

**Witness Testimony of  
Myron Campbell  
Chair, Physics Department  
The University of Michigan**

**Before the  
House Science and Technology Committee  
Research and Science Education Subcommittee**

**Hearing on  
Women in Academic Science and Engineering**

**October 17, 2007**

**Introduction**

Chairman Baird, Ranking Member Ehlers and members of the Subcommittee, thank you for the invitation to testify today. It is an honor for me to be able to contribute to the discussion of women in physics, and talk about the necessity of removing barriers to allow any member of our society to contribute to our nation's real and pressing needs in science and technology.

I joined the University of Michigan in September 1989 as an Assistant Professor. Prior to coming to Michigan I worked eight years at the University of Chicago, and prior to that I was a graduate student at Yale University. I was promoted to Associate Professor after three years and to Professor in 1998. My area of research is High Energy Physics and I am co-author on over 300 scientific papers, mostly with the CDF collaboration. I was appointed Chair of the Physics Department in 2004.

**Women in Physics**

My own appreciation of the issues of women in physics and some of the barriers came about four years ago during an unsuccessful attempt to hire a female assistant professor. During this process I became aware that the issue was about more than just the number of female faculty; that there were real barriers and biases which made it more difficult for talented women to participate in science.

**Activities at Michigan**

Three and a half years ago I was appointed the Chair of the Physics Department. Shortly after becoming Chair I invited the Committee on the Status of Women in Physics (CSWP)<sup>1</sup>, a committee of the American Physical Society (APS), to conduct a site visit to

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<sup>1</sup> <http://www.aps.org/programs/women/index.cfm>

assess the climate for women in our department. Over the last seventeen years CSWP has visited and evaluated over forty institutions. The overall assessment from the site visit report was that the climate at Michigan for women in physics needs serious improvement. There were several key points from the report I have used to understand how to proceed:

- It is not the responsibility of the women in the Department to effect change. Improvements will have to be driven by the combined efforts of the senior faculty.
- Problems exist at all levels and areas, and there is not a single solution or ‘magic bullet’. Improvements will come from a large number of modest accomplishments.
- It’s not just about the numbers. A major problem is the climate and how the women are treated. Bringing in additional female faculty must be accompanied by improving the climate.
- All of the Department’s accomplishments – first rate research programs, excellent undergraduate and graduate education, and successful community outreach – are placed at risk by climate issues.

With these points in mind, we took specific steps to improve the environment for undergraduate students through renovation of our introductory courses and providing student-led study sessions for advanced courses. We are more closely monitoring the graduate students, and taking early intervention for students who might otherwise drop out of the program. We have changed some of the graduate program requirements to reduce the stress graduate students feel, without reducing our standards. We have taken steps to improve the climate for female faculty. We have also modified the way we conduct searches for new faculty – searches are now open across all subfields of physics represented in the department<sup>2</sup>. This change has resulted in our department making offers to nine women over the last four years, although, only one accepted.

Much of this effort has been through Departmental and University initiative and support, along with support from funding agencies for programs such as ADVANCE. To increase the number of women in faculty ranks it is necessary to increase the number of women participating at all levels which lead to careers in science – high school, undergraduate education, graduate school, and postdoctoral positions. A key area of difficulty is the postdoctoral position, the transition from graduate student to assistant professor. One of the ways to create diversity in the workplace is to create a broad pool of applicants. The current practice for hiring postdocs runs counter to this – often a faculty member will select a postdoc from only a few candidates, since the work the postdoc is required to do is narrowly defined. The few institutions which have privately funded postdoctoral fellowships (Chicago, Caltech, Princeton, Berkeley, Harvard, MIT) are able to draw a large application pool, and have been successful at bringing in a talented and diverse group of postdocs.

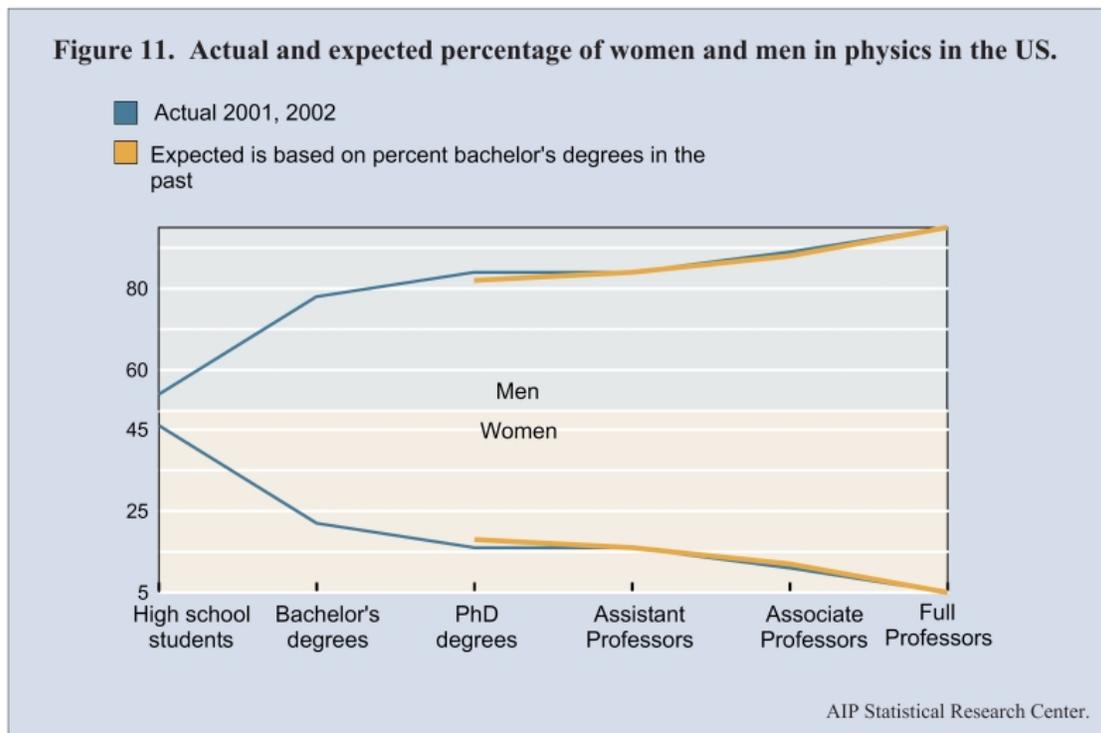
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<sup>2</sup> Advertisement in *Physics Today*, September 2007, page 101

I attended a workshop on gender equity<sup>3</sup> held by the American Physical Society in May, 2006 where I shared some of my experiences with chairs and heads of other physics departments. The summary and recommendations from the workshop have been posted on the APS gender equity website. The department chairs attending the conference focused on four categories: Recruiting Students, Building a Respectful Environment, Faculty Hiring, and Faculty Retention. The consensus goal from the workshop was to double the number of women in physics over the next 15 years, which will require increasing the number of women working at all steps leading to a career in science.

## Recommendations

I have several recommendations to the Subcommittee. The first is to encourage the NSF to continue the program *ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers*. I know firsthand this program has been of great benefit at the University of Michigan<sup>4</sup>. The practices, policies and procedures that have been developed at ADVANCE institutions should be integrated both into the NSF and other research and education institutions.



My second recommendation addresses the ‘pipeline issue’, as illustrated in the chart provided by the American Institute of Physics<sup>5</sup>. The figure shows the decline in the percentage of women at various ranks, and the prediction in yellow based on the number

<sup>3</sup> <http://www.aps.org/programs/women/workshops/gender-equity.cfm>

<sup>4</sup> <http://sitemaker.umich.edu/advance/home>

<sup>5</sup> <http://www.aip.org/statistics/trends/highlite/women05/figure11.htm>

of bachelor's degrees awarded to women in the past. This chart shows that the pipeline explains the small numbers of women in physics and that the pipeline is the problem, highlighting the need for eliminating gender bias at every career stage. Universities such as Michigan can work on some stages of the pipeline on their own, for example promotion from assistant professor to associate professor, or improvement in undergraduate education. One of the findings of ADVANCE was that open, broad based, as opposed to narrow, searches provides a larger, more diverse pool of applicants. While our Department has been able to do this for graduate admissions and assistant professor searches, we have not been able to do this at the postdoctoral level. I recommend that NSF expand their Postdoctoral Fellowships program to include Physics, similar to the existing programs in Astronomy and Biology. Such a program would draw a large pool of applicants.

My third recommendation is to eliminate some of the barriers to women, especially women with young children, which is codified in OMB circular A-21<sup>6</sup>. Section J.32 on Meetings and Conferences should be modified to specifically allow for women to take infants or small children to conferences and the cost of childcare during the conference should be an allowable direct or F&A expense. Section J.53 in a similar way should allow for the travel costs associated with having small children be an allowable direct or F&A expense. Section J.42 on recruiting costs should be modified to recognize that attracting top talent, either male or female, now often requires spousal recruitment<sup>7</sup>, which should be either an allowed direct or F&A cost.

## **Conclusion**

Thank you again for the opportunity to testify today. I hope I can continue to be of service on this issue. Advances in science and engineering require the talent, hard work, and ingenuity of a large and diverse workforce. Women represent about half of our entering undergraduates interested in science and engineering, yet they represent a much smaller fraction of our scientific workforce. We all must work to remove barriers.

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<sup>6</sup> <http://www.whitehouse.gov/omb/circulars/a021/a021.html>

<sup>7</sup> "*Education in Nuclear Science*," A report to the DOE/NSF Nuclear Science Advisory Committee, p4-15 (November 2004), [http://www.sc.doe.gov/henp/np/nsac/docs/NSAC\\_CR\\_education\\_report\\_final.pdf](http://www.sc.doe.gov/henp/np/nsac/docs/NSAC_CR_education_report_final.pdf)

# Myron Campbell

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## Education

1977-1982	Yale University	New Haven, CT	Ph. D., Physics Advisor Robert K. Adair
1973-1977	Otterbein College	Westerville, OH	B.A. Physics

## Employment

2004-Present	University of Michigan	Ann Arbor, MI	<b>Chair, Physics Department</b>
1998-Present	University of Michigan	Ann Arbor, MI	<b>Professor</b>
1992-1998	University of Michigan	Ann Arbor, MI	<b>Associate Professor</b>
1989-1992	University of Michigan	Ann Arbor, MI	<b>Assistant Professor</b>
1989	University of Chicago	Chicago, IL	<b>Senior Scientist</b>
1985-1989	University of Chicago	Chicago, IL	<b>Senior Research Associate</b>
1982-1985	University of Chicago	Chicago, IL	<b>Research Associate</b>
1982	Yale University	New Haven, CT	<b>Research Associate</b>

## Awards

Fellow of the American Physical Society, 1998  
LS&A Excellence in Education Award, 1996  
A.P. Sloan Fellow, 1990-1991  
A.H. Compton Lecturer, University of Chicago, 1985

## Professional Service

1990-present           CDF Executive Board  
1993-1994           Femilab Users Executive Committee  
1990-1993           SDC Technical Board

## Departmental Committees (selected)

1998-1999   High Energy Theorist Search Committee  
                  Undergraduate Concerns Committee  
1996- 1998   High Energy Experimental Search Committee, Chair  
1994-1997   Undergraduate Concerns Committee  
                  Undergraduate Laboratory Committee  
1993-1994   Department Computing Committee, Chair  
1992-1993   HEP Spin Physics Search committee  
1991-1994   Graduate Admissions

## College and University Committees (selected)

2003           LS&A Executive Committee  
1997 - 1998   CRLT Advisory Board  
1995- 1999   LS&A Curriculum Committee  
1994           University Task Force on Research Computing

## Research Activities

My research activities are in the area of high energy hadron collisions. I am involved in the CDF (Collider Detector at Fermilab). My efforts in this collaboration have been in the area of triggering, i.e. identifying events of interest. My analysis efforts are directed towards studies of top production and decay systematics

## Physics Publications

2006

**Top Physics:** Measurement of the Top Quark Mass with the Dynamical Likelihood Method using Lepton plus Jets Events with b-tags in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV

A. Abulencia et al., The CDF Collaboration, Phys. Rev. D 73, 092002 (2006).

**Top Physics:** Search for Anomalous Decay of Heavy Flavor Hadrons Produced in Association with a W Boson at CDF II

A. Abulencia et al., The CDF Collaboration, Phys. Rev. D 73, 051101 (2006).

**B Physics:** Evidence for the Exclusive Decay  $B_c^\pm \rightarrow J/\psi \pi^\pm$  and Measurement of the Mass of the  $B_c^\pm$  Meson

D. Acosta et al., The CDF Collaboration, Phys. Rev. Lett. 96, 082002 (2006).

**Top Physics:** Top Quark Mass Measurement Using the Template Method in the Lepton + Jets Channel at CDF II

A. Abulencia et al., The CDF Collaboration, Phys. Rev. D 72, 032003 (2006).

**Top Physics:** Precision Top Quark Mass Measurement in the Lepton + Jets Topology in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV

A. Abulencia et al., The CDF Collaboration, Phys. Rev. Lett. 96, 022004 (2006).

## Thesis Students

Name	Department	Candidacy	Degree
Kathy Copic	Physics	F03	W07
Fred Neill	Physics	F02	F03 (Masters)
John Carlson	Physics	W99	W02
Sarah Truitt	Physics	W96	W02
Eugene Guillian	Physics	F94	W99
Kevin Burkett	Physics	F94	W98
Bill Badgett	Physics	F90	F94