

Women in Mathematical Physics

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This is a summary of activities for the virtual workshop 20w5170 “Women in Mathematical Physics” (from here on “WoMaP”).

1 Reformulation of the WoMaP workshop for online version

Given the impossibility of a meeting in the standard Banff format, we met with the WoMaP group leaders (Katrina Barron, Gail Yamskulna, Daniela Cadamuro, Sylvie Paycha, Kasia Rejzner, Carla Cederbaum, Melanie Graf, Antonella Grassi, Elham Izadi, Ljudmila Kamenova, Julia Plavnik, Colleen Delaney, Claudia Scheimbauer, Ulrike Tillmann, Anne Taormina and Katrin Wendland) on June 29th and brainstormed together over Zoom. This was a very productive session, where we got some powerful ideas for our workshop and some important points were made. After reflecting on this feedback, collecting some extra input from the leaders via some forms, and taking into account our own considerations, the organizing team decided to have a 2-days virtual meeting on September 21st and 22nd, with only two activities per day:

- on Monday September 21st: a poster session and a (Corona) Q&A session, and
- on Tuesday September 22nd : a tribute session to work and life of Prof. Maryam Mirzakhani and a 1-to-1 mentoring session.

A summary of the principles we followed to organize the virtual meeting is:

- **Short:** we intended to keep screen-time to a minimum, and so we scheduled only four activities in two days, which was a doable amount even for those participants overloaded with work at home.
- **Concise:** we programmed one activity a day where the participants had to be active, and another more passive, listening-type. This would produce some engagement from the participants, without a deep sensation of commitment.¹
- **Maximize benefit:** if it is either a more passive or active activity, we made it so the participants could get something (the most if possible) out of everything they did.² We offered something unique/special: at the Mirzakhani session we presented things that were never discussed before about her, like e.g. some not-so-well-known around remarks on the Mathematics education and community in Iran.

¹In our case: for day one, we had a poster session (active) and a Q&A session on work-life balance at the Corona times (passive) and for day two we had a tribute session to Maryam Mirzakhani (passive) and a 1-to-1 mentoring session (active).

²In our case: those displaying a poster could get this as an extra point to their CV and get extra networking. According to our feedback, the mentoring sessions helped a lot to everybody participating.

- **Minimize effort:** we had very clear communication via email of crucial details with the participants, while minimizing the amount of mails. We pointed to Zulip for extra details on anything mentioned in the emails. We kept everything optional for everybody, so they can adjust to the schedule the best they could.
- **Keep it social:** we allowed time for informal discussions, which we deemed still important to plan and have. In our case, we had “coffee breaks” with “moderators” who kept the chat alive, and according to our feedback everybody enjoyed that and requested more for next time.
- **Everybody in:** we teamed up with our group leaders for making every step. It was important to make it successful and getting everybody involved as much as we could. We chose a time frame for our activities optimal for accommodating everybody (we had a time difference of 16h between our earliest and latest participants).

Besides the 43 already invited participants, we invited 8 more (who were in our back-up list of participants or had been suggested straight away by the group leaders).

2 Details on the activities performed

Four activities were scheduled:

Poster session (Monday September 21st 15:15-16:15 CEST): prior to the start of the workshop, we sent a form to the participants requesting who would like to present a poster. 7 posters were presented during this session:

- Zhongshan An (University of Connecticut, USA) on “Geometric boundary conditions for the vacuum Einstein equations”,
- Lisa Glaser (University of Vienna, Austria) on “Recovering geometry from spectral triples”,
- Ana Kontrec (University of Zagreb, Croatia) on “Representation theory of the Bershadsky-Polyakov vertex algebra at certain levels”,
- Flor Orosz Hunziker (University of Colorado, USA) on “Tensor categories arising from the Virasoro algebra”,
- Veronika Pedic Tomic (University of Zagreb, Croatia) on “Fusion rules for the Beta-gamma system and Lie superalgebra $gl(1,1)$ ”,
- Maria Schimpf (TU-Wien, Austria) on “Moonshine”, and
- Mara Ungureanu (University of Freiburg, Germany) on “Universal polynomials for counts of secant varieties”.

Corona Q&A (Monday September 21st 16:45-18:00 CEST): we had a discussion on work-life balance as a female/non-binary mathematician with a focus on the academic aftermaths of the Covid-19 pandemic. Our panel members were Katrina Barron (University of Notre Dame, USA), Stacey Harris (University of St Louis, USA), Carolina Neira (Universidad Nacional at Bogotá, Colombia) and Melanie Graf (University of Washington, USA).

Mirzakhani session (Tuesday September 22nd 15:00-16:15): this session included two introductory talks to the mathematical work of Maryam Mirzakhani by Jenya Shapir (former PhD student of Prof. Mirzakhani) and Elba García Faílde. The titles of the talks were “Another direction: Mirzakhani’s counting theorem” and “An overview on some of the beautiful work of Maryam Mirzakhani” respectively. They were followed by a third talk by Nezhla Aghaei on the mathematics education in Iran.

During the whole week of our conference the participants had access to watch the movie “Secrets of surface: the mathematical vision of Maryam Mirzakhani”, a documentary by George Csicsery on the life and mathematics of Prof. Mirzakhani. The discussion lead by Nezhla Aghaei was planned to be complementary to the documentary, trying to explain several unclear points shortly mentioned in it.

1-to-1 Mentoring session (Tuesday September 22nd 16:45-18:00): we organized private mentoring meetings between 16 participants and 13 team leaders, matching them by their preference. In the same form where we asked participants about whether they were interested on presenting at the poster session, we also asked who wanted a mentoring session and with whom. We deliberately made participants meet leaders out of their research area and optimized the requests to keep to a minimum the amount of meetings for the leaders.

Other activities: in addition to these, we had a virtual gong-show over Zulip, where everybody could introduce themselves and their research by either writing or by preparing a short video and upload it. We kept a thread in our joint Zulip on job opportunities, which we called “Hire and Seek”.

Furthermore, we made available working rooms to each team to meet during the whole week (at their own discretion and choice of time). We had a brief Welcome session right before the Poster session, and “coffee breaks” between activities (moderated by four volunteers: Karina Batistelli, Yajnaseni Dutta, Flor Orosz Hunziker and Corina Keller) and a short Farewell session at the end.

3 Scientific Progress Made

To our knowledge, most of the WoMaP teams are currently working on their suggested research projects and expect to get publications out of them. In addition, we are aware that some extra research collaborations have started out of our workshop. It is a bit early to see the mathematical fruits of our workshop, but we expect them to start popping up soon.

4 Outcomes of the meeting and future plans

Besides that of BIRS, we asked to our participants for feedback on our workshop. Here’s a summary of impressions:

- Many requested extra time to meet informally other participants, with e.g. longer coffee breaks or joint online lunches/dinners.
- The Poster session, the Mirzakhani session and the 1-to-1 Mentoring session were really appreciated. The Corona Q&A and Hire and Seek not so much.
- Many declared to have enjoyed lots the online version, and looked forward to the in-person version.

We plan to have an in-person version in 2022 at BIRS, once circumstances allow. We plan to give participation priority to the research groups that were on board in 2020, and open applications for whatever remaining spots. Given their success, we plan to repeat several of the activities we had in the online version.