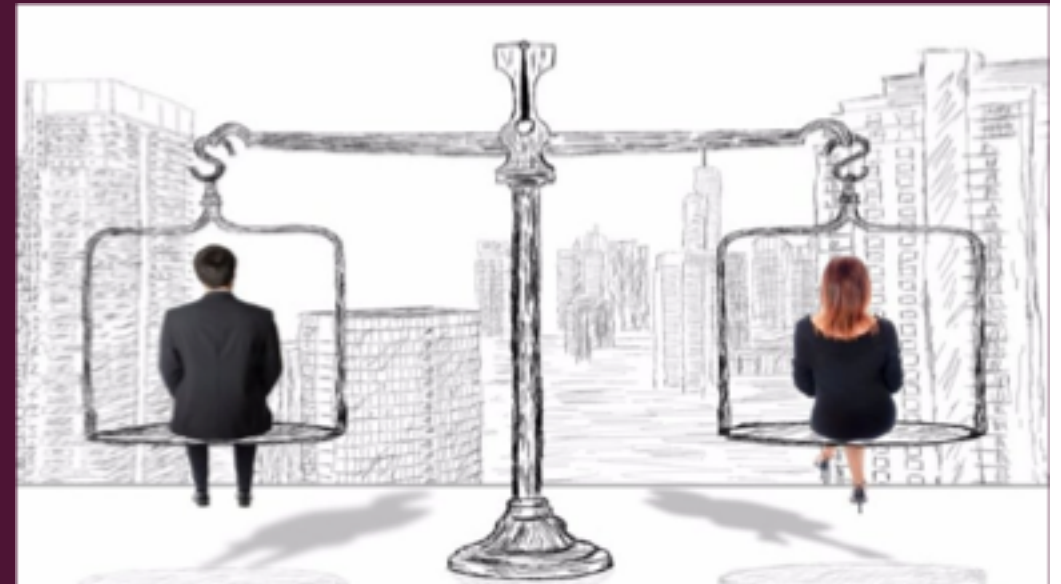


GENDER BALANCE IN MEDICAL PHYSICS – LOST IN TRANSITION?

PROF. LOREDANA G. MARCU

DEPARTMENT OF PHYSICS, UNIVERSITY OF ORADEA, ROMANIA
SCHOOL OF HEALTH SCIENCES, UNIVERSITY OF SOUTH AUSTRALIA



STEM FIELDS STATISTICS

World Congress on Medical
Physics & Biomedical Engineering
June 3–8, 2018, Prague, Czech Republic



UNESCO Institute for Statistics. Women in Science. 2015: STEM employees are predominantly men, totaling over 70% as a worldwide average.

Women outnumber men in overall undergraduate enrolments,
however

Men are more likely to major in science or mathematics and also to pursue a career in these fields.*

Male predilection towards sciences are considered to be based on several factors:

- (i) evolutionary perspective,
- (ii) differences in brain structure and function between sexes,
- (iii) biopsychosocial aspects related to environmental factors,
- (iv) sociocultural influences including family and school. **

*Reuben E, et al. How stereotypes impair women's careers in science. *Proc Natl Acad Sci U S A*. 111(2), 2014.

** Halpern D.F, et al. The science of sex differences in science and mathematics. *Psychol Sci Public Interest*. 8(1), 2007.

PHYSICAL SCIENCES - ROMANIAN STATS

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Until 1989, the gender distribution among Romanian **physics college students** was bent towards **males** with an approximate **two-thirds** to one-third ratio.

This trend is seen among current members of physics departments among Romanian universities.

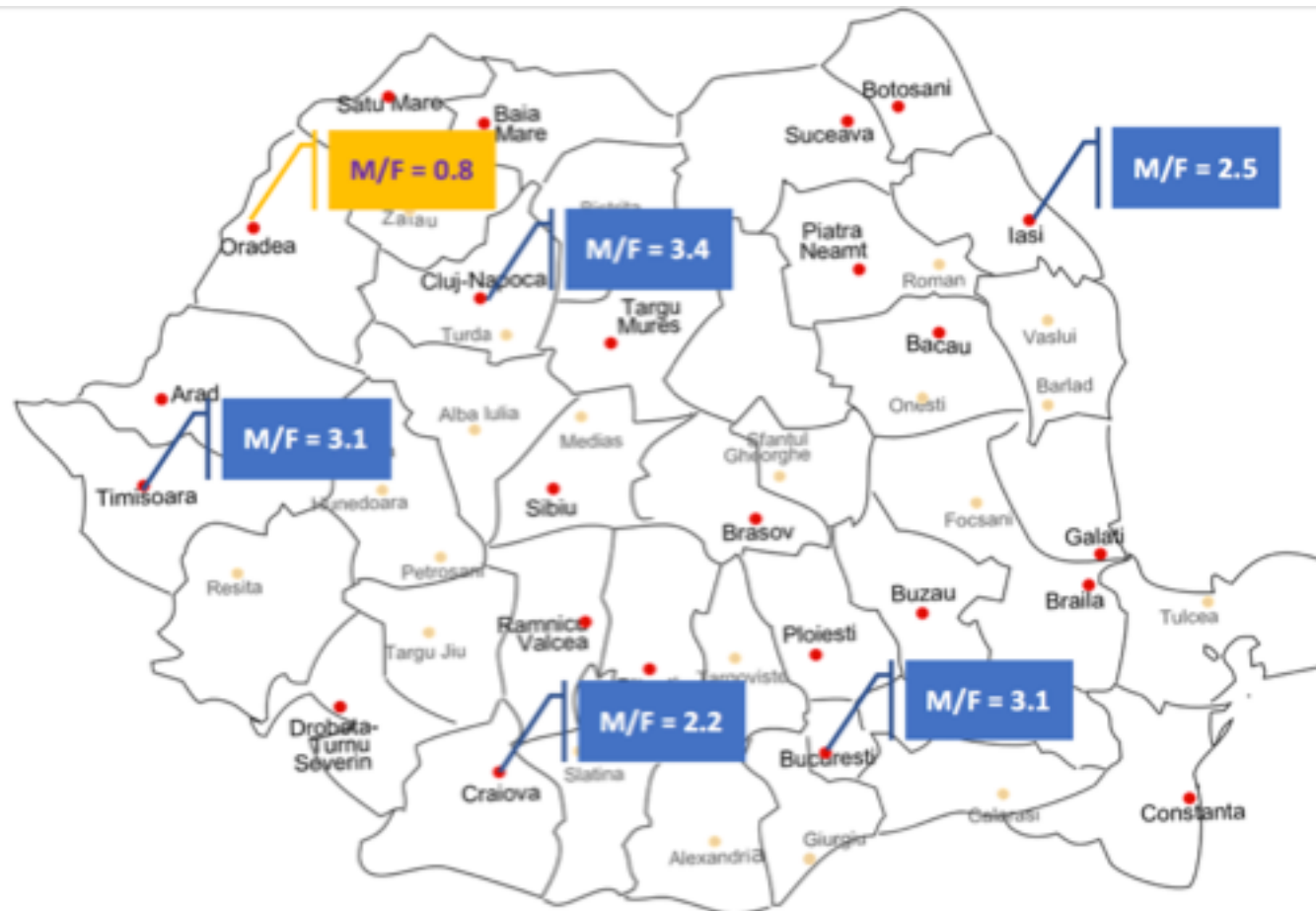


MALE / FEMALE RATIO AMONG ACADEMIC STAFF

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IUPESM
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PHYSICAL SCIENCES - ROMANIAN STATS

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Today the gender distribution among **physics college students** is shifted towards female students.

Clinical medical physicists (Romanian College of Medical Physicists stats):

Year	Male	Female
2008	55%	45%
2018	29.4%	70.6%

Obs: The gender ratio among medical physicists closely follows the ratio seen within current physics students (the ‘medical physicist’ profession has been officially introduced in Romanian legislation in 2005 = **new profession**) .

GENDER DISTRIBUTION IN RESEARCH RELATED TO PHYSICAL SCIENCES

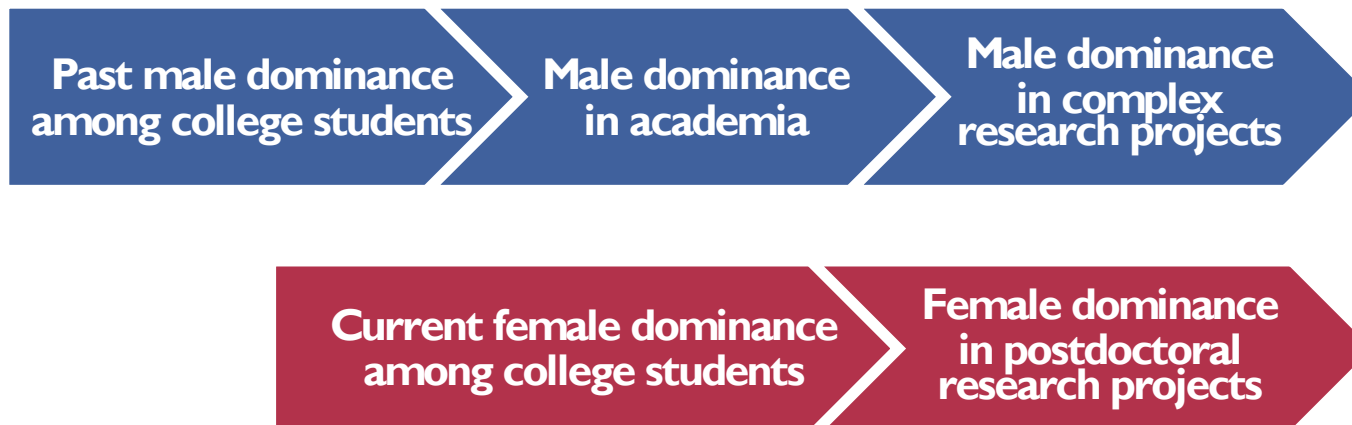
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Two types of national research grants were assessed regarding the gender of the applicants:

- (i) **complex research projects** (aimed at mature, established researchers) and
- (ii) **postdoctoral research grants** (aimed at young researchers).

What do we expect based on the previous statistics?



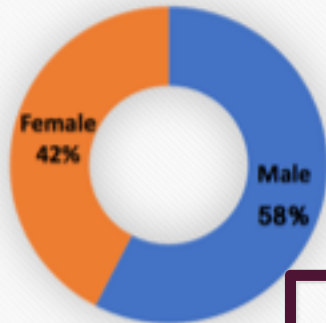
GENDER DISTRIBUTION IN RESEARCH RELATED TO PHYSICAL SCIENCES (CONT)

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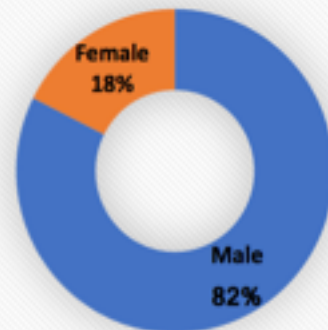


MATURE RESEARCHERS

Life sciences: Complex research projects

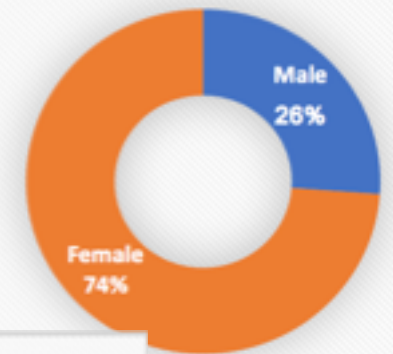


Physical sciences: Complex research projects

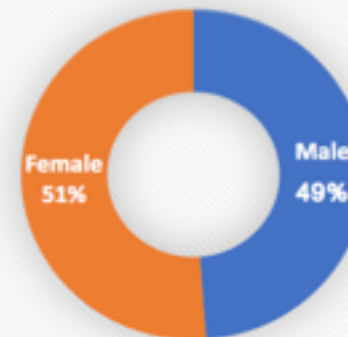


YOUNG RESEARCHERS

Biotechnology: Postdoc grants



Physics: Postdoc grants



WHERE ARE WE HEADED?

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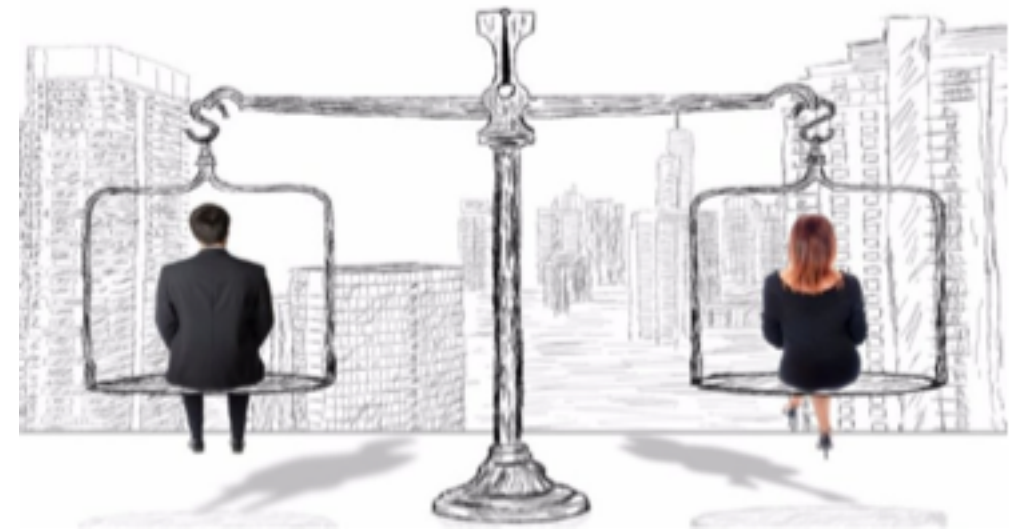


Possible reasons for the increase in female students undertaking medical physics studies:

- New field of science
- Strong interdisciplinary aspect
- Female role models (educators)
- Involvement in other people's wellbeing, which creates a strong professional fulfilment
- Global emancipation of women.

If the trend continues, medical physics in Romania will be clearly dominated by women for the foreseeable future.

Will this situation serve the best interest of the scientific community?



THE NEED FOR GENDER BALANCE IN RESEARCH & WORKFORCE

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Male brain: facilitates connectivity between perception and coordinated action.

Female brain: enables communication between the analytical and intuitive processing modes.*

Men tend to more easily focus on a specific task.

Women tend to outperform men at assignments that require multitasking. **



* Ingalhalikar M, et al. Sex differences in the structural connectome of the human brain. *Proc Natl Acad Sci U S A.* (2014).

** Stoet G, et al. Are women better than men at multi-tasking? *BMC Psychology.* 1:18 (2013).

IDMP 2017 - UNIVERSITY OF ORADEA

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FEMALE ROLE MODELS

Whether the topic, or the name of Marie Curie was the stimulating factor, fact is that an exceptionally high female interest was shown in activity involvement for IDMP 2017:

- 100% of the presenters were women and
- 100% of the teachers that involved the students in these activities were female.

