

XIII LASNPA 2020

Latin American Symposium on Nuclear Physics and Applications

WOMEN IN SCIENCE

The idea is to discuss how to act, have visibility and consideration.



centro
universitário
FEI



Mary Jackson
Katherine Johnson
Dorothy Vaughan



ALINKA LEPINE
SZILY

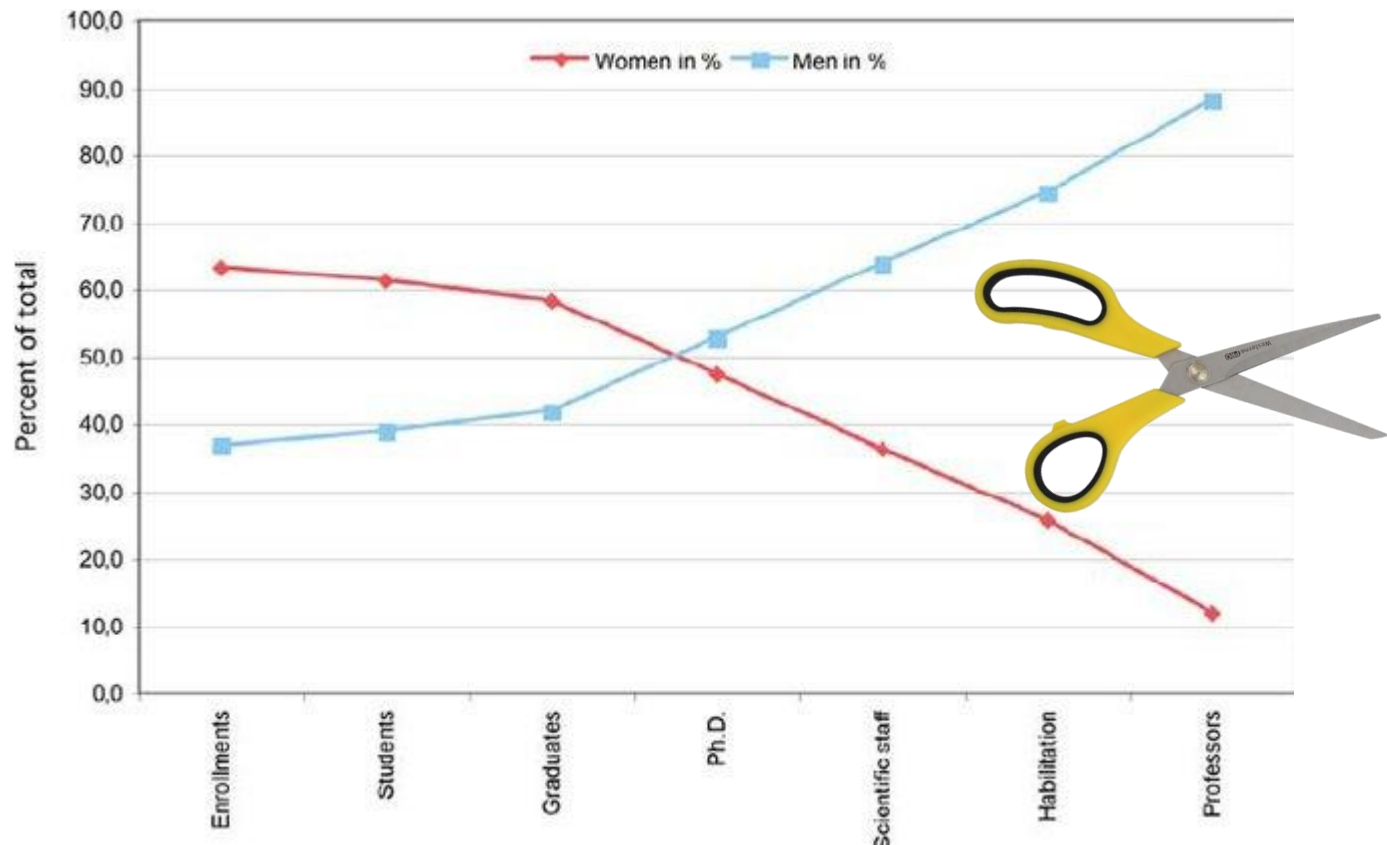
Marie Curie
Mildred Dresselhaus
Marie Tharp



MARCILEI APARECIDA GUAZZELLI
CENTRO UNIVERSITÁRIO FEI

DÉBORA PERES MENEZES
UNIVERSIDADE FEDERAL
DE SANTA CATARINA

THE SCISSORS EFFECT ON WOMAN LIFE



Scissors Diagram Showing the Gender Distribution within Career Stages in Biological Sciences at German Universities

In Brazil, the number of physicist women also decreases as career progresses

WHEN DOES THE SCISSOR EFFECT START?

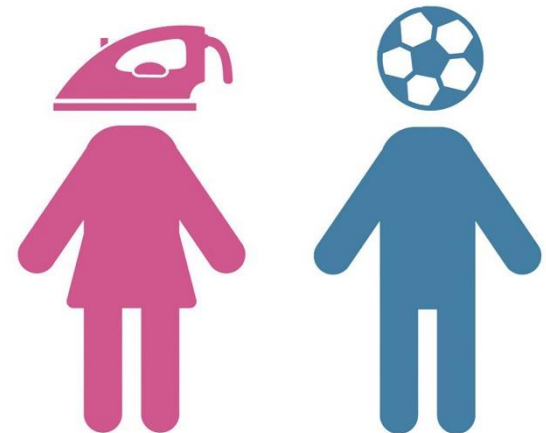
Misogyny is a structural issue: it affects relationships and the designation of social roles.

GIRLS' SELF-CONFIDENCE CHANGES VERY EARLY:

- Intelligence features are associated with the same gender at 5 years old and male gender at 7 years old.

Possible causes for gender stereotypes:

- Disney movies, children's toys, (lack of) stimuli social



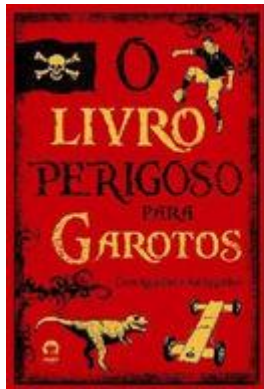
PREJUDICE AND DISCRIMINATION ARE DIRECTLY LINKED TO STEREOTYPES BECAUSE OF THEIR CHARACTERISTIC OF LABELING PEOPLE PREVIOUSLY.



Disney princesses represent some of the earliest examples of exposure to the ideal of thinness.

I am not the invisible woman!
I am wonder!

SUPER HEROES

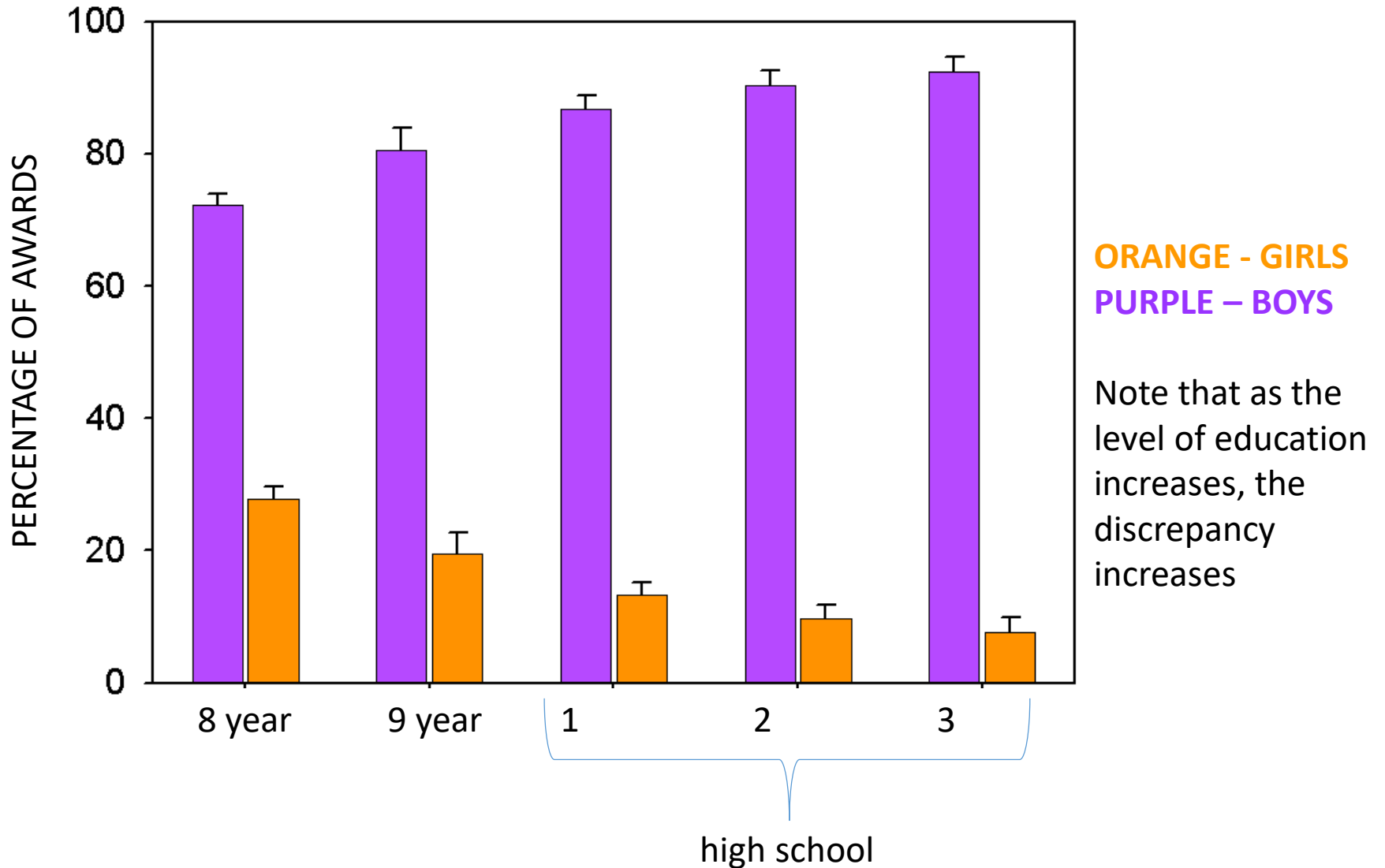


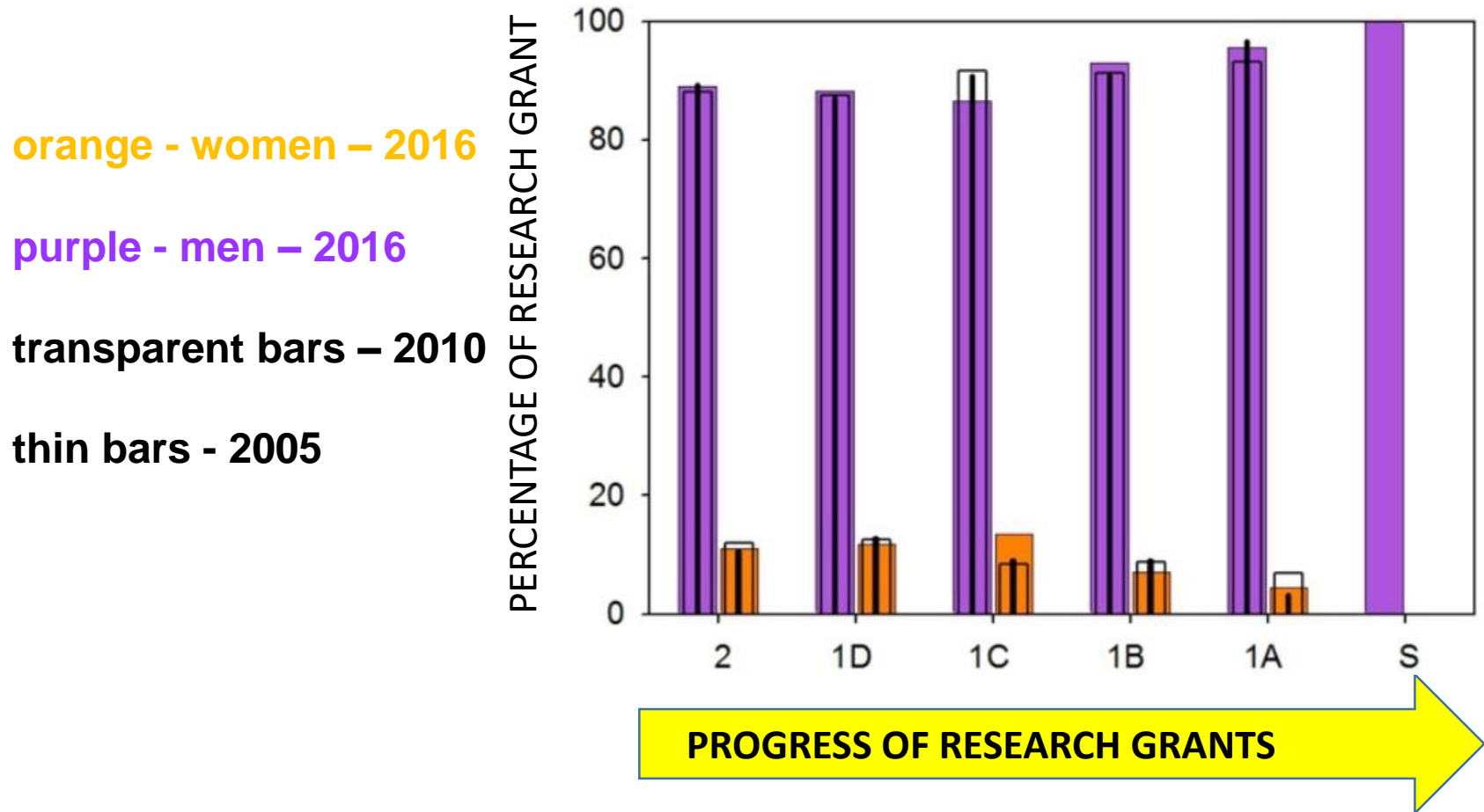
CHANGING AREA OF CHOICE: STILL MODEST, BUT IT IS BEHAVIOR CHANGE INDICATION ON THE ISSUE OF GENDER!

BRAZIL: Number of scholarships-year per Area						
AREA	% FEMALE			% MALE		
ANO	2001	2007	2015	2003	2007	2015
Agrárias	42,4	46,5	50,8	57,6	53,5	49,2
Biológicas	58,1	59,6	61,1	41,9	40,4	38,9
Saúde	63,4	65,5	67,6	36,6	34,5	32,4
Exatas/da Terra	32,6	33,2	34,1	67,4	66,8	65,9
Engs. e Comput.	27,8	31,8	35,9	72,2	68,2	64,1
Humanas	63,1	60,3	59,3	36,9	39,7	40,7
Soc. Aplicadas	55,3	54,5	57,3	44,7	45,5	42,7
Ling./Let./Artes	71,1	66,5	63,9	28,9	33,5	36,1

Fonte: Adaptação do CNPq/AEI
 Profa. Carla A. S. de Araújo

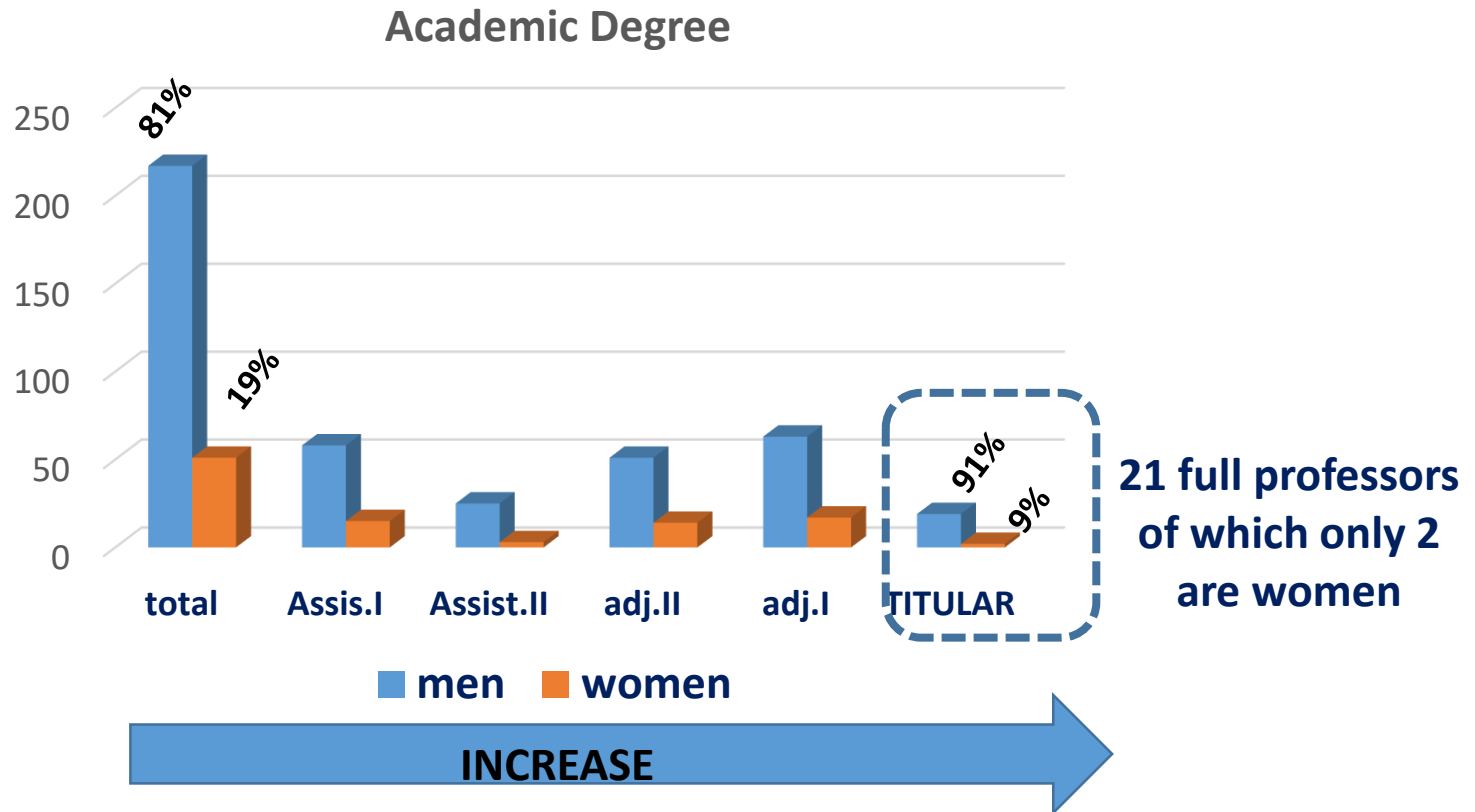
AWARDS - BRAZILIAN PHYSICS OLYMPICS AVERAGE 2005-2016



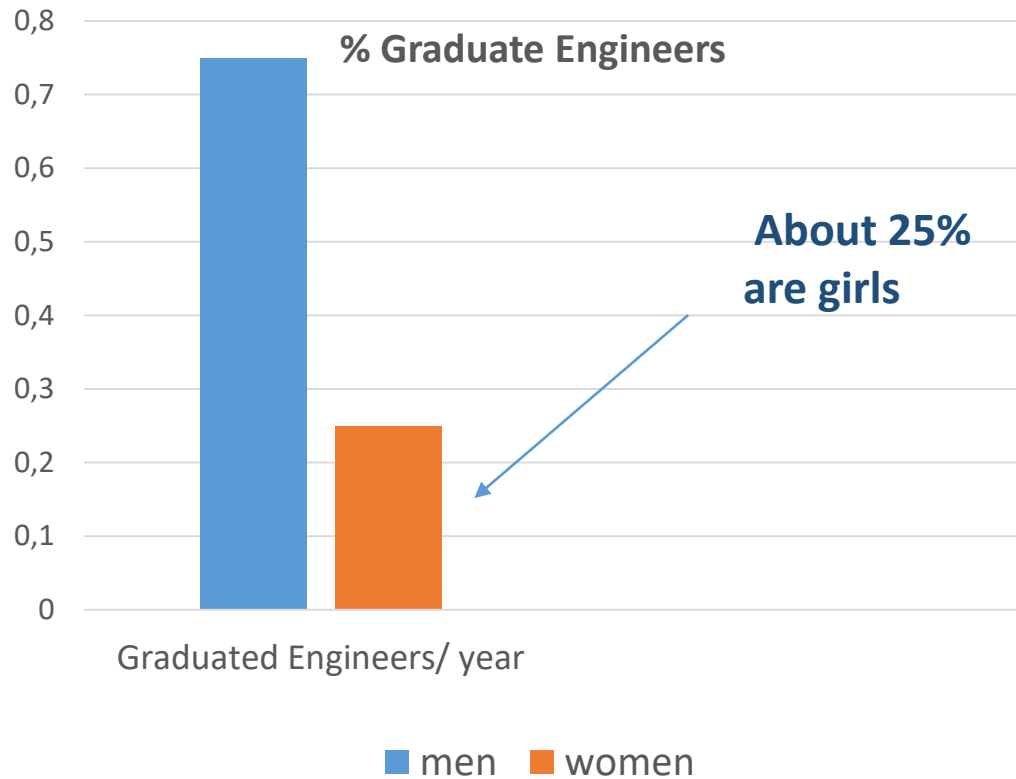


The difference is also visible in the research grants that research professors receive. Men receive the best grants for research.

CENTRO UNIVERSITÁRIO FEI

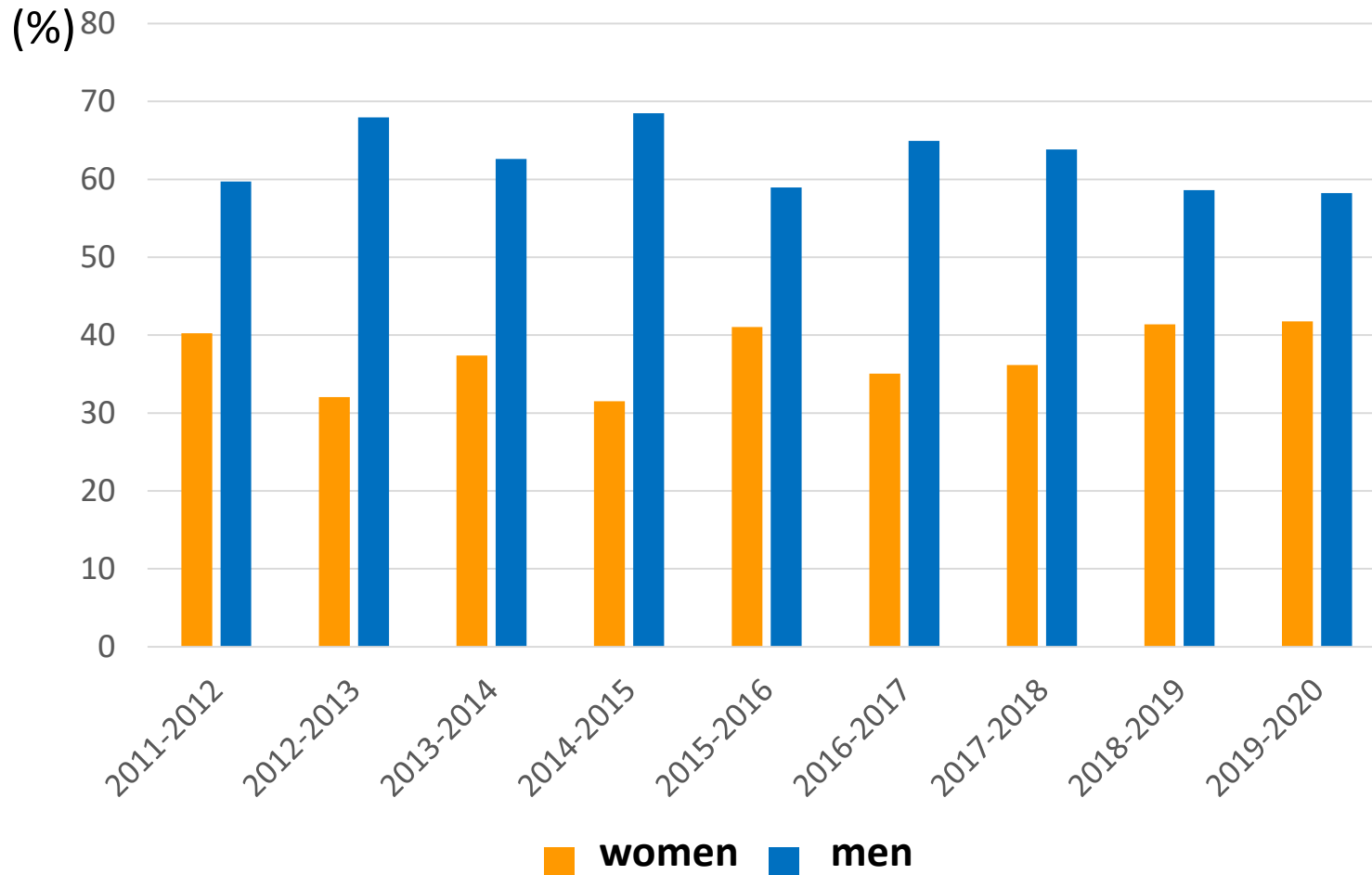


Female engineering teachers at the beginning of their careers account for 20%. Upon reaching the TOP of the career, they represent only 9%.



I COORDINATE A RESEARCH GROUP **ON APPLIED NUCLEAR PHYSICS** CURRENTLY COMPOSED OF 3 TEACHERS (2 WOMEN) AND **7 GIRLS WHO ARE FOLLOWING INITIATION TO RESEARCH.**

Scientific initiation by project completed annually



**THIS
REPRESENTS
5% OF BOYS
AND 11% OF
GIRLS**

**Are girls more
interested in
research?**

The proportion of girls who work in research is about 20% lower than boys.

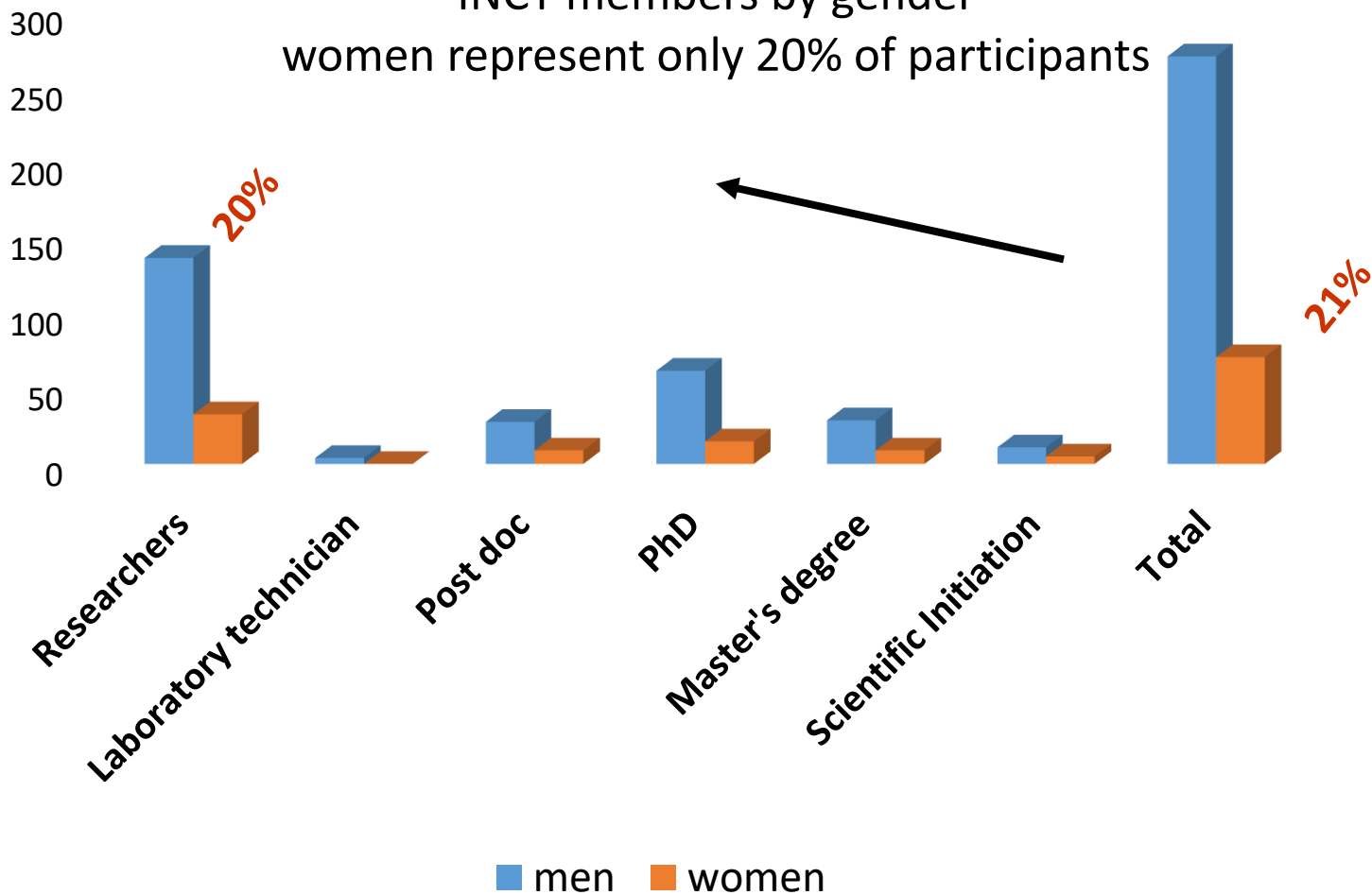
BUT, In relation to the total of engineering students, the proportion of girls who develop research projects is much higher than boys.



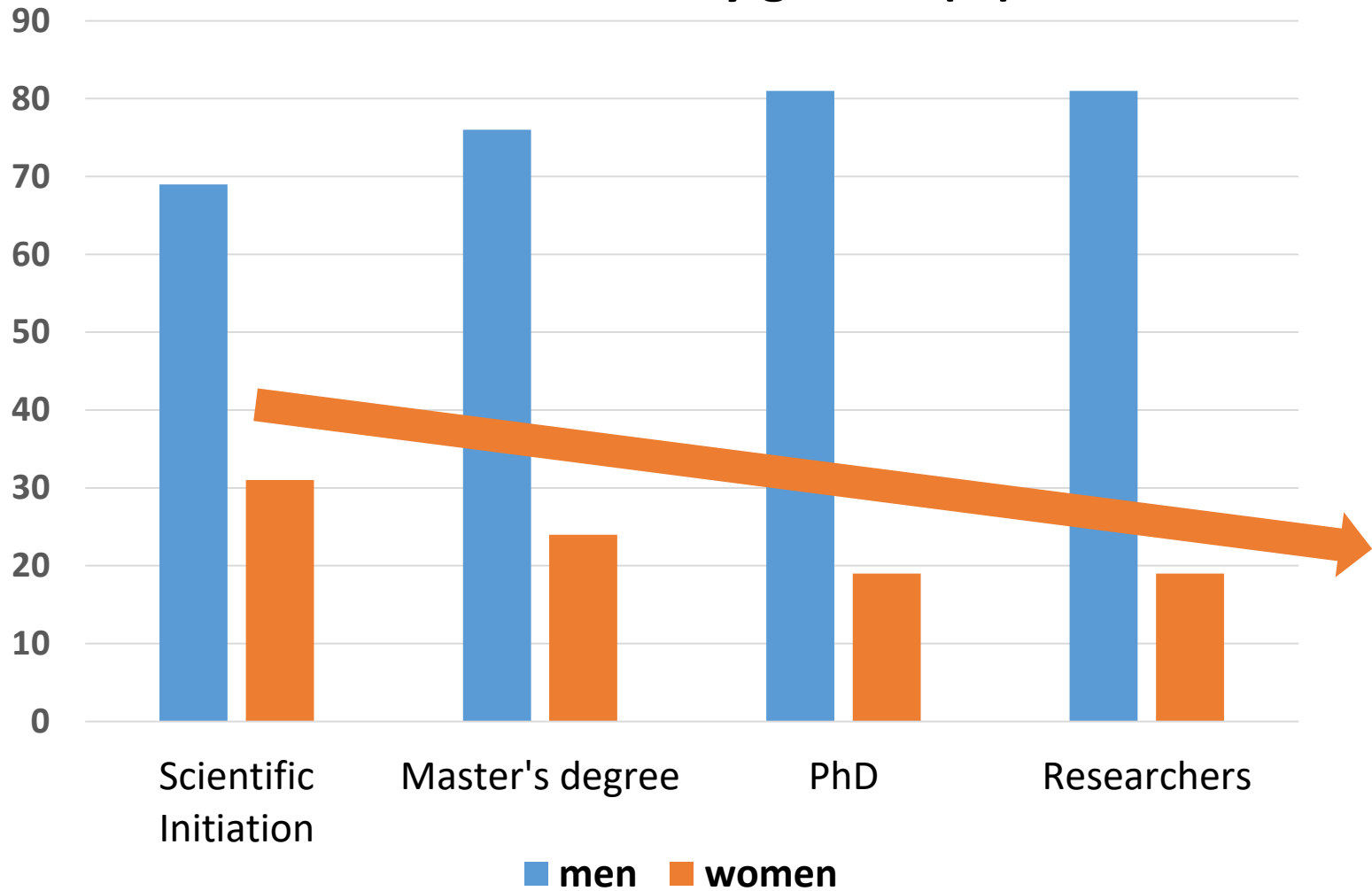
INCT-FNA

INSTITUTO NACIONAL DE CIÊNCIA E TECNOLOGIA
FÍSICA NUCLEAR E APLICAÇÕES

INCT members by gender
women represent only 20% of participants



INCT members by gender (%)



The percentage of women participating in the project decreases as their level of education increases.

DIVERSITY AND INCLUSION QUESTIONNAIRE.

Brazilian Physics Society Supports a Gender and Minority Working Group.

GRUPOS DE TRABALHO DE GÊNERO E MINORIAS

GRUPO DE TRABALHO SOBRE QUESTÕES DE GÊNERO

Débora Menezes (Coordenadora)
Célia Anteneodo (PUC-Rio)
Carolina Brito (UFRGS)
Carlos Alberto Santos de Almeida (UFC)
Alan Alves de Brito (UFRGS)
Simone Silva AlexAndré (UFMG)

O atual Grupo de Trabalho sobre Questões de Gênero (GTG) se propôs a dar continuidade às atividades que vinham sendo realizadas pelo grupo anterior, do qual três membros também faziam parte: Carolina Brito, Célia Anteneodo e Débora Peres Menezes. Todas as reuniões do grupo atual foram realizadas por Skype no período de

SBF - DIVERSIDADE E INCLUSÃO - QUESTIONÁRIO

Os Grupos de Trabalho sobre Gênero e Minorias da Sociedade Brasileira de Física (SBF) têm se empenhado para tornar a comunidade de Física no Brasil mais inclusiva e equânime. A fim de conhecermos melhor a comunidade em relação à raça, etnia, gênero, orientação sexual e às temáticas relativas a pessoas com deficiência, convidamos você a responder este questionário. Nosso objetivo é coletar informações que possam contribuir para que a SBF promova ações que ajudem a acabar com barreiras de acesso, permanência e ascensão na Física, especialmente de grupos historicamente sub-representados em nossa comunidade. As respostas serão tratadas de forma anônima.

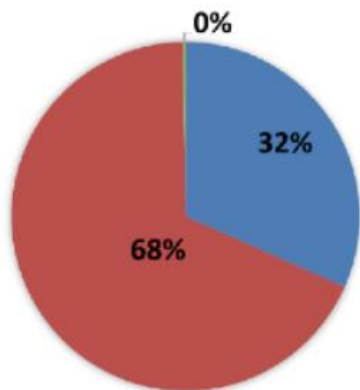
Agradecemos sua participação,
Grupos de Trabalho sobre Gênero e Minorias da SBF

GENDER AND MINORITIES WORKING GROUP

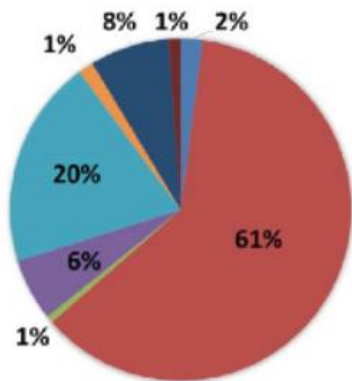


SBF IS NOT DIVERSE!

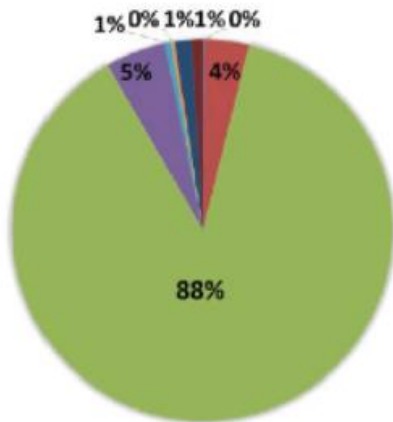
Men – 68%
Whites – 61%
Straight – 88%



- Feminino
- Masculino
- Outro



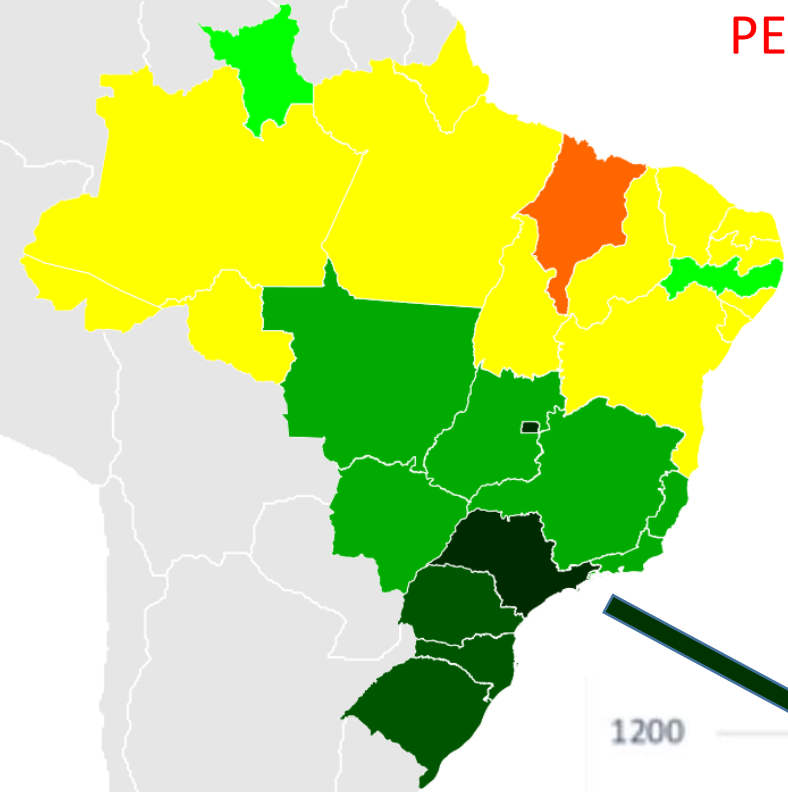
- Amarela
- Branca
- Indígena
- Preta
- Parda
- Outra
- Prefiro não me classificar
- Prefiro não responder



- Assexual
- Bissexual
- Heterossexual
- Homossexual
- Pansexual
- Outro
- Prefino não me classificar
- Prefiro não responder

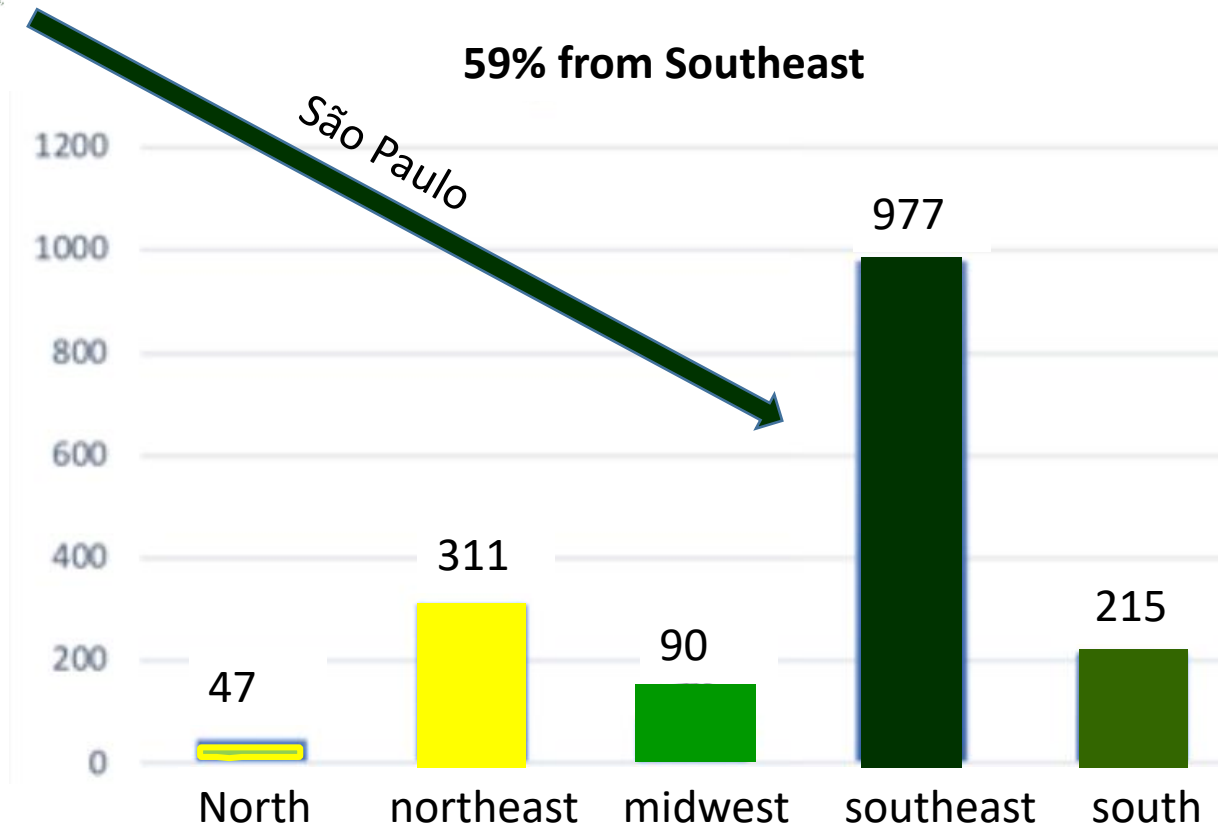
PER CAPITA INCOME

most of the members of the brazilian physics society are from the southeast region, which is the region with the highest per capita income



PHYSICAL BY REGION

59% from Southeast



https://pt.wikipedia.org/wiki/Lista_de_unidades_federativas_do_Brasil_por_renda_per_capita2015

ECONOMY IS ONE OF THE DETERMINING FACTORS!

SBF REACTION AND ACTION!!



Grupo de Gênero da Sociedade Brasileira de Física

Publicado por Karina Buss [?] · 29 de agosto às 21:21 · 🌐

GTG da dicas sobre como lidar com o assédio:

http://www1.fisica.org.br/.../Politi.../assedio_gtgenero_sbf.pdf



**TIPS ON
HANDLING
HARASSMENT**

WWW1.FISICA.ORG.BR

www1.fisica.org.br

You can find tips on how to deal with
bullying

RECOMMENDATIONS

FOR HIGHER EDUCATION INSTITUTIONS

- Create a more inclusive and respectful environment.
- Offer support to victims (harassment, prejudice etc).
- Create student tracking policies for fight evasion.
- Encourage the creation of codes of conduct (which inhibit the disrespect and trivialization of underrepresented group characteristics).
- Include in their curricula pedagogical practices, didactics, theories, methodologies and epistemologies associated with underrepresented groups.

FOR FUNDING AGENCIES

- Increase the number of initiation to research and outreach scholarships to all but particularly for students with socio-economic vulnerability.
- Conduct student demographic studies from which public policies aiming at equity, diversity and inclusio can be created.

FOR SBF

- Create mechanisms for attracting people who belong to underrepresented groups in physics and other hard sciences.
- Implement compulsory discussion spaces on gender and minority issues at events supported by SBF.
- Create rules that encourage the community of physicists to look at motherhood as something positive and not as a career barrier.



THERE ARE NO GUARANTEED RIGHTS.



YOU ALWAYS HAVE TO FIGHT FOR THEM!

Gender Bias in Nobel Prizes

P. Lunnemann, M.H. Jensen, L. Jauffred, arXiv:1810.07280

Donna Strickland

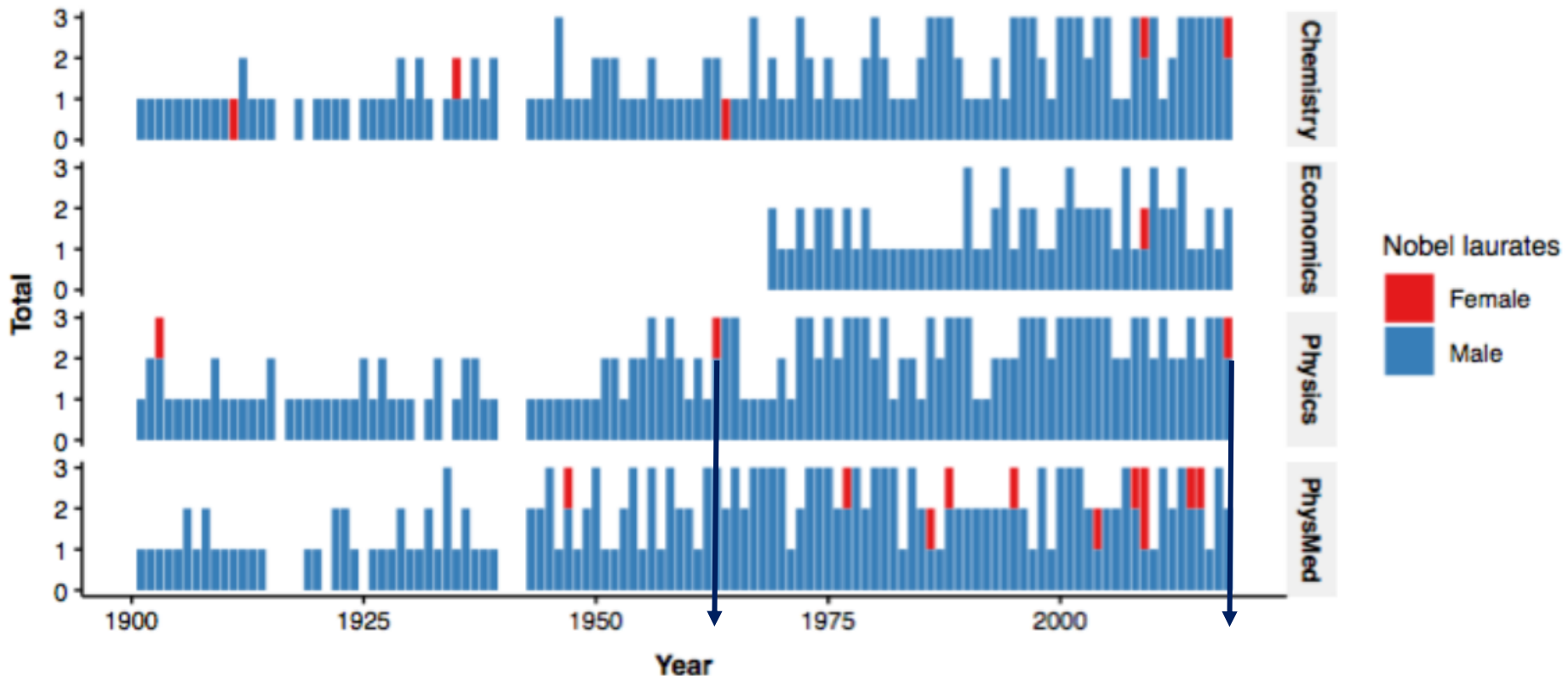
From Wikipedia, the free encyclopedia

FOR THE FIRST TIME IN 55 YEARS, THE NOBEL PRIZE IN PHYSICS WAS GIVEN TO A WOMAN



Donna Theo Strickland (born 27 May 1959)^{[1][2][3]} is a Canadian optical physicist and pioneer in the field of pulsed lasers. She was awarded the Nobel Prize in Physics in 2018, together with Gérard Mourou, for the invention of chirped pulse amplification.^[4] She is a professor at the University of Waterloo.^[5]

She served as fellow, vice president, and president of The Optical Society, and is currently chair of their Presidential Advisory Committee. In 2018, she was listed as one of BBC's 100 Women.^[6]



SOME IMPORTANT POINTS:

Sexist society (religion, Freemasonry,
Unconscious bias) - structural problem!

Few women in decision-making and important positions of
scientific policy:

Female professional success is not facilitated.

CONSEQUENCE:

Underrepresented categories suffer most from bullying and
sexual harassment.

There is a big stimulus to give up and little stimulus to continue.

THE CONTRIBUTION OF WOMEN IS INVISIBLE!?

STATEMENT
OR
QUESTION



ARE THESE NORMAL SITUATIONS ???

Profa. Dra.
Débora Peres
Menezes (2019)



what do you think of that?

Profa. Dra.
Marcilei A.
Guazzelli (2019)



I show myself in the research groups that I participate

Profa. Dra.
Marcilei A.
Guazzelli (2017)



Profa. Dra.
Marcilei A.
Guazzelli (2018)



I am the only woman in some research groups of which I participate.

CURRENTLY WE CAN'T BE INVISIBLE IN NUCLEAR PHYSICS AND APPLICATIONS!



XLII WORKING MEETING ON NUCLEAR PHYSICS IN BRAZIL

note that the number of women participating is not negligible.

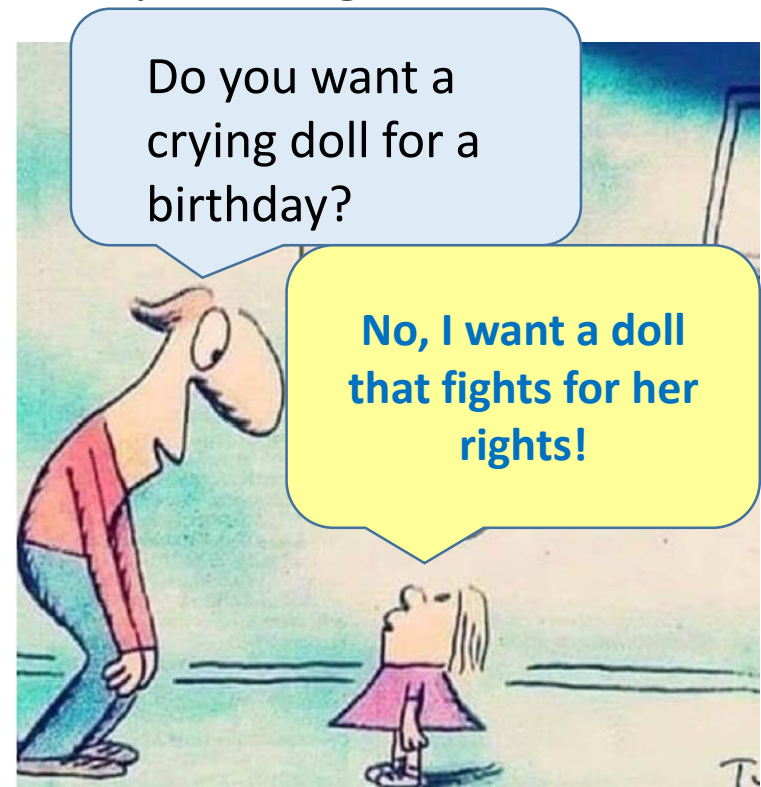
WOMEN ATTENDING THE EVENT

In LASNPA2020 the relation of the speaker between men and women is about $1/4$



ACTIONS TO REVERSE THIS STATE

- encourage, guide (from childhood).
- enable practical experiments in physics.
- make successful examples visible models for girls to realize and feel that there is intellectual equity between men and women.
- punctual affirmative actions and data spreading.



INCENTIVE PROGRAMS



This award was created by the Brazilian Physical Society with the support of the Gender Working Group to recognize female contributions to the development of Brazilian physics, as well as to contribute to diminishing the visible gender asymmetry in physics.

Licenças maternidade e paternidade poderão ser incluídas no Currículo Lattes

5 DE ABRIL DE 2019

PESQUISA E INOVAÇÃO

The CNPq: National Council for Scientific and Technological Development, includes periods of maternity and paternity leave on the Lattes Curriculum platform. The decision aims to justify the fall in the rate of production during the postpartum period, especially in the case of women scientists.



CURRENTLY, IN MOST INTERNATIONAL EVENTS ON HARD SCIENCES, QUESTIONS ABOUT THE DIFFICULTIES OF WOMEN IN SCIENCE ARE BEING DISCUSSED.



13:30

WOMEN IN ENGINEERING - Barthez room, Level 2

Networking Coffee & Invited Talk

Nathalie Pelletier, Local Network for Women Business Leadership

Technical Program

Tuesday, Sept. 17

Session C - Single Event Effects: Mechanisms & Modelling

Session A - Basic Mechanisms of Radiation Effects

Session E - Photonics, Optoelectronics & Sensors

Wednesday, Sept. 18

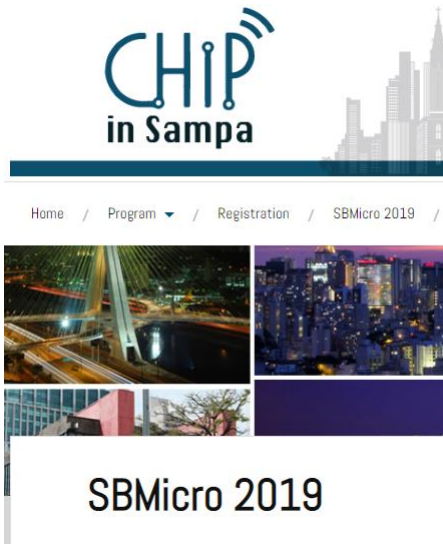
Invited talk - Mars missions and the search for traces of life missions

Session B - Radiation Effects On Devices & ICs

Women In Engineering event

Session I - Facilities and Dosimetry

Chip in Sampa 2019 - Program at a Glance



Monday, Aug 26		SBMicro / INSCIT Poster Session 1															
Hall - 2nd floor	Room A/B and C	SBMicro / INSCIT Poster Session 1					Invited 1			WCAS Session 2		Women in Microelectronics Panel					
Officina de Empreendedorismo		SBMicro Session 2	SBCCI Session 2	Invited 1	WCAS Session 2	Women in Microelectronics Panel											
coffee-break																	
Officina de Empreendedorismo	Event Registration																
Lunch																	
Officina de Empreendedorismo	Meeting of SBMicro (room A/B) and CECCI (room C) boards	Tutorial 3-SBMicro Ravi Toth Western Digital, USA	Tutorial 3-SBCCI Riccardo Mariani INVIDEA, Italy	Invited 1 SBMicro Session 1	Invited 1 SBCCI Session 1	INSCIT Session 1	WCAS Session 1	CI Brazil Meeting	Invited 4 SBMicro Session 5	SBCCI Session 5	INSCIT Session 5	WCAS Session 5	SBMicro Business Forum	SBMicro Session 8	SBCCI Session 8	INSCIT Session 8	CNPq CA- ME meeting
coffee-break	break	coffee-break			coffee-break + SBMicro / INSCIT Poster Session 1			coffee-break + SBMicro / INSCIT Poster Session 2					coffee-break				
Officina de Empreendedorismo	Meeting of SBMicro/SBCCI/Sforum steering (room A/B)	Tutorial 4-SBMicro Navakanta Bhat Indian Institute of Science, India	Tutorial 4-SBCCI Sachin Sapatekar Univ. of Minnesota, USA	SBMicro Session 2	SBCCI Session 2	Invited 1 INSCIT Session 2	WCAS Session 2	Women in Microelectronics Panel	Industrial Panel (in Portuguese) Auditorium					SBMicro Session 9	SBCCI Session 9		
SBCCI/CECCI Assembly (room A/B)	SBMicro Assembly (room A/B)	18:20 - Opening Ceremony - Landell de Moura Award, IEEE EDS Region 9 student paper Award, SBMicro Thesis and Dissertations Award (auditorium)			19:30 - Commemorative Session 50 years of Microelectronics in Brazil (auditorium)			19:30 USP Bus Transfer to the Restaurant					18:20 - Closing Ceremony and Best Papers Awards (auditorium)				
		20:20 - Welcome Reception (Exhibition Area)			20:00 - Conference Dinner (Jardineira Grill, Av. dos Bandeirantes, 1001 - Vila Olimpia, São Paulo)												

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Committee on the Status of Women in Physics



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IEEE Women in Engineering

Women

We need to "shake up" women's participation in all hard science areas .



Inspire Engage Empower Encourage

15,000+ IEEE WIE Members Worldwide
 70+ Countries
 600+ IEEE WIE Affinity Groups
 1,500+ Annual WIE Events

OUR EFFORTS ... OUR CAUSE!

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[WOMEN IN SCIENCE](#)

[Radiation Doses](#)

[Radiation Effects in Electronic Devices](#)

[Girls in science](#)

The channel Women in Science, recently opened on Youtube by Profa. Débora Peres Menezes from the Department of Physics, UFSC, aims to bring the everyday science to the public in an uncomplicated and objective way through short films produced and starring female scientists and students.



**MEN HAVE ALWAYS BEEN AFRAID
OF WOMEN WHO CAN FLY.
THANK YOU
FOR YOUR ATTENTION
EITHER ARE WITCHES OR ARE FREE**