

## **Report on the activities of the IUPAP Working Group on Women in Physics, 2013-2014**

The Working Group on Women in Physics was formed by resolution of the Atlanta IUPAP General Assembly with the following mandate:

- to survey the present situation and report to the Council and the liaison committees
- to suggest means to improve the situation for women in physics.

One of the main activities of the Working Group is the organization of the International Conferences on Women in Physics (ICWIP) that take place once every three years. At these conferences experiences and data from a large number of countries are exchanged. This year the Fifth IUPAP International Conference on Women in Physics took place in Waterloo, Canada from August 5<sup>th</sup> through August 9<sup>th</sup> (<http://icwip2014.wlu.ca/>). This was the first time that the conference was held in North America. 215 participants from 49 countries attended the conference. The country list included both developed and developing countries many of which are not part of IUPAP. To guarantee the participation of people from countries in need we awarded full Travel Grants. We received 93 grant applications from 34 different countries, many of them from Africa. This shows the positive impact that the Conference held in South Africa in 2011 had on the Physics community in the continent. In that regard, it is remarkable that our Working Group has links with active groups of women in many countries that do not have a strong tradition in the practice of Physics and are not part of IUPAP. Unfortunately, although we had agreed to cover the travel expenses of many applicants, we had last minute cancellations due to visa problems. Although we knew we could be facing this problem, we did not have many resources to address it. It would be good to develop a strategy for the future. Finally, 46 Travel Grant awardees attended the conference. They came from the countries listed in the following table.

<b>Country and number of funded participants</b>
Albania, 1
Algeria, 1
Argentina, 2
Armenia, 1
Belarus, 1
Brazil, 1
Burkina Faso, 1
Cameroon, 1
Congo, D. R., 1
Cyprus, 1
Ecuador, 2
Egypt, 2
El Salvador, 1
Estonia, 1
Ethiopia, 2

Honduras, 1
Ghana, 2
India, 2
Indonesia, 2
Iran, 1
Ireland, 1
Kenya, 1
Lithuania, 1
Mexico, 2
Morocco, 1
Nepal, 1
Nigeria, 1
Pakistan, 1
Peru, 1
Philippines, 1
Russia, 1
Sudan, 1
Tanzania, 1
Tunisia, 1
Uganda, 2
Zambia, 1

We could support the travel expenses of so many participants thanks to the funds we received from the following agencies and individuals:

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Network For Good
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Korean Physical Society (KPS)
Asia Pacific Center for Theoretical Physics (APCTP)
Association of Asia Pacific Physical Societies (AAPPS)
Japan Physical Society JPS
Japan Society of Applied Physics - JSAP
Physical Society of Republic of China, Taiwan
ICSU
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The Working Group was responsible to apply for this support. The Local Organizing Committee obtained funding from their country to cover other expenses of the conference. Several Physical Societies, on the other hand, helped the conference through the support of their own country team members.

As planned, at the conference there were six very successful plenary talks delivered by Melissa Franklin (Harvard University, USA), Silvia Torres-Peimbert (UNAM, Mexico), Claudia Felser (Max Planck Institute for Chemical Physics of Solids, Germany), Patience Mthunzi (National Laser Centre of South Africa), Sabine Stanley (University of Toronto, Canada) and Tsai-Chien Chiang (China, Taipei, author of the biography entitled "Madam Wu Chien-Shiung: The First Lady of Physics Research"). One copy of the book by T-C Chiang was given to each participating country thanks to a donation from the publisher.

The Conference had very interesting outreach activities. There was a public lecture by Jill Tarter, the outgoing Director of the Center for SETI Research who inspired Carl Sagan for his novel "Contact". There was a Panel Discussion on "How to succeed with physics" especially intended for undergraduate students, featuring four women physicists with "non-standard" careers (Sandy Eix, developer of shows, programs, and exhibits at Science World, Canada; Marina Milner-Bolotin, Assistant Professor in Science Education at the University of British Columbia; Clara Moskowitz, Associate Editor at Scientific American and Eileen Pollack, novelist, essayist, and short story writer with an undergraduate degree in Physics). A special lunch was organized where the pioneering Canadian physicist and activist, Ursula Franklin, talked about her life and signed her book, "Ursula Franklin Speaks".

The distinctive feature of ICWIPs is that they are highly participative. Attendants not only present their country and scientific posters, but are also engaged in discussions and elaboration of resolutions and proposals. The climate of the conference, on the other hand, is such that most people are willing to share their feelings, thoughts and experience. Associated with the 5<sup>th</sup> ICWIP there were two activities that promoted this exchange. On one hand, participants were invited to share stories that reflected their life in Physics. These stories that came from all over the World are available at <http://mystemstory.wlu.ca/>. Then, Beth Cunningham and Toni Sauncy worked on a video project as part of an NSF grant for which over 40 women participants of ICWIP were interviewed. The video is currently being edited and will be made available soon. Finally, as in previous conferences, during the 5<sup>th</sup> ICWIP there were 5 parallel breakout sessions where discussions were fostered. They covered the following subjects: Gender Studies, Physics Education, Improving the workplace, Professional Development and Leadership, Cultural perception and bias/ Science Practice and Ethics. Apart from the resolutions to be presented at the IUPAP General Assembly, we want to highlight here two points that came out of the discussions of the breakout sessions. On one hand, a deeper involvement of specialists on gender studies was perceived as necessary either during ICWIP or by holding a separate specific international conference. On the other hand, the need for a continuous survey of the situation of physicists throughout the world was pointed out. Namely, at one of the breakout sessions, Casey Tefaye from the American Institute of Physics presented the results of the 2010 Global Survey of Physicists analyzed by regions. This analysis was restricted to the 12 countries with at least 30 female respondents to the Survey.

The data turned out to be not representative of any nation or region, but reflected the respondents' experience. A multi-level analysis considering age, employment sector, gender and children was applied. Yet, some global trends were inferred with respect to gender. In 9 of the analyzed countries, women had fewer opportunities than men and in a different 9-country subset they had fewer resources than men. Regarding career progress, women with children progressed more slowly than men in 8 of the analyzed countries. The percentage of men who perceived that their careers had advanced more slowly, on the other hand, was smaller for men with than for men without children. These findings were consistent in many countries, but not all. This shows that there is still work to be done and that a deeper study is necessary to learn from the differences between countries. The multi-level analysis, however, requires that data from many more individuals be collected. There is therefore a need to have a continuous global survey of physicists.

The results of the discussions of the breakout sessions were presented at a General Assembly that was held the last day of the conference. Based on these results a set of resolutions was unanimously approved.

As in previous conferences, AIP will publish the Proceedings of the 5<sup>th</sup> ICWIP. Papers for the proceedings are currently being collected. About 30 scientific papers, 28 of the 49 country papers, 4 of the 5 workshop papers, and at least one of the plenary speakers papers have already been received. We thus expect these proceedings to be ready much earlier than the previous ones.

All conference participants and the Working Group members think that there is a compelling need for the Group to continue to exist. Although there has been great progress more work is needed to increase the number and improve the situation of women physicists throughout the world. To pursue its goals efficiently, Working Group members need to be renewed. Our proposal is that Igle Gledhill replaces Silvina Ponce Dawson as chair of the Working Group after the IUPAP General Assembly and that Shohini Ghose from Canada replaces Silvina, Prajval Shastri from India replaces Shobhana Narasimhan and Kwek Leong Chuang from Singapore replaces Jin-Hee Yoo from Korea as Working Group members. The Working Group website, currently hosted by the University of Buenos Aires, will also be updated and moved to Singapore. As always, it is very important to mention that none of the Working Group activities would be possible without the continuous help of Jacquelyn Beamon-Kiene with the full support of the American Physical Society.

Silvina Ponce Dawson, Argentina (outgoing chair), [silvina@df.uba.ar](mailto:silvina@df.uba.ar)  
Igle Gledhill, South Africa (incoming chair) [igledhil@csir.co.za](mailto:igledhil@csir.co.za)  
Jacquelyn Beamon-Kiene (secretary and financial manager) ([beamon@aps.org](mailto:beamon@aps.org))  
Ching-Ray Chang, China, Taipei [crchang@phys.ntu.edu.tw](mailto:crchang@phys.ntu.edu.tw)  
Gillian Butcher, UK, [gib@star.le.ac.uk](mailto:gib@star.le.ac.uk)  
Manling Sui, China, Beijing [mlsui@bjut.edu.cn](mailto:mlsui@bjut.edu.cn)  
Renee Horton, [rhorton@mint.ua.edu](mailto:rhorton@mint.ua.edu)  
Prajval Shastri, India [prajval.shastri@gmail.com](mailto:prajval.shastri@gmail.com)  
Shohini Ghose, Canada [shohini.ghose@gmail.com](mailto:shohini.ghose@gmail.com)  
Lilia Meza Montes, Mexico, [lilia@ifuap.buap.mx](mailto:lilia@ifuap.buap.mx)  
Kwek Leong Chuang, Singapore [kwekleongchuan@nus.edu.sg](mailto:kwekleongchuan@nus.edu.sg)  
Jin Hee Yoon , Korea, [jinyoon@inha.ac.kr](mailto:jinyoon@inha.ac.kr)