

# Climbing the Academy Ladder in Brazil: Physics

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**Abstract.** In the last few years, the main Brazilian funding agencies, CNPq and CAPES, have introduced gender awareness projects. This initiative is a starting point for changing the percentage of women at all career levels in physics, but particularly at the top. The change in the percentage of female researchers at the different levels so far has been quite mild; the most likely reason is that the decision committees consist mostly of male researchers. We show that prejudice is still present in the evaluation process. The average number of publications of the female researchers is 72% higher than for the male researchers at the entrance level, indicating that it is harder for women to enter into the research system.

**Keywords:** Brazil, women in physics

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In the last few years, the main Brazilian research funding agencies, CNPq and CAPES, have introduced gender awareness projects; these efforts work in resonance with the federal office to address public policies for women (“Secretaria Especial de Políticas para as Mulheres”), which reports directly to the Brazilian Presidency.

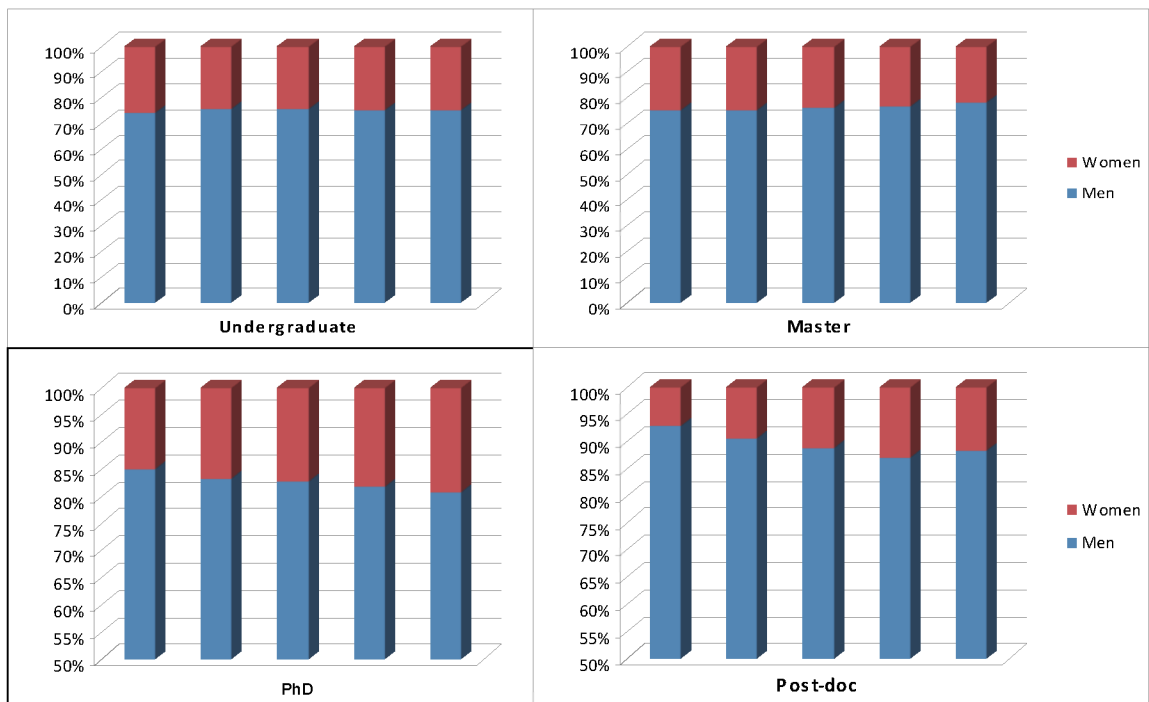
The Gender Relations Committee of the Brazilian Physical Society has studied the impact of these policies on the graduate programs of CNPq, the main federal funding agency, by analyzing the trend in scholarship and fellowship distribution over the last 5 years (2003–2007). The funding for physics programs has four levels: undergraduate, master’s, doctorate, and postdoctorate. Once enrolled into temporary or permanent jobs at research institutions (public and private universities, research centers, and company labs), physicists can also apply for partial fellowships in the form of federal grants that are awarded in recognition of the productivity and research quality of the grantees. The fellowship funding is also divided into levels, according to evaluation by a scientific committee. The change in the percentage of female researchers at the different levels so far has been quite mild; the most likely reason is that the decision committees consist mostly of male researchers. Women’s participation in this program is low, representing between 6% and 17% of the funding at the various levels.

Figure 1 shows the gender dependence of the CNPq scholarship awards at the undergraduate, master’s, doctorate, and postdoctorate levels. The number of women recipients is basically constant—around 25%—for undergraduate enrollment in research. There is a small drop in the master’s program, especially for the last two years. However, at the doctorate level this trend is reversed, with the number of women receiving scholarships steadily increasing during the last five years. Similarly, postdoc numbers have increased in the same period. This may be interpreted as a reflection of the improved funding in Brazil during the last five years.

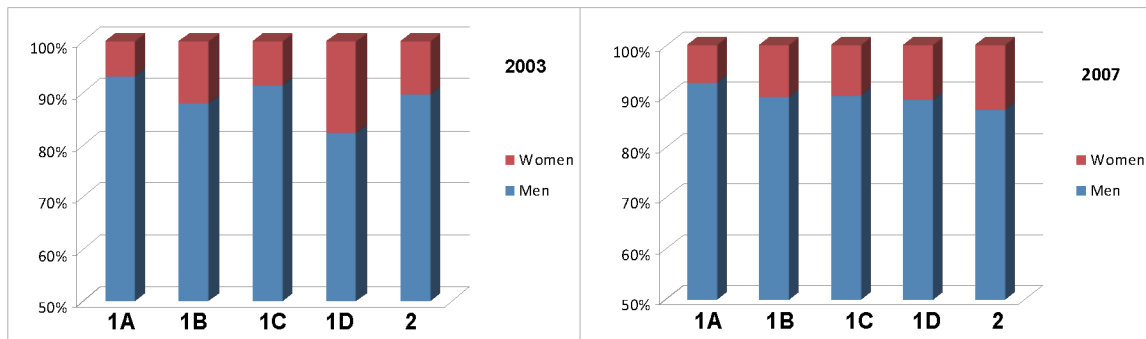
Among the several initiatives in gender awareness, many are directed toward young female students (high school or undergraduate); the scope of these programs is usually more connected to humanities rather than to the physical sciences. However, one initiative—which can affect all areas of knowledge—must be emphasized: the adoption of paid maternity leave for master’s and doctorate students. In 2006, CNPq and CAPES agreed to a three-month paid extension of a scholarship after a baby’s delivery. Although it is too soon to see any impact on our data on the percentage of women recipients of research grants, one must keep this information in mind.

The larger number of scholarships for women doctorate students is related to the increase in postdocs also observed. However, the number of CNPq fellowships awarded to women already working in physics has not changed much in the recent past, as shown in Figure 2. In fact, data for 2007 have a more uniform distribution, but this is again related to the larger number of fellowships available. Most important to note is that the total number of women in the higher levels (1A, 1B, and 1C in the figure) dropped, while the total number of women at the entry level (2) increased. Having fewer women in top positions leads to more male-dominated committees; this might lower the chance of significantly changing the situation—similar to that reported at the first IUPAP Women in Physics Conference in 2002—because a male-dominated committee might lead to distortions in the system.

Prejudice is still present in the evaluation process. The average number of publications of the female researchers is 72% higher than the same number for the male researchers at the entrance level, indicating that it is harder for young female scientists to enter into the research system.

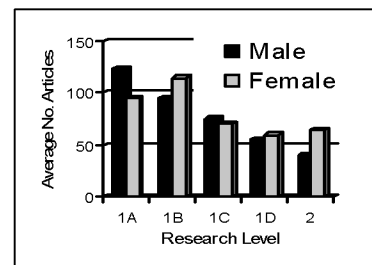


**Figure 1.** Gender dependence of CNPq scholarships awarded from 2003 (left column) to 2007 (right column). Note different scale of the y-axes in bottom figures. (Data from Brazilian Ministry of Science and Technology).



**FIGURE 2.** Number of CNPq fellowships (from top level 1A to entry level 2) in 2003 and 2007, classified by gender [1].

Figure 3 illustrates the average number of publications per person at each research level, showing that for a woman to enter in the fellowship program after the postdoc level (level 2 in the figure), she must have almost twice the number of publications as the male researchers. Similarly, female researchers in level 1B, one before reaching the top level, have a higher number of publications than their male counterparts. This result indicates that many of the female researchers have the qualifications to become top level, but are not promoted. The most likely reason is that the decision committees consist mostly of male researchers. However, one can expect in the next years more pressure at the entry level from women leaving the postdoctoral programs.



**FIGURE.3.** Average number of publications at each research level of CNPq (1A = top level; 2 = entry level).<sup>1</sup>

## ACKNOWLEDGMENT

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<sup>1</sup> Data from J. Arenzon and M.C. Barbosa, *Produtividade em Pesquisa – CNPq – 2005: uma análise estatística*, Instituto de Física, Universidade Federal do Rio Grande do Sul [www.if.ufrgs.br/~barbosa/cnpq.html]. (in Spanish)

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