Women in Physics Leadership

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ABSTRACT

If we are to increase women's participation in physics, we need to attract and retain women at all levels in the field. Strong gains have been made in faculty numbers at the associate and assistant professor level, but full professors remain predominantly male, and the numbers of women working as lab directors or department chairs is mostly unknown. There has been very little research looking at the participation level of physics women in a broad range of leadership positions such as director, lab manager, dean, or department head. This paper will showcase the double bind that physics women in leadership positions face as they are forced to simultaneously deal with the many barriers facing women in leadership and those specific to women in physics fields. Given the parallel structures of barriers involved, women in physics who want to advance into leadership positions have fewer role models, face more unconscious bias, and have to deal with higher standards. There are also issues involved with leaving one's lab and/or students in the lurch.

BACKGROUND

No one knows how many women hold leadership positions in physics. This study is the first to determine current numbers of women in certain leadership positions in physics.

We also do not know what specific barriers women in physics/STEM face when moving into leadership positions.

BARRIERS TO LEADERSHIP

- Balancing work and family
- Implicit/unconscious bias
- Undervalued achievements
- Lack of role models
- Sexual harassment
- Weaker references
- Being primary caregiver
- Being primary housekeeper
- Fewer premium assignments

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WOMEN LEADING PHYSICS

The following data was collected in spring 2017, based on websites and the subject's gender presentation online.

Women as department chair

	Random 30 US physics departments	Top 20 world physics departments
Number of female chairs	3 of 29	2 of 19
	Top programs for women (US, AIP 2005)	US Women's Colleges
Number of female chairs	2 of 18	13 of 24

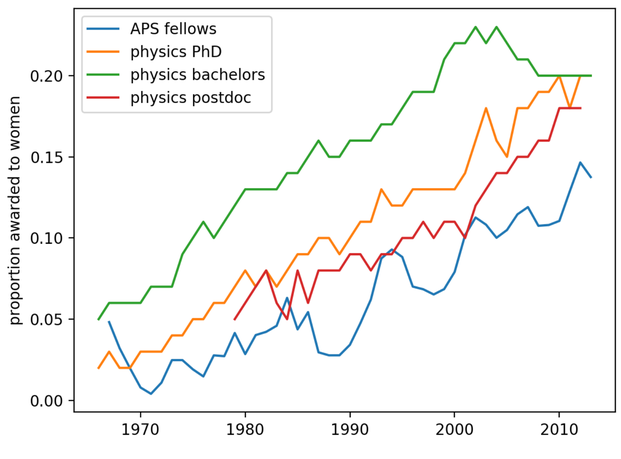
Women serving as directors

	National Science Foundation	National Institutes of Health
Number of women	3 of 17 directors (historical data)	1 of 16 directors (historical data)
	National Academy of Science	Amer. Assn. for the Advancement of Science
Number of women	3 of 5 Officers; 8 of 12 Councilors	3 of 5 Officers; 6 of 9 Board Members
	National Laboratories	
Number of women	3 of 20 Directors; 3 of 18 Deputy Directors	

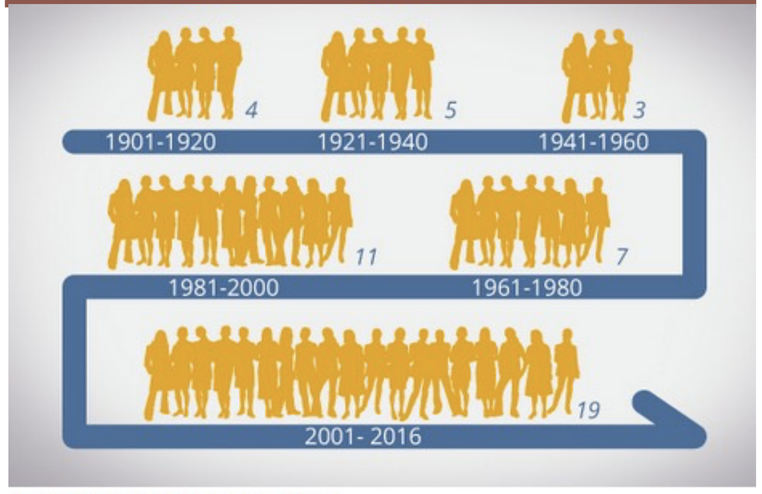
Women serving as editors

	American Journal of Physics	AJP Advisory Board
Number of women on Editorial Board	0 of 9	1 of 9
	PhysRev Letters	PhysRev PER
Number of women on Editorial Board	0 of 4	1 of 2
	The Physics Teacher	TPT Editorial Board
Number of women on Editorial Board	7 of 11	5 of 12

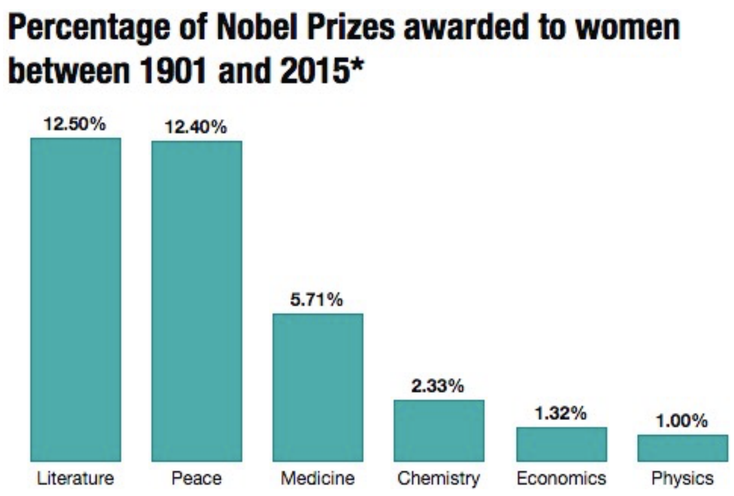
Female APS Award winners



FEMALE LAUREATES



Nobel Prize awarded women 1901-2016.



DOUBLE THE TROUBLE? DOUBLE THE FUN?

Women who have succeeded in physics often have strategies to counter the biases and barriers they have encountered.

Do women in physics who move into leadership have an easier time because their strategies work to counteract the biases for leadership?

Or do they have to deal with twice as many barriers, and their path made even more difficult? No research exists to answer this question.

CONCLUSIONS

- Women are under-represented in leadership positions in physics in the US
- Women in leadership in physics is at a rate lower than the percentage of women in physics
- The barriers for women in physics and women in leadership are very similar

FURTHER RESEARCH

- Surveys of women in physics leadership
- Interviews after the survey will help determine if barriers for women in leadership in physics are cumulative or ameliorative

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