

Local and Global Aspects of JEDI* in Science

(*Justice, Equity, Diversity, Inclusion)

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PASCOS 2023
University of California Irvine
July 2023

A very personal story...

Robert N. Little
March 11 1913-May 21 1986
University of Texas, Austin





Central American School of Physics
Guatemala 1977

On justice, equity, diversity and inclusion

Sharing definitions of equality, diversity and inclusion (EDI) and why EDI matters at the University

➔ Equality is about ensuring that everyone has the same opportunities, and no-one is treated differently or discriminated against because of their personal characteristics. These are known as 'protected characteristics' under the Equality Act 2010. The nine protected characteristics are:

- age
- disability
- gender reassignment
- marital or civil partnership status
- pregnancy and maternity
- race (including colour, nationality and ethnic or national origins)
- religion or belief (including lack of belief)
- sex
- sexual orientation

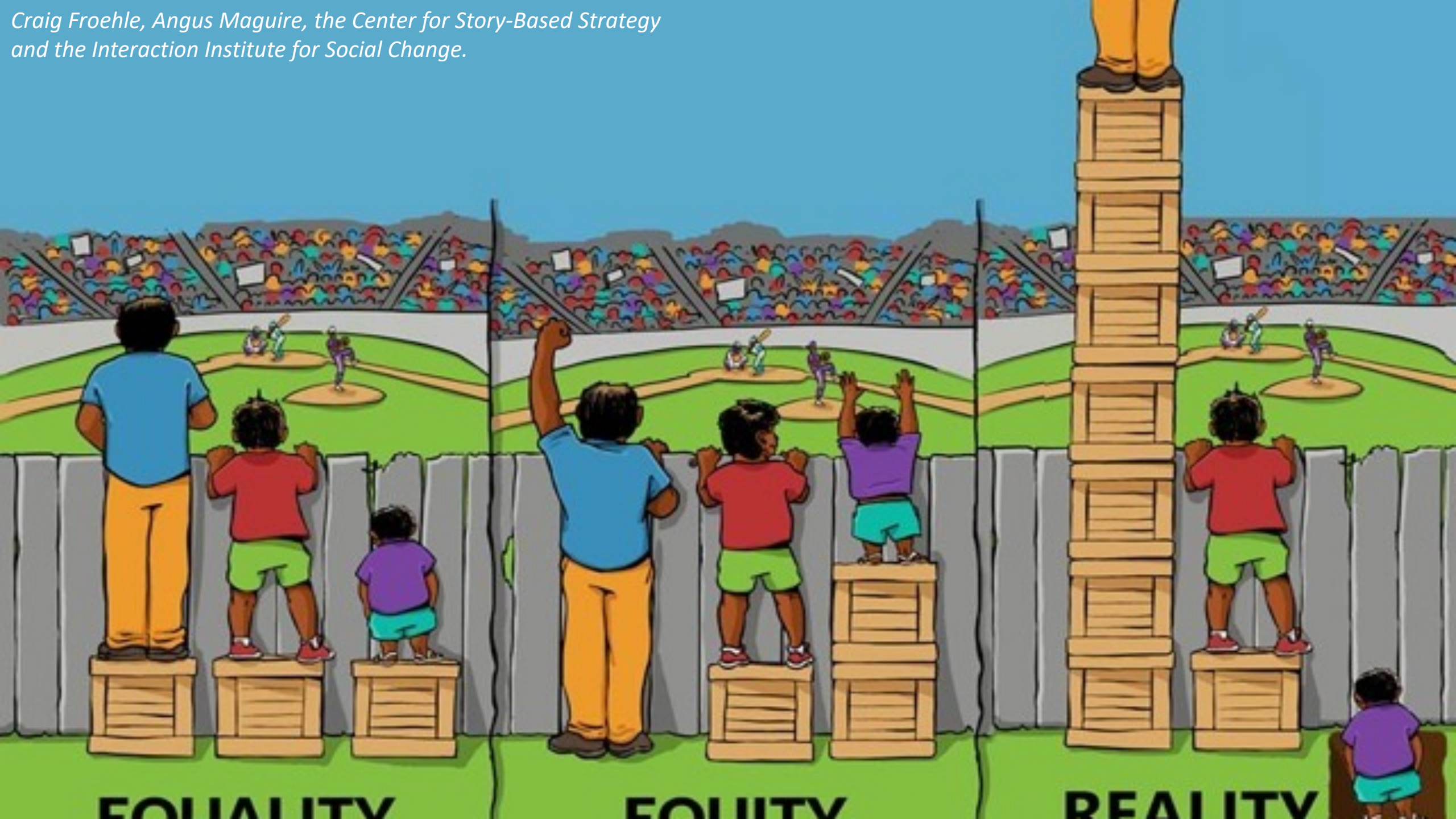
➔ ***Justice: connecting these values to accountability for ensuring that our goals are met.**

You may also have come across the term equity, which is about ensuring that everyone is treated fairly, by removing barriers to resources or opportunities that some groups in society face.

➔ Diversity is about recognising, valuing and taking account of people's different backgrounds, knowledge, skills, and experiences.

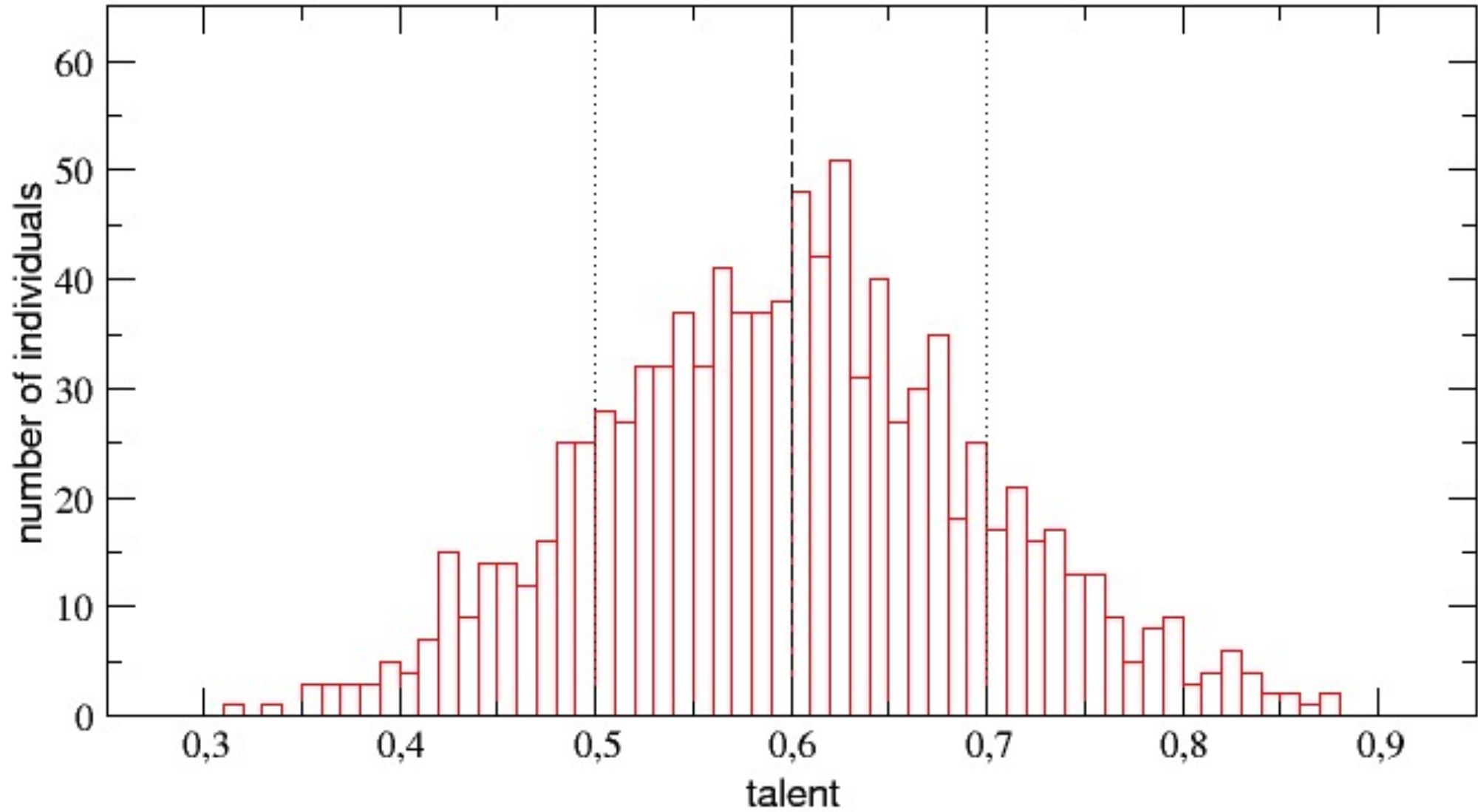
➔ Inclusion is where these differences between people and groups are seen as a benefit, and where people feel comfortable to share their perspectives and differences, knowing that their opinions and ideas are valued.

*Craig Froehle, Angus Maguire, the Center for Story-Based Strategy
and the Interaction Institute for Social Change.*



Claim:

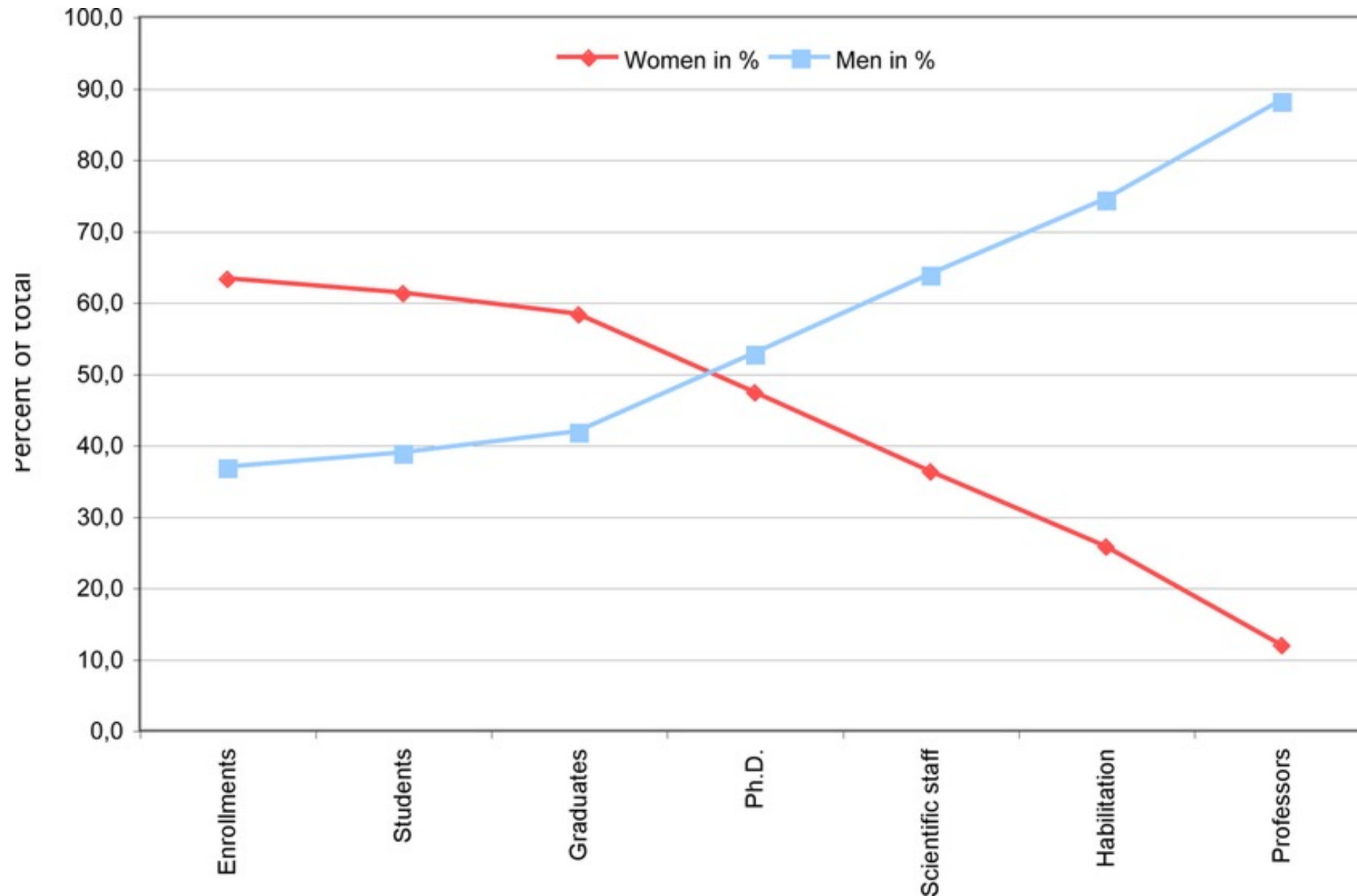
Talent in science is distributed uniformly across regions, countries, religions, ethnic origin, gender and social status but opportunities are not.



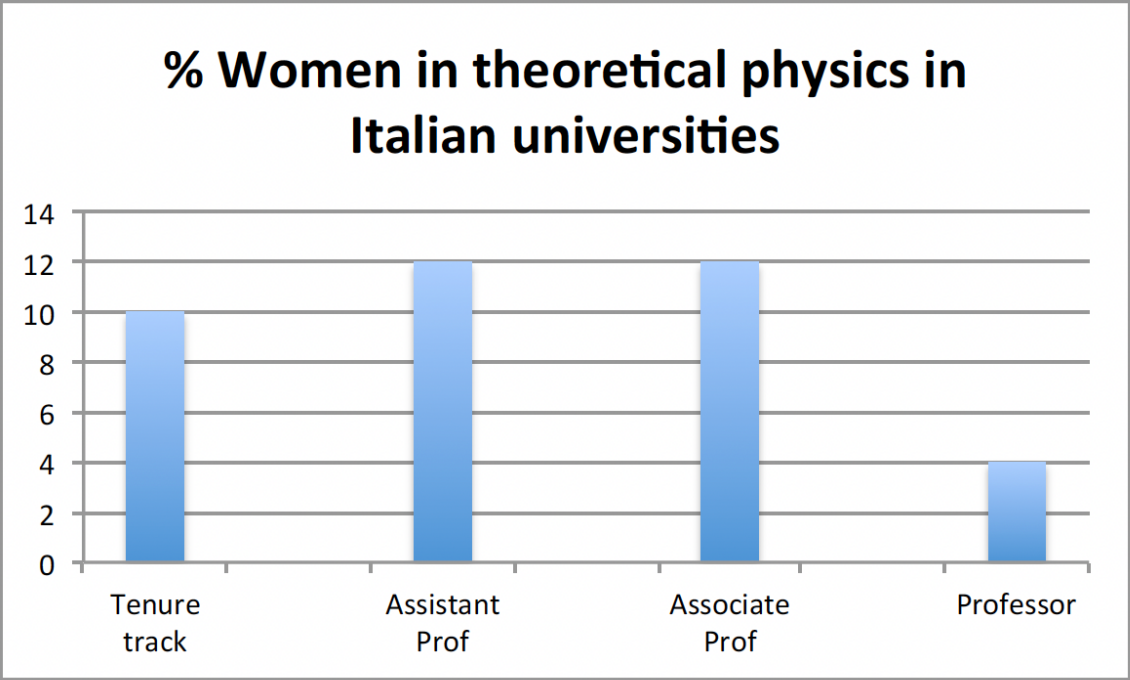
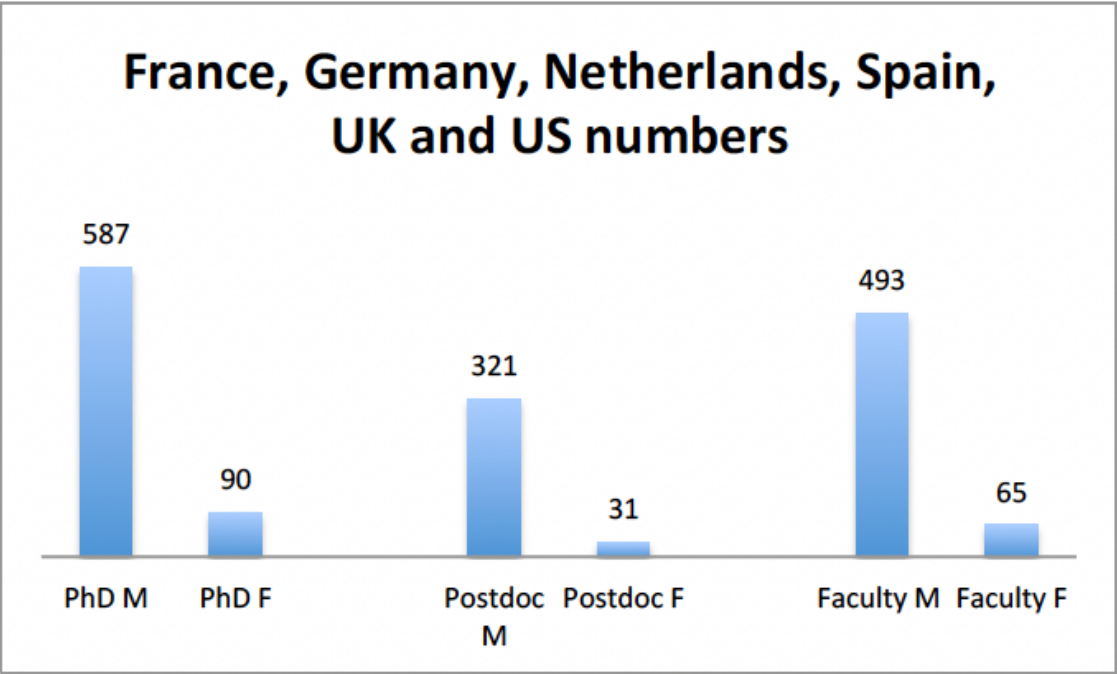
https://www.researchgate.net/publication/323302956_Talent_vs_Luck_the_role_of_randomness_in_success_and_failure/download

One concrete case: women in science

Scissors Diagram: Women in higher education

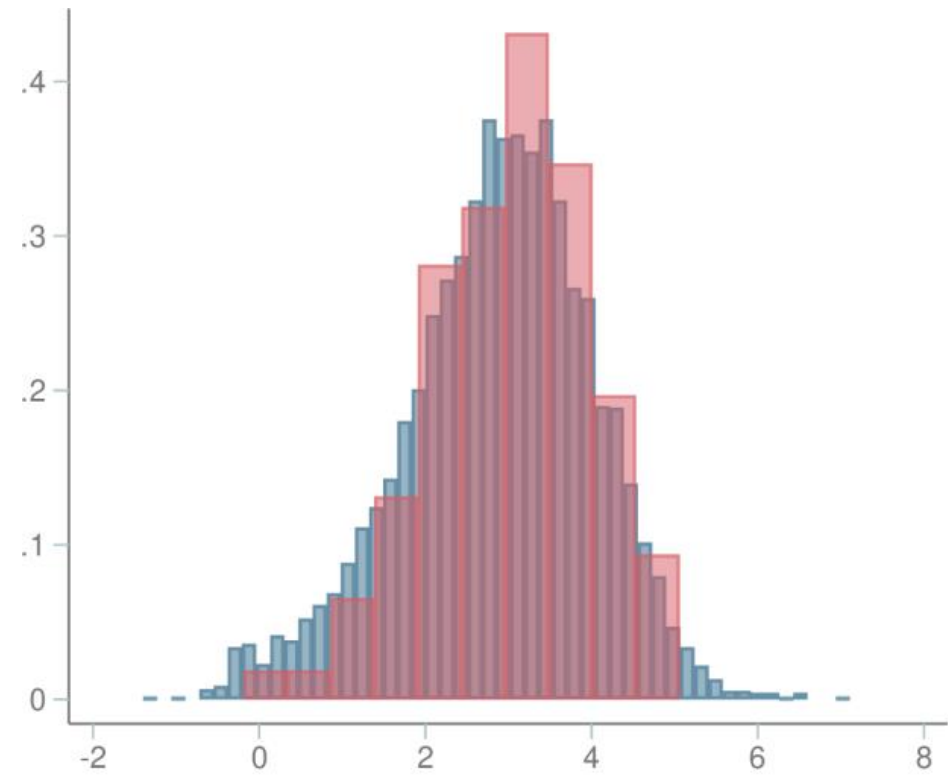
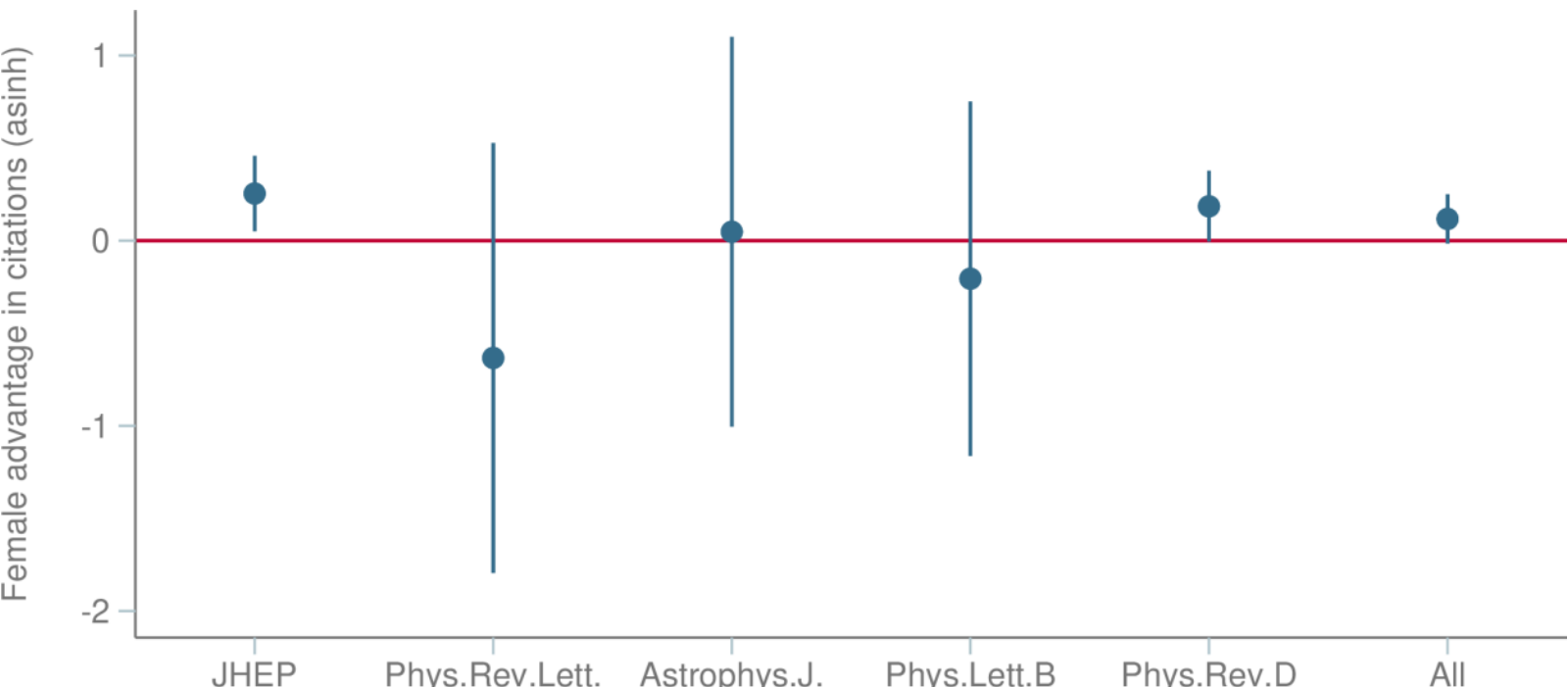


Statistics of Women in hep-th (2017)



Lower than average in Physics

Gender differences in citations (Ball et al.)



Common obstacles for a scientific career

- **Governments emphasise short term priorities**
- **Correlation science culture and economic development not appreciated**
- **The gap among rich and poor keeps increasing: brain drain**
- **Working conditions: research is usually a luxury**

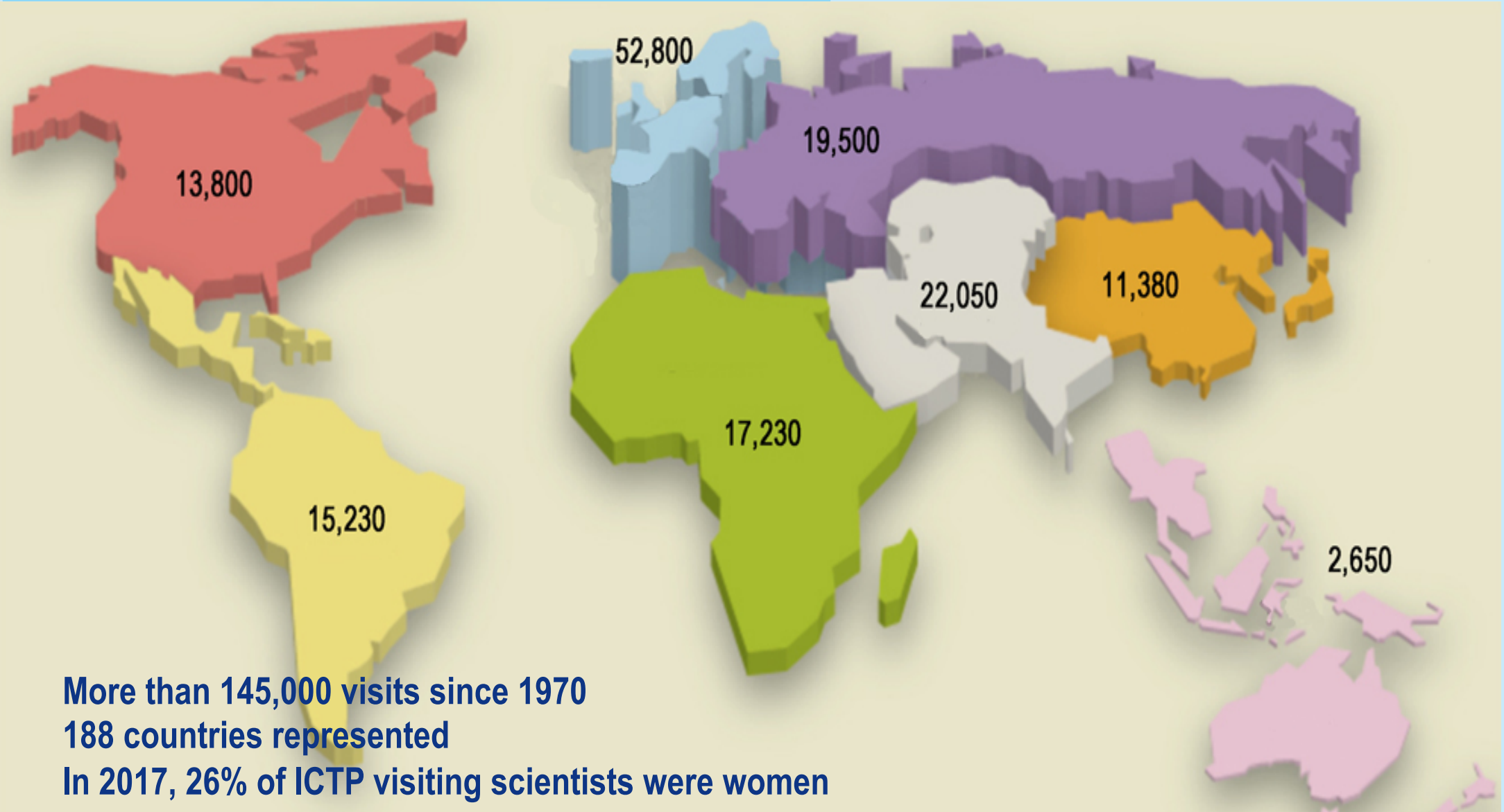
Some observations

- **Passion for physics despite difficult working conditions in developing countries**
- **Talent is uniformly distributed**
- **Given opportunities scientists can develop a good scientific career anywhere**
- **Most important resources from any country are human resources**
- **Important: scientists helping scientists**

Importance of International Scientific Institutions

- CERN
- ICTP
- TWAS
- SESAME
- IIASA
- ICGEB ...

ICTP in a Nutshell



More than 145,000 visits since 1970
188 countries represented
In 2017, 26% of ICTP visiting scientists were women

Examples of ICTP's activities

- **Diploma programme**
- **Workshops/Schools**
- **Regional partner institutes**
- **Physics without frontiers**



Science diplomacy





With Keshav Shrestha (Nepal), Wilder Daza-Romero (Colombia), Mariami Rusishvili (Georgia), Armindo Cuamba (Mozambique), Cong Huy Pham (Vietnam), Stephane Kenmoe (Cameroon), Noeliarinala Felana Andriambelaza (Madagascar)

Women in Physics

Career Development Workshop 2013



Physics Without Frontiers

- **University courses**
- **Schools**
- **Roadshows**
- **Online Seminars**
- **Lecturers support**
- **Outreach and Diversity**

Physics Without Frontiers



Palestine,
Algeria,
Lebanon,
Tunisia,
Nepal,
Venezuela,
Colombia,
Afghanistan,
Guatemala,
Zimbabwe,
Namibia,
Lesotho,
Egypt,
Iraq,
Malaysia,
Senegal,
Nigeria,
South Africa...



INTERNATIONAL CENTER FOR THEORETICAL PHYSICS

PHYSICS WITHOUT FRONTIERS AFGHANISTAN

HIGH ENERGY PHYSICS WORKSHOP
KABUL UNIVERSITY
SATURDAY 31 MARCH - SUNDAY 1 APRIL 2018
PHYSICS FACULTY, LECTURE ROOM 1

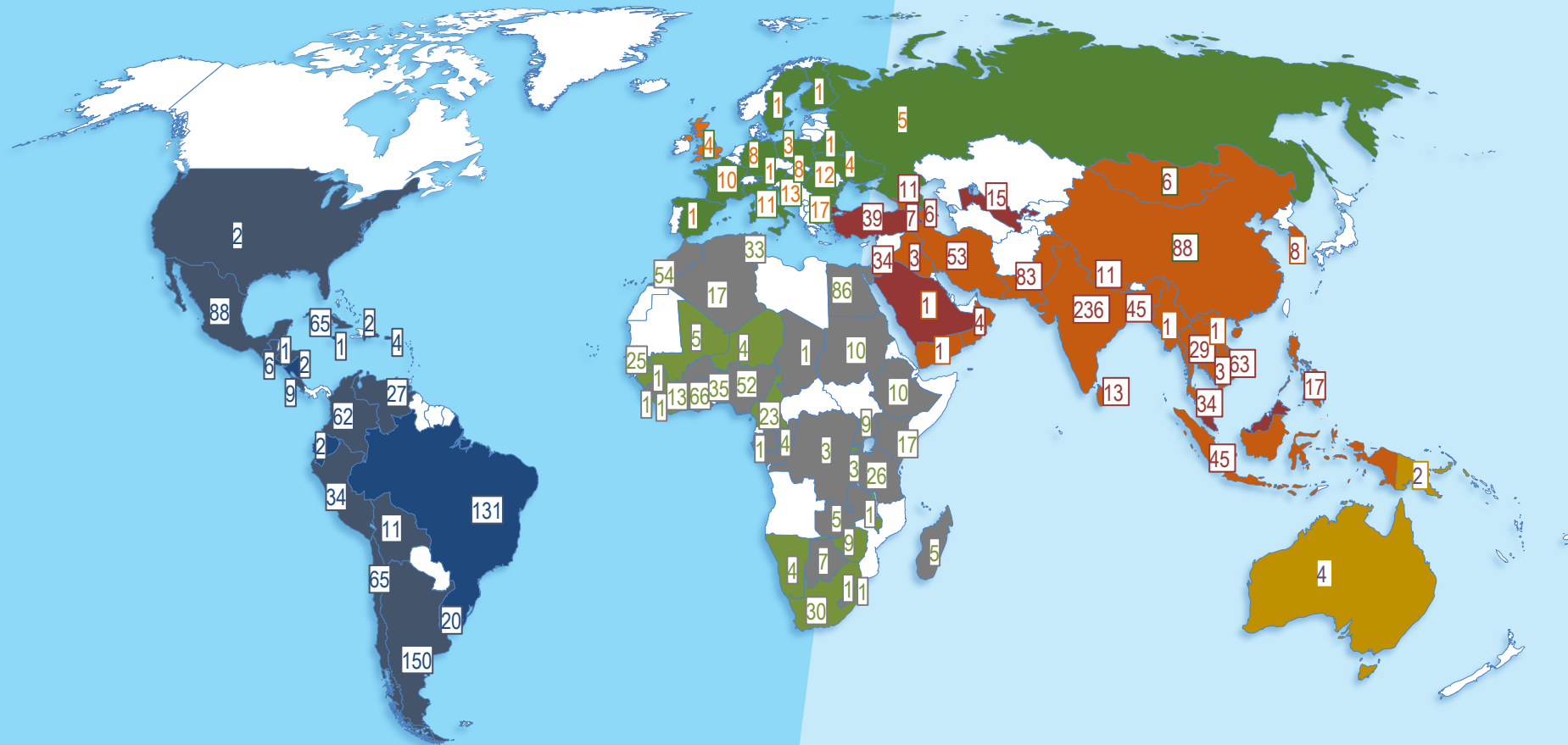
PWF is organising a workshop in high-energy physics at Kabul University Afghanistan. The program is designed for 3rd and 4th year undergraduate physics students throughout the region, to introduce the field and research topics with a focus on cosmology and particle physics.

ORGANISED BY ICTP PWF, WIHT;
BAKTASH AMINI (KABUL UNIVERSITY, ICTP PWF AFGHANISTAN COORDINATOR)
KATE SHAW (ICTP PWF COORDINATOR, UNIVERSITY SUSSEX, ATLAS EXPERIMENT AT CERN)
ENICH ERFANI (INSTITUTE FOR ADVANCED STUDIES IN BASIC SCIENCES)

ICTP
PHYSICS WITHOUT FRONTIERS

Kabul University
Faculty of Natural Sciences





Partner Institutes



MCTP
Mesoamerican Centre
for Theoretical Physics



ICTP-AP
INTERNATIONAL CENTRE FOR
THEORETICAL PHYSICS ASIA-PACIFIC



**ICTP
SAIFR**

International Centre
for Theoretical Physics
South American Institute
for Fundamental Research

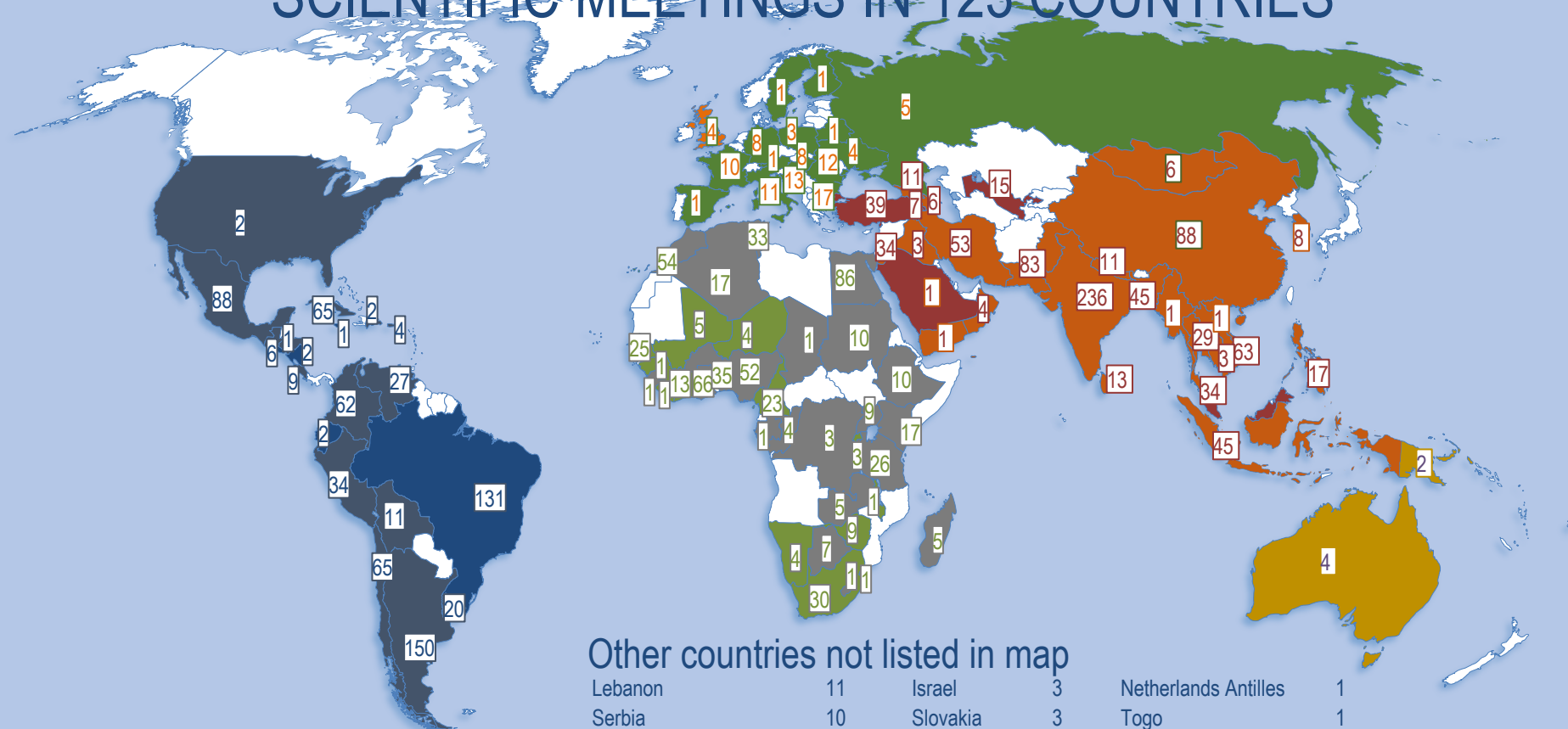


EAFIR

ICTP—East African Institute
for Fundamental Research



SINCE 1986, ICTP-OEA HAS SUPPORTED 2271
SCIENTIFIC MEETINGS IN 123 COUNTRIES



Other countries not listed in map

Lebanon	11	Israel	3	Netherlands Antilles	1
Serbia	10	Slovakia	3	Togo	1
Singapore	9	Burundi	2		
Czech Republic	5	El Salvador	2		
Syria	5	Slovenia	2		
Yugoslavia (before 1991)	5	Switzerland	2		
Bosnia and Herzegovina	4	Albania	1		
Palestine	4	Barbados	1		
Trinidad and Tobago	4	Macedonia	1		
Hong Kong, SAR	3	Moldova	1		

Question:

Is it possible to create major scientific collaborations in developing countries?

Recent Regional Initiatives

- **LASF4RI**
- **ASFAP**

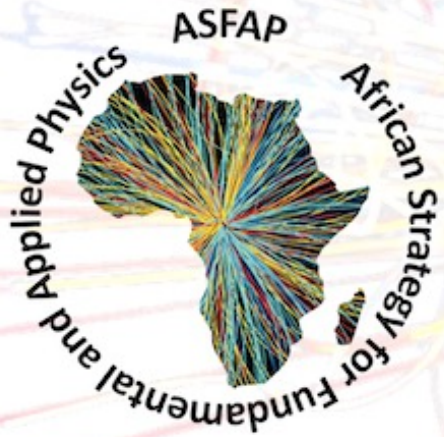
Latin America's planning



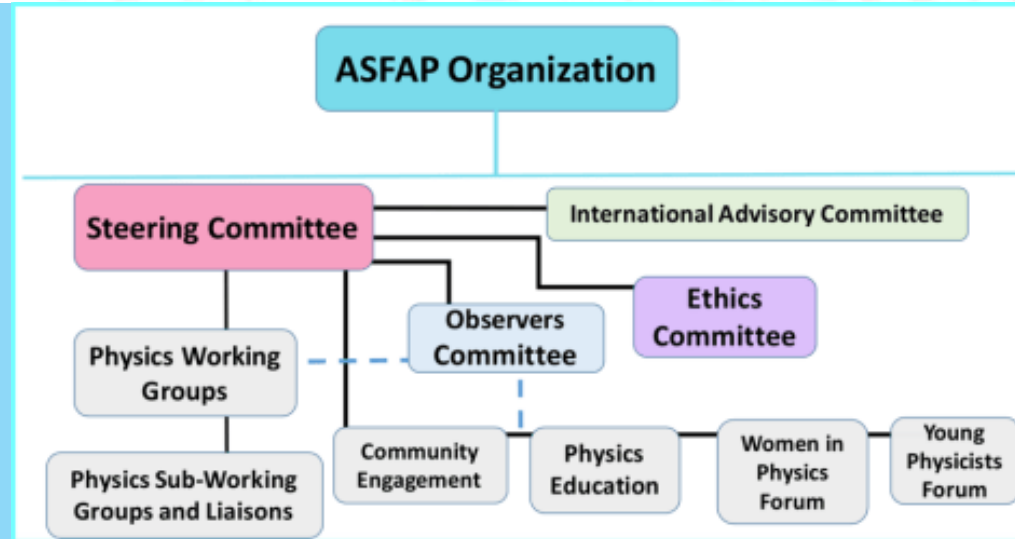
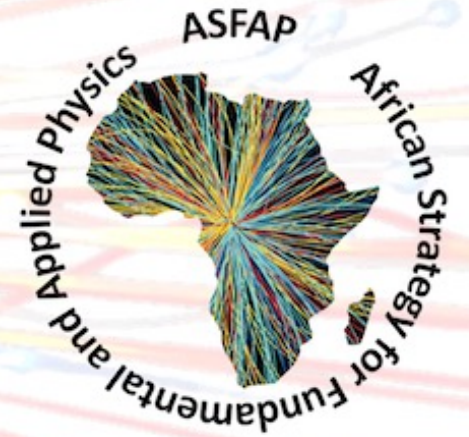
LASF4RI Workshop
ICTP-SAIFR, April 30-May 1 2019, Sao Paulo

PARTICLE PHYSICS & ASTROPHYSICS AROUND LATIN AMERICA





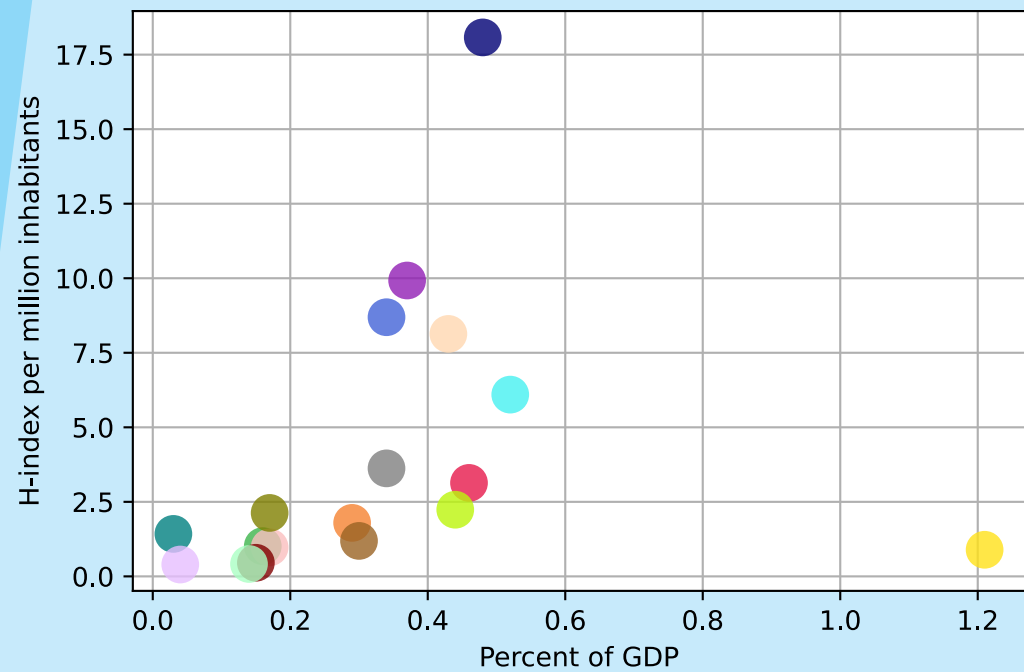
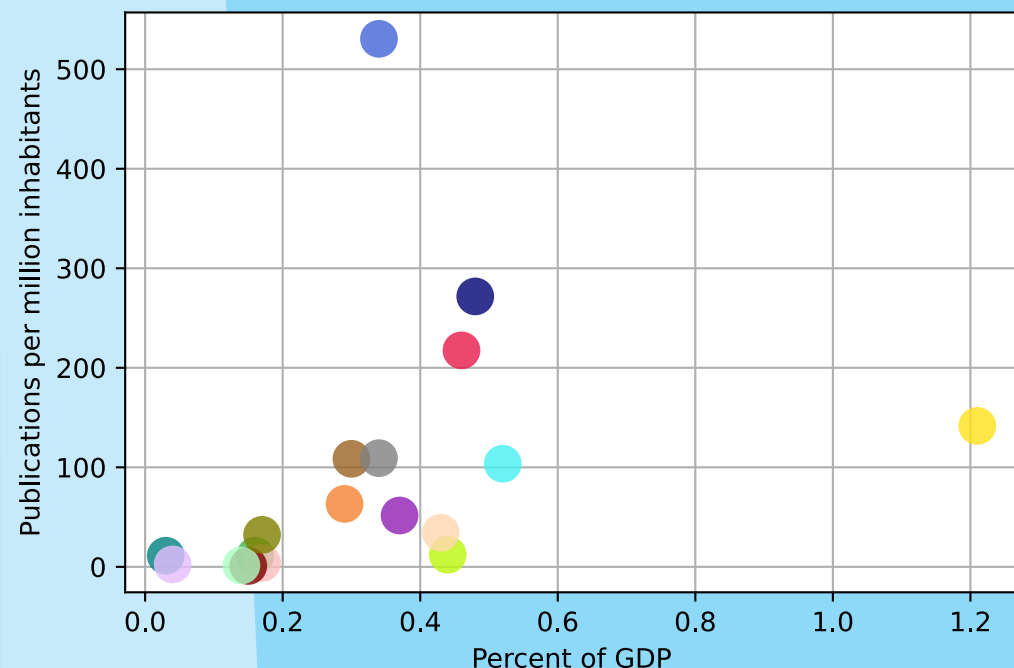
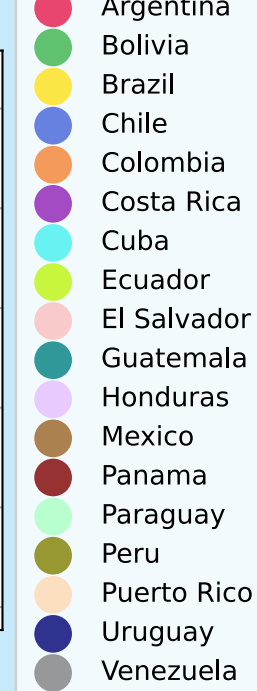
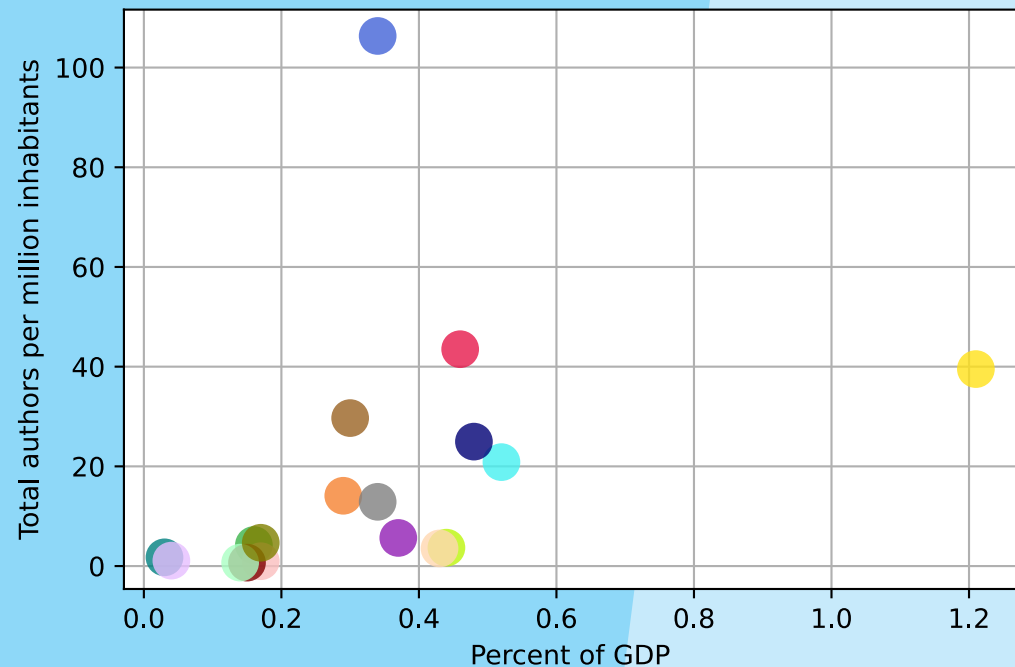
African Strategy for Fundamental and Applied Physics



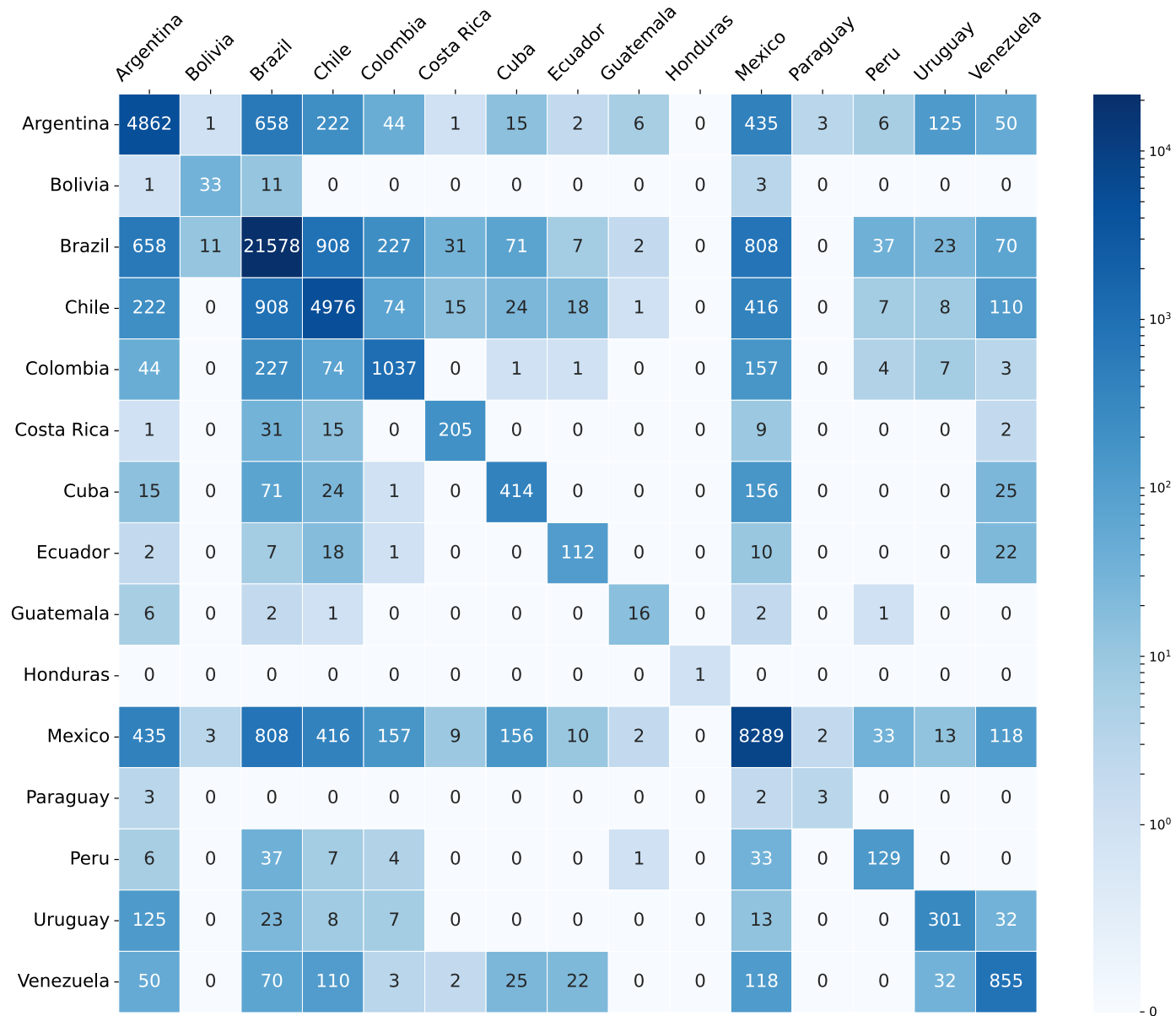
Official Launch November 18 2020

Recent Developments

- **Establishment of Latin American Association of High Energy Physics (October 2021)**
- **LaConga (EC-funded virtual master programme on advanced physics)**
- **Working with funding agencies towards implementation of a research hub.**
- **Collecting all active researchers and evolution of research outcome over the years.**

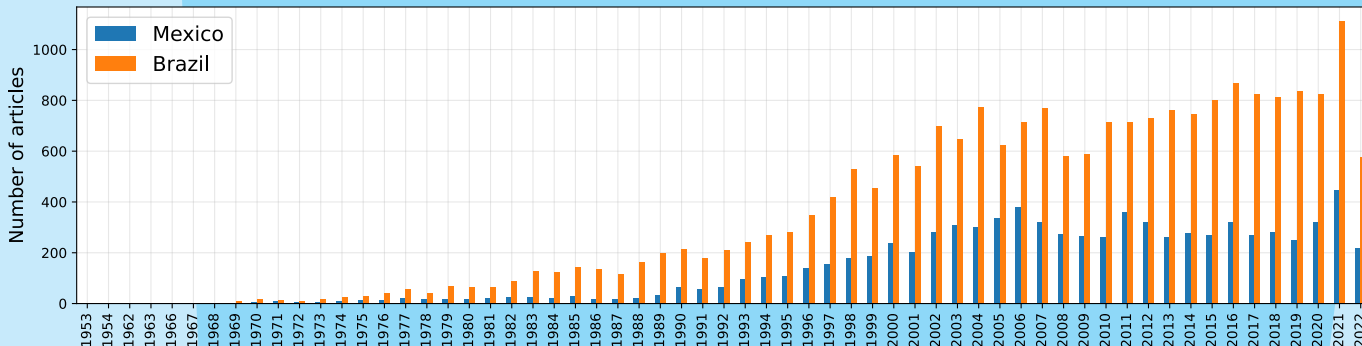


NUMBER OF COLLABORATIONS WITHIN LATIN AMERICA

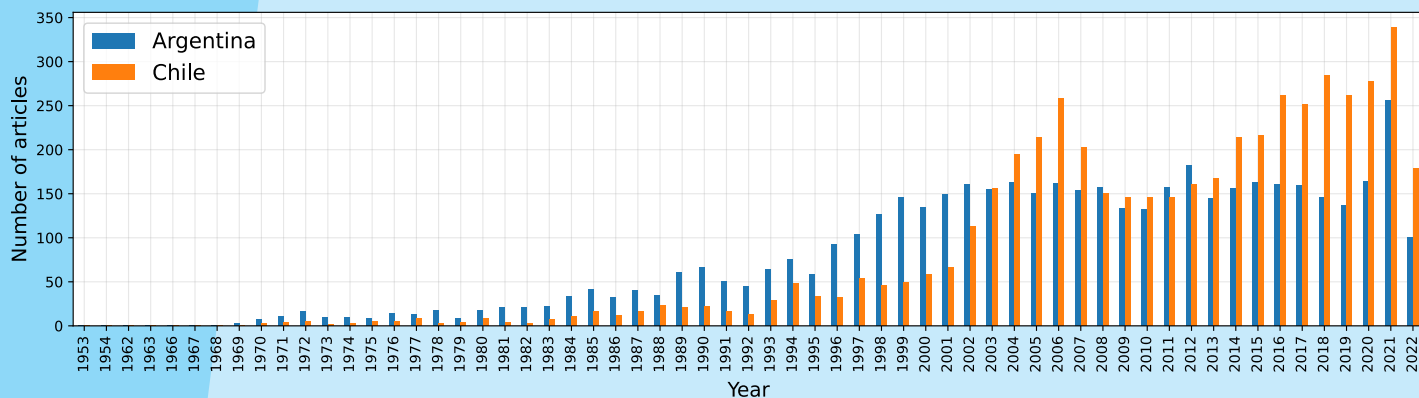


Systematic study of research in the region...

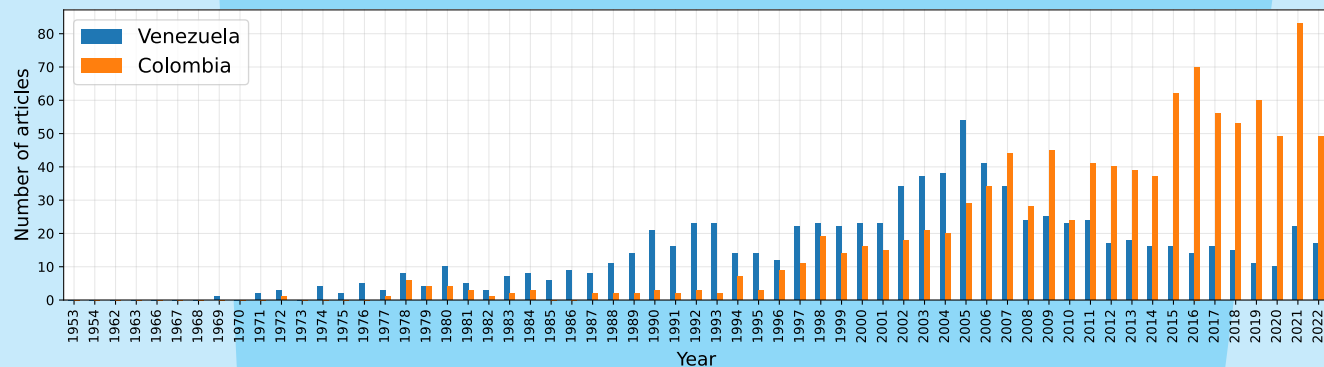
Articles per year



D. Restrepo
M. Morales, FQ, M. Ramos
Work in progress...



Articles per year



Other Important initiatives

- EDI programs in Universities and funding agencies
- UNESCO-I'Oreal For Women in Science (FWIS) awards
- Gates-Cambridge Fellowships
- OWSD programs and awards
- TWAS awards and grants
- Women in Mathematics
- Tutor system (e.g. supernova foundation, CERN,...)
- AIMS awards...

Diversity, Equity, and Inclusion in Particle Physics

C. Bonifazi, J. S. Bonilla, M.-C. Chen, Y. H. Lin

K. A. Assamagan, E. V. Hansen, S. Meehan, E. Smith

3.1 Executive Summary

To achieve the highest level of intellectual excellence calls for the greatest extent of diversity. However, due to the unjust institutional and societal barriers, the field of particle physics remains as one of the least diverse fields, severely limiting the potential of our scientific achievements. In order for the US Particle Physics Community, including the accelerator science and engineering fields, to remain at the forefront of global scientific leadership, it is imperative for our community to act urgently and diligently to improve the status quo of diversity, equity, inclusion, and accessibility (DEIA).

In order to improve the DEIA in particle physics to further our scientific goals, we must allocate dedicated financial and personnel resources to

- Bring awareness in the particle physics community about different forms of marginalization, including but not limited to racism experienced by individuals identified as Black, Hispanic or Latino/a/x, Indigenous, Asian, as well as other forms of discrimination based on gender identities, disability status (both visible and invisible) and neurodiversity; LGBTQA+; veteran status; socio-economic status, xenophobia, and intersectionality of these identities. Educate our community to be good bystanders.
- **Create pathways** for members from historically and currently marginalized backgrounds to participate in particle physics community, and provide necessary support (including but not limited to accessibility, personal, financial) for these members to have equitable opportunity to thrive in our field.
- **Engage communities** from emerging and developing countries, including Africa and Latin America, to ensure DEIA in the participation of members from these regions in our global endeavors of particle physics.
- **Engage outside experts** (including sociologists and psychologists) to help develop effective strategies for continuous improvements, through

Accessibility in High Energy Physics: Lessons from the Snowmass Process

K.A. Assamagan¹, C. Bonifazi², J.S. Bonilla³, P.A. Breur⁴, M.-C. Chen⁵, T.Y. Chen⁶, A. Roepe-Gier⁷, Y.H. Lin^{*8}, S. Meehan⁹, M.E. Monzani^{10,11,12}, E. Novitskiy¹³ and G. Stark¹⁴

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⁶Fu Foundation School of Engineering and Applied Science, Columbia University, New York NY, USA

⁷ATLAS Experiment

⁸Queen's University, Department of Physics, Engineering Physics & Astronomy, Kingston ON, Canada

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⁹2021-2022 AAAS Science & Technology Policy Fellow

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¹²Vatican Observatory, Castel Gandolfo, V-00120, Vatican City State

¹³Center for Experimental Nuclear Physics and Astrophysics, University of Washington

¹⁴Santa Cruz Institute for Particle Physics, University of California, Santa Cruz CA, USA

March 2, 2023

ABSTRACT

Accessibility to participation in the high energy physics community can be impeded by many barriers. These barriers must be acknowledged and addressed to make access more equitable in the future. An accessibility survey, the Snowmass Summer Study attendance survey, and an improved accessibility survey were sent to the Snowmass2021 community. This paper will summarize and present the barriers that prevent people from participating in the Snowmass2021 process, recommendations for the various barriers, and discussions of resources and funding needed to enact these recommendations, based on the results of all three surveys, along with community members' personal experiences.



" Scientific thought and its creation is the common and shared heritage of humankind"

Abdus Salam

Thank you !