

Preface

The Eighth European Congress of Mathematics (8ECM) was special in many ways. It was the first time that an ECM was entrusted to Slovenia, a relatively small European country of two million inhabitants. In addition, in contrast to previous ECMs that were organized in major cities, this ECM was planned to take place in a small town, Piran, on the shore of the Adriatic coast. Although the municipality of Piran has less than twenty thousand inhabitants, it has a suitable congress infrastructure. Local organization was focused in the small but ambitious University of Primorska in the nearby town of Koper. The main challenge was to break the stereotypes about Slovenia and its mathematics, not only abroad but also locally. “We are too small for such a big project. Forget it!” said a leading Slovenian mathematician. After winning the bid for the 8ECM, the tide changed and all Slovenian institutions practicing mathematics enthusiastically offered their support for the success of the congress.

The second challenge was to increase interest in the congress among the general international mathematical community. Looking at the attendance details of the past seven ECMs, we noticed that the number of participants never exceeded the participation at the first ECM in Paris, which had about 1,500 attendees. Only in the seventh ECM in Berlin, one of the key centers of European mathematics, did the trend turn and the participation surpassed 1,000 attendees. Before we decided to put in a bid for hosting the congress, we wanted to understand why this event, one of the most important international mathematical events, does not attract more participants. By informally interviewing various mathematicians from different countries, including some of the organizers of previous congresses, we identified certain issues, three of which are mentioned below.

First, even the first-rate mathematicians who were actively involved in previous congresses as speakers, prize winners, scientific or prize committee members, etc., in general, rarely find time to attend later congresses. Similarly, many officers of the European Mathematical Society (EMS), belonging to various EMS committees, consider their participation at the ECM of lesser importance. By not being a strong positive role model, they also fail to reach out to the younger generations of European and world mathematicians. For instance, the absence of members of scientific committees who select plenary and invited speakers, and similarly members of prize committees, unfortunately, sends a very negative message not only to the speakers and prize winners themselves but also to the general mathematical community, that it is prestige and not mathematical content that counts at the congress. This is a challenge that the leadership of the EMS should address for future congresses.

Second, many excellent mathematicians tend to avoid worldwide and European mathematics congresses. They find these meetings too big and too broad; they prefer smaller, specialized meetings, which they find much more attractive and productive. We addressed this challenge by increasing the weight of the bottom-up approach, expanding the number of minisymposia and minisymposia speakers. In addition, we allowed each minisymposium to select a special speaker and gave these speakers the opportunity to present their contribution within these proceedings.

The third issue, and by far the most damaging, was beyond our control. The outbreak of the pandemic in the final stages of our preparations at the end of 2019 forced us to rapidly adapt to the developing situation. The numbers of infections were rising steeply, worldwide. By March of 2020, it became clear that our original plan needed drastic changes. All decisions were made hand in hand with the executive committee of the EMS. The option of canceling the congress was never on the table. Postponing the ECM for a couple of months seemed too risky. Eventually, we decided to postpone it for a year. By then, the tools for online conferences were sufficiently developed and most mathematicians had adjusted to giving their presentations via the Internet. Although we were prepared for a live congress, we knew very well that several countries still prohibited their scientists from traveling abroad at that time. This is why we opted for a hybrid approach.

Structure of the 8ECM

There were 62 minisymposia with 902 talks, and 95 talks were delivered in special sessions.

Plenary Speakers. Peter Bühlmann, Xavier Cabré, Franc Forstnerič, Alice Guionnet, Gitta Kutyniok, Monika Ludwig, János Pach, Alfio Quarteroni, Karl-Theodor Sturm, Umberto Zannier.

Invited Speakers. Andrej Bauer, Yves Benoist, Robert Berman, Martin Burger, Albert Cohen, Marius Crainic, Mirjam Dür, Alison Etheridge, Rupert Frank, Aleksey Kostenko, Emmanuel Kowalski, Daniel Kressner, Daniela Kühn, Eugenia Malinnikova, Domenico Marinucci, Eva Miranda, Richard Nickl, Burak Özbağcı, Ilaria Perugia, Gabriel Peyré, Yuri Prokhorov, Alexander A. Razborov, Aner Shalev, Špela Špenko, László Székelyhidi, Anna-Karin Tornberg, Nick Trefethen (FRS), Stuart White.

EMS Prize Lectures. Karim Adiprasito, Ana Caraiani, Alexander Efimov, Kaisa Matomäki, Joaquim Serra, Simion Filip, Alexandr Logunov, Phan Thành Nam, Jack Thorne, Maryna Viazovska.

Abel Lecture. László Lovász.

Felix Klein Prize Lecture. Arnulf Jentzen.

Otto Neugebauer Prize Lecture. Karine Chemla.

Hirzebruch Lecture. Martin Hairer.

Public Lectures. Bojan Mohar, Andrei Okounkov, Stanislav Smirnov, Kathryn Hess, Robin Wilson.

Scholarships were awarded following the regulations of the open call.¹ Out of 274 applications from 64 countries around the world, 105 scholarships were awarded.

The internal satellite event “Optimization in Insurance” was held in Portorož on 23 June 2021.² Due to COVID-19, five of the fifteen external satellite events were canceled or postponed.

Four Open Panels and Society Meetings

A highlight of the 8ECM was an open live interview with Jean-Pierre Bourguignon, one of the most influential contemporary European mathematicians who, among other things, served as the second President of the EMS and as President of the European Research Council and left a huge impact on the prestigious Institut des Hautes Études Scientifiques as its Director for 19 years. The interview was conducted by Günter Ziegler, a prominent mathematician who currently serves as the President of the Freie Universität Berlin. The event was chaired by Maria J. Esteban, the Chair of the 8ECM Scientific Committee, and was broadcast live with open access. The interview took place on the last day of the congress, on Friday, 25 June 2021, and was followed by the closing ceremony.

There were eight accompanying events, a career day, and a student competition “Best of 8ECM”. There were sixteen 8ECM exhibitors. There were 1,771 participants who completed registration. Participants came from seventy-seven countries, and there were nineteen countries with more than twenty registered participants: Italy, Slovenia, Germany, UK, Spain, USA, France, Russia, Poland, Czech Republic, Croatia, Hungary, Austria, Ukraine, Switzerland, China, Canada, Belgium, and Romania. There were 1,058 contributions in total.

These proceedings covered forty presentations coming from plenary speakers (7), invited speakers (14), EMS prize winners (6), public lecturers (2), and minisymposia keynote speakers (11).

The 8ECM program was broadcast using the Zoom Webinar platform: one Zoom Webinar license for 3,000 participants (used for plenary talks, public talks, the opening, the interview with Jean-Pierre Bourguignon, and the closing ceremony), eight Zoom

¹See <https://www.8ecm.si/about-8ecm/8ecm-scholarships>.

²See <https://conferences.famnit.upr.si/event/20>.

Webinar licenses for 1,000 participants (used for invited talks and prize talks), and forty-two Zoom Webinar licenses for 500 participants (used for minisymposia, round tables, exhibitors, etc.).

We certainly hope that the next ECMs will be held live, perhaps with certain key talks and other events broadcast over the Internet, and all talks recorded for posterity. We also hope that the next ECMs will be attended more widely by members of EMS committees and also by members of ECM committees. The bottom-up approach could be significantly extended through engagement by national mathematical societies.

Tomaž Pisanski, 8ECM Organizing Committee Chair

Dragan Marušič, 8ECM Local Scientific Committee Chair

Klavdija Kutnar, 8ECM Organizing Committee Deputy Chair

Ademir Hujdurović, 8ECM Organizing Committee Member