experiments, accelerators and detector R&D

### Is everything covered?





### Invisible Dimensions - Survey

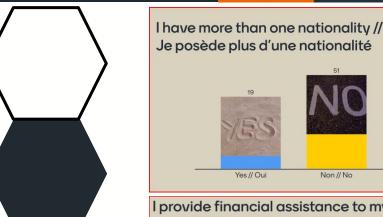
#### Louise Carvalho



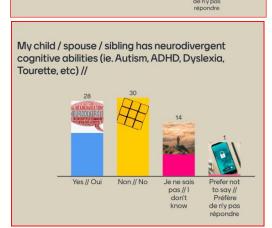


- More than one nationality
- First in family to go to University
- Financially supporting others
- Caring for others
- Neurodivergent: self or child/spouse/sibling
- Two body issue







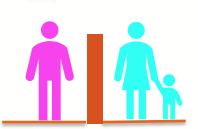


### What can YOU do?



- 1) Support everyone in your career / be considerate mentor others
- GO

- 2) Be an ally to those treated unfair, call out bad behaviour
- Don't assume that your lived experience are the same as anyone else's – learn about others
- 4) Attend training courses to become more equipped



GO

- a) If you are in-charge of others
  - create a positive, inclusive, fair, open and transparent culture
  - where people can be heard and contributions valued
  - giving people same opportunities may be not treating people equally
- b) Allocate resources fairly: money, time, PhD students, talks,

workload: shifts etc

Victoria Martin

- c) Have summer students to help with EDI work, make a team, EDI seminars!
- 5) Don't be scared of EDI do your best! everyone creates the culture (+/-)

  Tracey Berry, ICHEP24



### danke

### Děkuji

### 感謝

bedankt



grazie

ありがとうございました

Thank you

dyakuyu

xie xie 謝謝 Arigatou gozaimasu

takk

merci

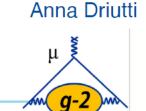


### Collaboration and Funders Aims



The **mission of the collaboration** is to measure with unprecedent precision (goal: 140 ppb) the **anomalous magnetic moment of the muon**.

Have a **diverse collaboration** with a variety of backgrounds is an asset to solve the complex problems we encounter, and an **inclusive and equitable environment** help us to maximize the productivity of the collaboration.



Fermilab

THE GOAL:

EVERY EARLY CAREER SCIENTIST HAS EQUAL OPPORTUNITIES INDEPENDENT OF THEIR BACKGROUND

Christian Appelt,



Funding opportunities for frontier science Ensuring equal treatment of applicants

Luis Fariña Busto.





#### **ADDITIONAL READING**

- The neurodiversity edge, by Dunne, Maureen // Neurodiversity at Work, by Theo Smith & Amanda Kirby
- Inclusion revolution, by Auger-Dominguez, Daisy
- Career and family, by Golding, Claudia
- The highly sensitive person, by Aron, Elaine N
- The inclusion nudges guidebook, ed. 2020, by Kepinski, Lisa and Nielsen, Tinna C
- Suis-je hypersensible? by Midal, Fabrice
- The authority gap, by Sieghart, Mary Ann
- An employer's guide to managing professionals on the autism spectrum, by Scheiner, Marcia and Bogden, Joan
- The little data book on gender by World Bank Group, 2019) (e-book, open access
- Neuroscience of prejudice and intergroup relations, by Derks, Belle, and al.
- **Performance through diversity and inclusion**, by Bernstein, Ruth and al.



Diversity & Inclusion



### NEURODIVERSITY at Work What can I do?

#### Notice strengths:

- Memory
- Innovative thinking
- · Attention to detail
- Entrepreneur mindset
- Creativity
- Visual Reasoning
- Pattern recognition
- · Time keeping
- 3D thinking
- Seeing the big picture
- Structured analysis

As a manager

- Offer the person additional time to process information or complete tasks
- Provide flexible working hours and location.
- ≥15-20% of the global population are neurodivergent

As a

colleague

- Reach out to a colleague whom you see might be struggling
- Invite the colleague's advice about work / encourage their contribution in meetings

Source: Pearn Kandola: «Neurodiversity at Work 2024» report

click & read: What is Neurodivergent Masking & Why do Professionals do it?



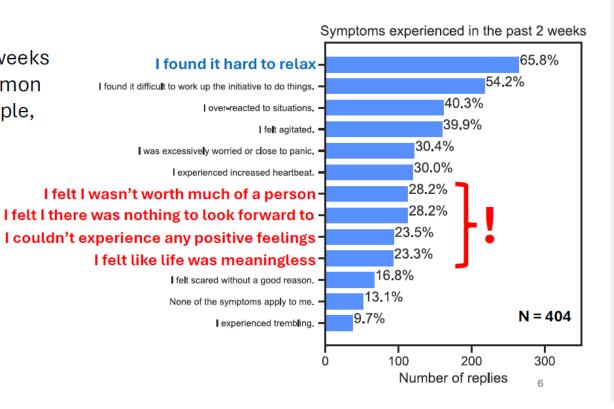
Diversity & Inclusion



### Survey on wellbeing of the LHC researchers



- Only 13% reported no symptoms in past two weeks
- Hard to relax most common
- 20-30%, i.e. 80-125 people, strong symptoms

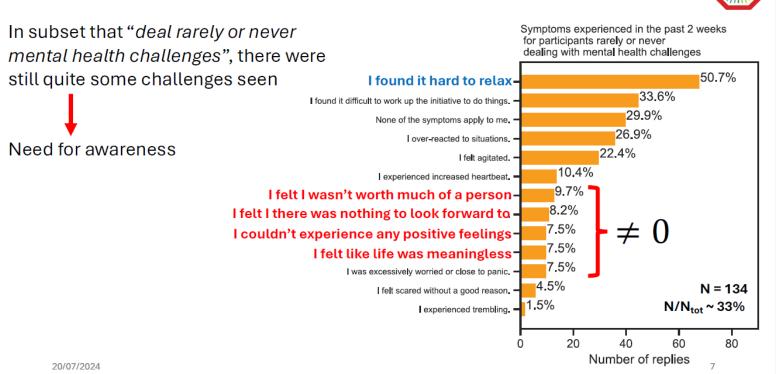


20/07/2024



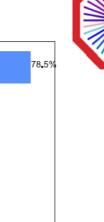
#### Survey on wellbeing of the LHC researchers

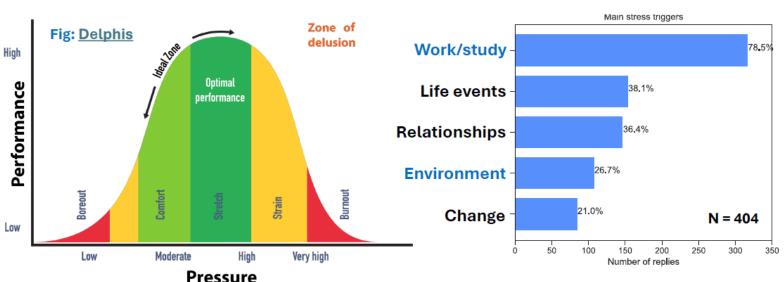






### Survey on wellbeing of the LHC researchers





Strong worry from questionnaire  $\rightarrow$  What can we do?

- The main stress trigger is work/study, also environment contributes
  - → two things in our reach
- Realizing that all stress is not bad; we need pressure and deadlines

20/07/2024

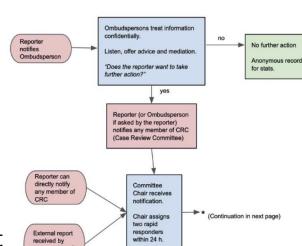
### LZ Community Agreement

### **Hugh Lippincott**



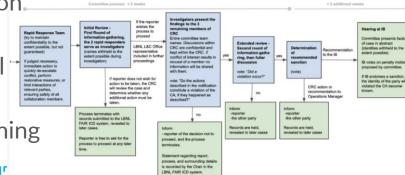
- ➤ LZ ~200 people, ~36 institutions, 7 countries
- majority in US and UK
- Original code of conduct adopted in 2018
- Mostly aspirational
- ""Unacceptable conduct may warrant further action. "
- ➤ Not explicitly spelled out how would actually work
- Developed in 2022 -
- > June 2023 Ratification of new Community Agreement
- Two ombudspeople
- Creation of Case Review Committee (CRC)
- > 0 5 members, all from IB, elected by collaboration
- o Two year terms
- Chair chosen by elected CRC convenor-level

Reflecting & Reviewing after 1 year - more training





LZ Community Agreement - Process



### **HOLLOWAY**

### Sample D&I-related Policies, Actions, Learnings

**Gender** Equality Plan; International Gender Champion; Contract extension postmaternity leave: Increased co-parent leave; Genera Network; Women-in-Tech network

adaptations;

SRR gender inclusive language; Official D&I lanyard; DIO Network; D&I Roundtable; dashboards: Gender diverse **selection** boards; 577 email policy

> Spouse & Partner equal rights"; Infant feeding room; Crèche onsite; Swiss work permit for spouse

**Dual Career** Network:

D&I Awareness Workshops; Active **Bystander** training; D&I embedded in mandatory learnings; Invisible dimensions poll; Harassment prevention seminars



**Diversity & Inclusion** 

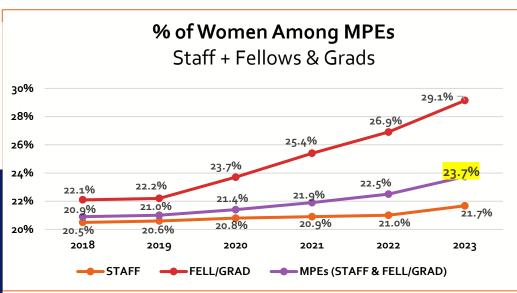
### Setting Diversity Targets – Data!



- •Monitor diversity issues and report periodically to the collaboration
  - Data collection and reporting vital to see trends
  - Quantitative and Qualitative (surveys)
  - Analysis/ Identify Actions/Review

Louise Carvalho's Talk



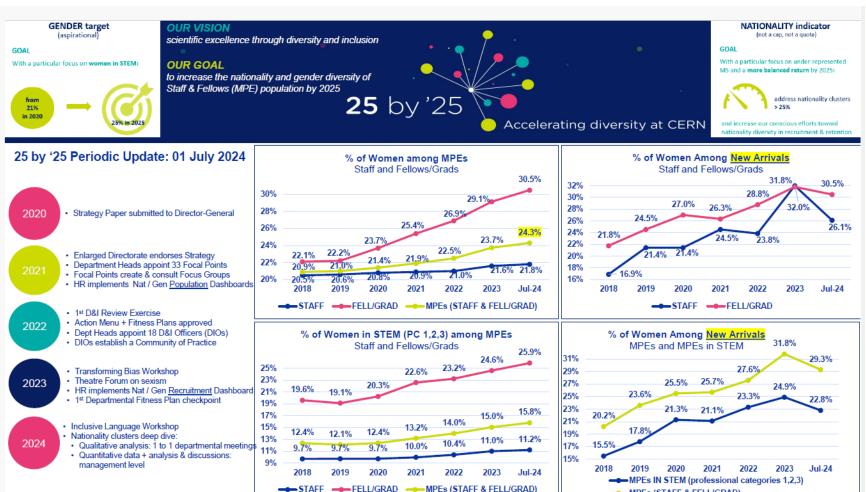


→ 1.3% from our 25% target!



But some characteristics reasier to monitor than others

#### ROYAL HOLLOWAY UNIVERSITY OF LONDON



MPEs (STAFF & FELL/GRAD)



# "UNITE PEOPLE FROM ALL OVER THE WORLD TO PUSH THE FRONTIERS OF SCIENCE AND TECHNOLOGY, FOR THE BENEFIT OF ALL"

- CERN MISSION

