Women in Physics in South Africa: The Story to 2008

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Abstract. Overall about 40% of South African researchers in science, engineering, and technology are women, but the percentage of women in the physical sciences is significantly lower. In 2006, it appeared that about 16% of the 500 members of the South African Institute of Physics were women. Many of the issues of women in physics in South Africa parallel those of black physicists, including discrimination, both conscious and unconscious, in hiring and in awarding grants. The situation is slowly improving with the advent of policies aimed at redress and with far-reaching joint projects from the South African Department of Science and Technology and the South African Institute of Physics. Women in Physics in South Africa Project (WiPiSA), launched in 2005, aims to stimulate an increased interest in physics among girls and women, and assist in removing or overcoming obstacles to the study of physics and to work in physics-related careers. WiPiSA conducted a baseline survey of women who graduated with postgraduate degrees in physics between 1995 and 2005, and a surprisingly large database of 188 women has been formed. WiPiSA has also overseen a number of additional projects aimed at students, teachers, physics departments, and graduates.

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A 2004/2005 national research survey showed that overall about 38% of South African researchers in science, engineering, and technology were women, but that the percentages of women in the physical sciences were significantly lower [1]. In 2006, it appeared that about 16% of the 500 members of the South African Institute of Physics (SAIP) were women. Many of the issues of women in physics in South Africa parallel those of black physicists, including discrimination, both conscious and unconscious, in hiring and in grant awards. The situation is slowly improving with the advent of policies aimed at redress and with far-reaching joint projects from the South African Department of Science and Technology and SAIP, and the creation of the Women in Physics in South Africa Project (WiPiSA) and working group in 2005.

Following the resolutions of the first IUPAP Conference of Women in Physics in 2002, SAIP supported the formation of a women in physics working group. This was also influenced by the work of SAIP in changing the perceptions about physics in the country arising from its report, *Shaping the Future of Physics in South Africa, Report of the International Panel* [2]. In celebration of the International Year of Physics, the South African Department of Science and Technology (DST) funded the launch of WiPiSA in 2005. DST further supported the activities of WiPiSA after a presentation of the business plan by the working group. WiPiSA performed a baseline survey of women who graduated with postgraduate degrees in physics between 1995 and 2005, and a surprisingly large database of 188 women has been formed [3].

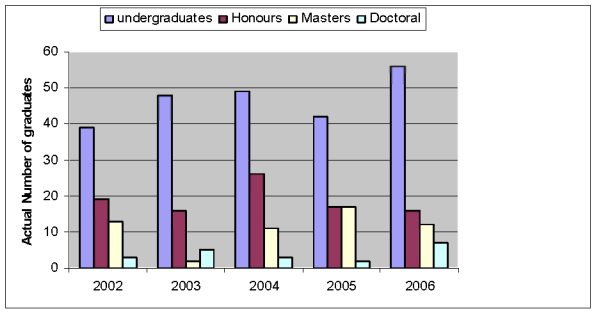

FIGURE 1. Female graduates in physics.

Figure 1 shows the number of women who graduated in physics from 2002 to 2006. There is a significant increase in the number of female undergraduate students majoring in physics in the country, from 39 in 2002 to 56 in 2006 [4]. The honours degree (4th year) in physics in South Africa is a definite obstacle, with numbers fluctuating between 2 and 17. This has a major effect on the number of students continuing to master's and doctoral levels. The highest number of female students graduating with a PhD was seen in 2006, when seven PhDs were awarded to women.

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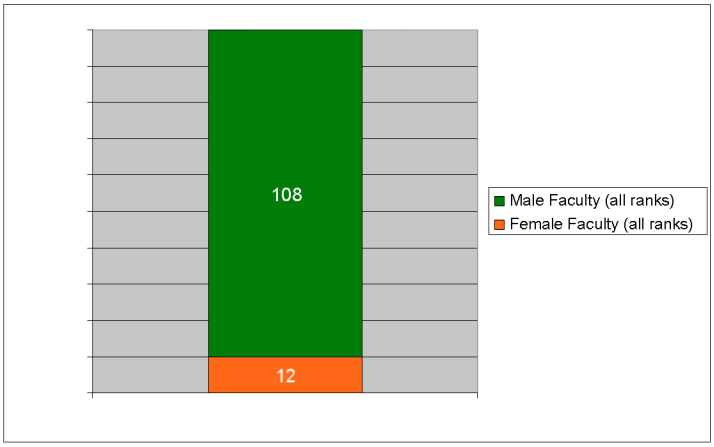

FIGURE 2. Male and female physics faculty in 10 main universities.

Figure 2 shows the number of male and female faculty in physics at 10 major universities in South Africa. On average, there is one female student to two male students at all levels of study. Physics is classified as a scarce skill and is receiving special attention from the government. Some of the unique contributions to reshape physics in South Africa are the birth of the National Institute for Theoretical Physics in May 2008, the Space Science Strategy with the bid to host the Square Kilometer Array, the Southern African Large Telescope (SALT), the National Nanotechnology Strategy, and the improvement of science teaching in schools so that barriers that hinder girls from pursuing physics are reduced. Funding for physics studies has increased, and there are many other initiatives involving international collaborations to accelerate the training of physicists in the country, in order to develop the skilled people needed for the new energy and space science initiatives.

WiPiSA has been able to launch women in physics groups in many South African universities and to create projects for attracting girls into physics at high schools. In celebrating Women's Month in South Africa, many institutions highlighted role models for different careers, and women in physics were featured in many of these activities. The working group produced a brochure that it uses to market physics to women in South Africa. Considered by some to be the most successful project of the SAIP, WiPiSA has received significant support from men in the physics community.

With the launch of WiPiSA in 2005, a baseline survey was conducted to verify the number of recent women graduates in physics in South Africa. Twenty-three women with PhDs in physics were identified, and that number has increased to approximately 45. As of now, the baseline study of women with postgraduate degrees in physics in South Africa has 188 women on the database.

New developments in South Africa are aimed at improving the education system. A new physical science curriculum has been implemented, with the SAIP supporting and advising the Department of Education. SAIP has run several workshops to support teachers in developing their content knowledge of physics. WiPiSA is looking at ways to make the curriculum girl-friendly and to help teachers encourage girls to take physical science at school, as well as to pursue careers in physics.

There is a need to improve the climate for women in physics for senior positions in research centers and universities. Nearly all South African university physics departments have either one or no female academics in permanent positions. No national research facility in South Africa is headed by a woman.

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