

REPORT ON THE 6TH INTERNATIONAL IUPAP CONFERENCE FOR WOMEN IN PHYSICS

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The 6th conference in the series of *International Union of Pure and Applied Physics (IUPAP) International Conferences on Women in Physics* was hosted by the University of Birmingham from July 16 to 20, 2017. It was organized by the Working Group on Women in Physics (WGWiP) of IUPAP, the Institute of Physics in the UK (IOP), the University of Warwick and the University of Nottingham. Over 300 delegates from 48 countries attended the meeting, including a diverse Canadian team with seven members that included faculty members, graduate and undergraduate students, and a member of WGWiP (Dr. Shohini Ghose).

The program of the conference fostered multidisciplinary, cross-cultural discussions, interesting and inspiring presentations on the career paths and research interests of eminent female physicists. Programming included poster presentations on the status of women in physics across various countries, physics research posters, challenging and stimulating workshops, and unique networking opportunities. Topics of discussion included the underrepresentation of women in physics, breaking gender stereotypes, conscious and unconscious bias towards women physicists, pay inequality compared to male physicists, and attrition of women as they continue to climb the academic ladder [1].

One of the conference highlights was the presentation of the Institute of Physics (IOP) President's Medal to Professor Dame Jocelyn Bell Burnell "for her outstanding contributions to physics through pioneering research in astronomy, most notably the discovery of the first pulsars while a Ph.D. student in Cambridge, and through her unparalleled record of leadership within the community" [2]. The award praises the Fellow of the Royal Academy and Dame Commander of the Order of the British Empire as "a champion in encouraging women to study the physical sciences, noting her contribution to establishing the Athena SWAN awards for commitment to advancing the careers of women in science" [2].

Following the award presentation, Professor Bell Burnell shared with the audience her perspectives on challenges she faced during the past 50 years as a woman researcher in astrophysics who persevered in her struggle to achieve

a balance between her family duties and an outstanding career in physics, "a male dominated field". Professor Bell Burnell told the audience: "We've assumed the problem is with the women, not with the way scientific society works. Be persistent. Take risks – surprise yourself! One failure does not make a disaster. Aim as high as you can. Keep your options open. Make women braver, more willing to put in grant applications, to apply for promotion, to apply for jobs. Get a prize for the institution that's the most women friendly... and they'll compete for it!". She ended her thought-provoking talk with a quote by Laurel Thatcher Ulrich: "Well-behaved women seldom make history". Regarding institutional changes, Professor Bell Burnell remarked that "several UK funding agencies require a university / department to have the Athena Swan accreditation before applying for grants."

The plenary speaker, Professor Dame Athene Donald spoke of many 'firsts' including being the "first woman to be professor in a UK university and Master of a Cambridge college" [3], often the only woman on scientific or policy-making committees, a trailblazer for women in physics and a "gender champion at Cambridge" [3]. She referred to herself as "a woman showing that science is a normal activity for women to do". Her contributions to the physics community are outlined by Dr. Jessica Wade in her blog [3]: "She began initiatives to support women returning from maternity leave, offered CV advice and frameworks for promotion, ran workshops on confidence and impostor syndrome [4], and helped postgrads with career advice. But with great power came great responsibility – from broadcast to print media, everyone wants Donald's comment. Today, she advises broadly, from academia to pre-19 education and even parliament and the hardest part is learning to say "no" to other people's requests". The advice Professor Donald offered during her talk, entitled "Reflections on Not Fitting In", included the following: "The need for support does not go away, although the form in which is required may change"; "Friends, mentors and sponsors are all-important"; "If you hit roadblocks, you can either let them block you, knock them down, or find ways around them"; and "I believe scientists should use every opportunity to talk about science on mainstream radio as opposed to (but not instead of) specifically science programs".

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During the conference dinner the delegates were addressed by the President-Elect of IOP, Dame Julia Higgins, one of the founders of the UK Athena Swan (Scientific Women's Academic Network) charter in 1999 in the UK. She was "the first woman to become both a Fellow of the Royal Society and of the Royal Academy of Engineering" explains Jessica Wade [3]. Discussing the low numbers of women in physics a few decades ago, Dame Julia Higgins said: "I had always assumed that if I looked over my shoulder there would be more following up behind, but there weren't". She added, "The best thing that I could do for women in science was to be one and to be successful."

The workshops were filled with interesting discussions, hands-on exercises and demonstrations on the following topics: Gender Studies and Intersectionality; Improving the Workplace/ Science Practice and Ethics; Professional Development and Leadership; Cultural Perception and Bias; and Physics/Science Education. As part of the Gender Studies and Intersectionality workshop series, Canadian team member and social psychology Ph.D. Candidate Eden Hennessey presented an overview of gender studies and provided an introduction to the concept of intersectionality. "Across the workshop sessions, some attendees expressed concern about addressing too many identities instead of examining only gender, which is, in itself, still a prevalent issue. These conversations suggest that discussing research on intersectionality is still needed to fully communicate how different identities interact to create unique and challenging circumstances for women in physics" said Hennessey.

The last plenary talk of the conference was delivered by the former spokesperson for the Laser Interferometer Gravitational-Wave Observatory (LIGO) project, Professor Gabriela Gonzales of Louisiana State University. In order to succeed, the LIGO project pushed the sensitivity, noise level, and amount of light captured by the observatory beyond the state-of-the-art so that they could study very distant astrophysical phenomena. Speaking of the first detection of gravitational waves on September 15th, 2015 Professor Gonzales told the audience: "It has been very exciting, but it's

going to be even more exciting." "Lots of people think success is a big discovery" but "success is being happy in what you do".

The social program included a classical music concert by a 15 year-old very talented musician, Lauren Zhang. Lauren is already a winner of several prestigious national and international prizes for her piano performances. Other conference highlights included the unveiling of the digital exhibition by local artist, Dr. Annie Mahtani, in collaboration with the Chair of the ICWIP conference's Local Organizing committee, Professor Nicola Wilkins, and anthropologist Liz Hingley. The exhibition, entitled "Finding Space - Celebrating what it is to be 'a woman in Physics'", presented inside the world's tallest free standing clock tower, was based on pictures of themselves and their work environment submitted by over 200 conference delegates.

The conference ended with a surprise visit from the youngest ever Nobel Peace Prize laureate Malala Yousafzai. In her address to the ICWIP delegates, a thoughtful and humble Malala spoke of the importance of education for young girls and the need to get young girls interested in science at a young age through joint efforts of "schools, parents and communities" [3]. She told the audience, "I decided to speak out because there was no other option. If you stay silent nothing will change". She also presented an overview of her recent "Girl Power Trip" with the Malala Fund [5].

In sum, the facts and statistics presented by delegates, and the discussions that occurred at the conference, clearly demonstrated that the worldwide status of women in physics has improved since the inception of this conference series in 2002. To ensure that the observed trend for recruitment, retention and career progress continues to improve in all countries represented at the conference, the delegates approved several resolutions that will be presented to the IUPAP General Assembly by representatives of the IUPAP Working Group on Women in Physics.

REFERENCES

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