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JUL 09, 2014

Women must overcome the barriers to growing their numbers in physics



Professor Marcia Barbosa



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BY: [KEITH CAMPBELL](#)

Women scientists need to work together, network and identify the barriers to increasing their numbers in their respective disciplines. This is the message of International Union of Pure and Applied Physics (IUPAP) VP and Federal University of Rio Grande do Sul (Brazil) Physics Institute director Professor **Marcia Barbosa**. She was addressing a plenary session of the 2014 South African Institute of Physics conference at the University of Johannesburg on Wednesday.

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dropping out of their disciplines as they progress in their careers. Barbosa, naturally, focused her attention on physics. She cited an IUPAP study, which revealed that, globally, in 2002 about 22.5% of physics undergraduates were women, some 18% of graduate students were women, but only about 13% of professionally active physicists were women.

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This decline is, she noted, called the "leaky pipeline" in the US and the "scissors effect" (as if women were being cut out) in Europe. There are a number of reasons for this, which are found all around the world, although the exact mix differs from culture to culture and from country to country.

One problem is stereotypes of scientists -- all too often seen as asocial, if not antisocial, nerdy men. And there are also stereotypes of women scientists, as plain and unattractive, perpetually single and (again) nerdy. Even for highly intelligent and well educated teenage girls, this can be a singularly unattractive

image.

Another issue is the lack of women as role models in physics (and other sciences). "When I first joined my department, we didn't have a single woman at a high level," noted Barbosa. Fortunately, this is now rapidly changing, with more and more women achieving prominence in the discipline.

Then there are the "myths" about women: that women aren't interested in the exact sciences, or that they are not good in them. The history of women in science, especially over the past 150 or so years, refutes these.

There can also be unconscious prejudice. In many countries, scientists are graded according to their contributions to their disciplines, usually measured by the number of scientific publications they produce. Brazil is one such country. A study by Barbosa revealed that Brazilian women scientists were having to publish significantly more papers than their male colleagues in order to be upgraded. (This discovery resulted in a lot of women scientists being immediately upgraded.)

However, worldwide the really big problem is reconciling family with work. Pregnancy and child care can wreak havoc on a woman's scientific career. This is a multifaceted issue. For example, many countries (such as Germany) require

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different university to that in which a PhD was obtained. For a woman who is pregnant or has small children, these requirements are usually impossible to fill. Likewise, late working hours or late meetings are rarely possible for such women.

As a result, these women often drop out of science. In Europe, they tend to go for part-time jobs instead. In developing countries with large, young, populations, they often become teachers in colleges which do not undertake any research. In the US, where child care systems are generally poor, they often stop working altogether.

Yet many of these problems could be solved, or at least ameliorated, by simply changing some of the rules. Give women who are pregnant or have little children more time to finish their postgraduate studies, do not schedule late meetings or expect late working hours, allow postdoctoral studies much nearer home and so on. And it is to achieve such changes within the profession that women physicists should work together and change things.

Edited by: Creamer Media Reporter

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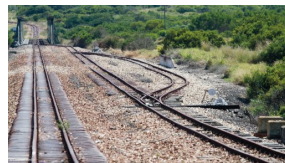
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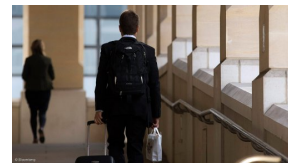
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