Women in Numbers 3

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This past April, Banff International Research Station (BIRS) hosted forty-two female number theorists for its third Women in Numbers (WIN3) workshop. This series of conferences is designed to promote collaborations and enrich the research careers of women in all areas of number theory. The success of these conferences also inspired the formation of the Women in Numbers – Europe workshops, which launched in October 2013.

Participants at Women in Numbers 3

The Women in Numbers conferences are designed to be highly collaborative so that junior faculty members and graduate students can enhance their research programs and learn from more senior mathematicians. Yara Elias, a PhD student at McGill University, commented that one reason WIN3 was a positive experience was because she "had the opportunity to meet accomplished female mathematicians, who are inspiring and passionate." For the conference, participants were organized into small research groups led by prominent mathematicians. Group leaders proposed projects several months ahead of time in order to allow the other members to prepare in advance, and all of the groups plan to continue their collaborations for months or years following WIN3. Ellen Eischen (University of North Carolina at Chapel Hill), who co-led a project titled "A p-adic q-expansion principle for unitary groups" with Ana Caraiani (Princeton), wrote that her group is "already making plans to meet again in a few months. In addition to outlining the paper we plan to submit to the WIN3 proceedings, we made a file of future questions/projects that we might try to address."

The other projects were: Sieves in arithmetic geometry, led by Alina Cojocaru (University of Illinois at Chicago) and Lillian Pierce (Duke); Monodromy of classical hypergeometric functions and complex multiplication, led by Ling Long (Louisiana State University); Shadow lines in the arithmetic of elliptic curves, led by Jennifer Balakrishnan (Oxford) and Mirela Ciperiani (University of Texas at Austin); Curves with many automorphisms in positive characteristic, led by Irene Bouw (University of Ulm); π_1 obstructions to rational points on Fermat curves, led by Vesna Stojanoska (MIT) and Kristen Wickelgren (Georgia Institute of Technology); Computing transcendental Brauer-Manin obstructions on Enriques surfaces, led by Michelle Manes (University of Hawaii) and Bianca Viray (Brown University); Hecke operators for codes, led by Gabrielle Nebe (RWTH Aachen); and Cyclotomic rings in cryptography, led by Kristin Lauter (Microsoft Research) and Katherine Stange (University of Colorado Boulder). One participant wrote that "the project topics at WIN3 were fantastic and it was very inspiring to see everyone working together to make progress on significant problems in number theory."

Sieves in Arithmetic Geometry research group

In addition to having ample time to work in their small research groups, participants had opportunities to engage with the community as a whole. Each group leader and co-leader gave a short presentation of their research topic to all participants. On the last day, other group members gave progress reports to show what was accomplished during the week. Four participants also gave general talks about their research outside of their WIN projects. Anna Haensch

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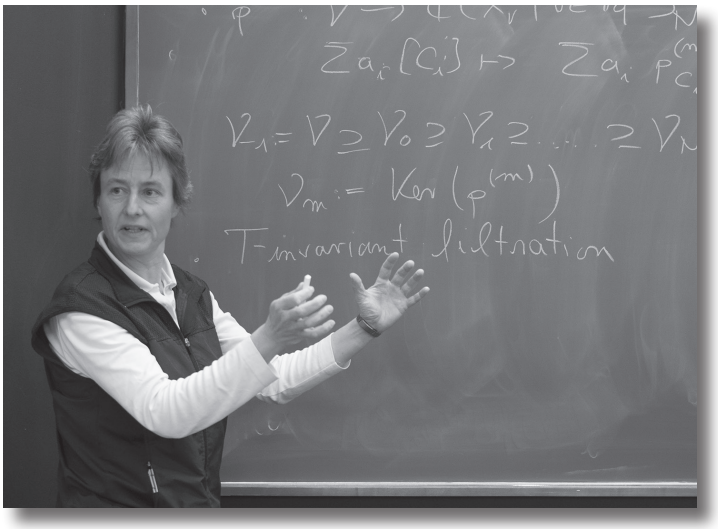
(Max Planck Institute and Duquesne University) spoke about her experience as a science reporter at National Public Radio (NPR), through the AAAS Mass Media Science and Engineering Fellowship. In her talk, Haensch also brought up important questions about how to engage the general public in science and mathematics while still preserving the rigor and details of the subject.



Gabrielle Nebe lecturing

In addition to the great research topics and talks given at WIN3, there were also opportunities for networking. The facilities at BIRS are excellent for conferences of this nature. They provide separate rooms for small working groups but also plenty of opportunities for conference participants to mingle with each other. All attendees ate meals together in the dining halls, allowing them to have conversations with others who were not in their groups. The residence hall also has a lounge, which provides a space for participants to relax and talk in the evenings. After dinner on Tuesday and Wednesday there were informal gatherings to discuss all aspects of careers in number theory. Here people who were organizing conferences or knew about job opportunities were able to announce their events and even find people willing to help with the organization of sessions at their conferences. These informal gatherings allowed participants to make connections with others who have shared interests and find out more about what they are doing. During this time, participants were welcome to ask any questions they had about careers as women in number theory, from finding an advisor to careers in industry, to getting tenure. This led to good discussions and was especially beneficial to graduate students who are planning to be on the job market in the next few years.

The conference was made possible by the organizers: Ling Long (Louisiana State University), Rachel Pries (Colorado State University), and Katherine Stange (University of Colorado Boulder). It was generously supported by funding from the Clay Mathematics Institute, Microsoft Research, the Pacific Institute for the Mathematical Sciences (PIMS), and the Number Theory Foundation.

USASEF: Impressions from the AWM Booth

Janet Fierson, Maria Lorenz, Tai Melcher, Katharine Ott, and Irina Mitrea

At the end of April, the Association for Women in Mathematics was once again present in Hall C of the Walter E. Washington Convention Center in Washington, DC at the Final Expo of the 2014 USA Science and Engineering Festival (USASEF). The organizers of the AWM booth activities share here a potpourri of festival impressions that will hopefully give the reader a sense of the energy and excitement witnessed during this incredible science extravaganza. This is what the festival meant to us.

Janet Fierson (La Salle University): I had a tremendous experience as a first-time organizer for AWM at the USASEF Expo. Although we were competing with beautiful spring weather outside, we had a nonstop flow of visitors through our booth both days of the event. I enjoyed seeing entire families getting involved, sometimes with a little friendly competition between siblings or between children and parents! It was also inspiring to witness the creativity of the participants; they brought the activities to life in a different way each time and took away even more than what had been planned. Some visitors encoded their own secret messages to family members using a reproduction of Jefferson's wheel cipher and watched eagerly as the recipients decoded them. One young participant found the letter that appeared most frequently in an encoded multiplication cipher message, assumed that it corresponded to the letter "E" in the original message, and performed some modular arithmetic to correctly identify the multiplication factor that had been used. It was also rewarding to see a former advisee of mine, now a teacher herself, stop by with several of her students. There was so much genuine curiosity and excitement at the booth. In several cases, children were so engaged that parents had to eventually force them to move on! We may have even facilitated defining moments for some young people who are now on trajectories toward careers in mathematics. This was