

Part II (viewable by the public)

Basic Information

1. Institution Name:

University of Alberta

Conference Vision

1. What is your vision for the conference?

Our vision for this conference is that it should be a celebration of undergraduate research, an ode to mathematics' interdisciplinary nature and pure beauty on its own, and a way of embracing enthusiasm in academics. Attending past iterations of the CUMC has shown us how much its activities can shape the undergraduate mathematics experience. As well, the University of Alberta is an impressive research institution which we hope to promote during the CUMC. We are especially excited about continuing the tradition of holding a Women in Math (WIM) event and about promoting the Canadian Mathematics Society's presence in Western Canada.

We would like to put a focus on collaboration and cooperation, both between mathematics and other disciplines and between mathematicians. As collaboration is one of our guiding themes for this conference, we plan to offer professional development activities designed to encourage more fruitful cooperation and interdisciplinarity in research. We want students in applied math, pure math, statistics, and other disciplines to all feel welcome and begin to discover the benefits of working together; the reality is that we do not work in isolation.

We have seen firsthand examples of this conference's potential. At CUMC 2012, one of our organizing committee members, Peggy Jankovic, had only just switched into a mathematics program from statistics, and was thus still very new to all that pure mathematics encompasses. Getting a taste of all these fascinating areas of research and being exposed to brilliant results presented by undergraduate students helped her to realize how many options are available to mathematics students. After some late-night conversations with passionate young algebraists, she realized how much she too loved abstract algebra and will be starting graduate research in the field this fall.

It is nontrivial that the CUMC can be an instrumental driving force in opening up undergraduates' futures through keeping them curious and excited about learning. We would be proud to take on a role in shaping the path of any undergraduate with an interest in mathematics.

2. Which aspects of the CUMC do you think work particularly well and would continue to be included in your iteration of the conference?

All three of the CUMC iterations attended by one or more of our planning committee members were greatly enjoyed. We recognize that this stems from the components that form the foundation of the CUMC, including the open, non-competitive, bilingual atmosphere, and that these components are a huge part of why the conference is a year-to-year success. The repeat aspects of this conference, including the student talks and keynotes, must remain the focal points of the schedule. Our priority when selecting keynote speakers will continue to be finding strong speakers with a good understanding of their audience.

We have observed some small details in past iterations of the conference that we really felt made a difference. For example, we really appreciated that there were name-tags provided for all participants, that volunteers and executives wore different, brightly coloured t-shirts to make them easily recognizable, and that there was good communication to the guests about all of the daily events. The use of clear speakers and microphones in both English and French made a huge difference in dealing with such a large group of people.

However small of a point this may seem, the choice in contents of past conference packages has been greatly appreciated. The tote bags provided with the conference packages along with the name-tags, helped to provide visibility and community to the group. As well, the spiral notebooks were an exciting part of the package. They really encourage participants to take notes and bring home their sides of the talks. We would be sure to include writing tools and notebooks in our conference packages in order to encourage that extra level of engagement with the talks.

We particularly want to include some of the special events held during past conferences. The Women in Math dinner is especially valued by delegates from our university, and we are particularly interested in the different ways it has been run. In particular, though the WIM dinner has been open to all CUMC participants, regardless of gender, in the two most recent years, we recognize that there are many benefits to creating a women-only space in which participants feel safe to openly discuss issues, tell stories, vent, and express support for each other as occurred at CUMC 2012. Yet, we also want a more open event to inform those who are curious about the issues and eager to be allies. We want to pull the benefits of both versions by having a two-part event, as will be further detailed below.

We greatly enjoyed the recruitment fair at Carleton, though we would love to have a wider range of job-related booths for students to peruse. The 2014 executive was clearly pleased with how the recruitment fair contributed to their conference and we intend to retain this new addition to the CUMC.

The closing banquet is a wonderful way of wrapping up the conference and we greatly enjoyed spending time with our new friends and letting the conversation spiral into the night. A strong closing banquet and a selection of activities to continue through the evening will maintain a feeling of unity among participants, something we aim to foster.

3. Which aspects of the CUMC would you improve upon and how? Are there any new ideas that you would like to bring to the conference?

Our delegation to CUMC 2014 enjoyed much about the conference: the final banquet on the boat, the residence accommodations, the keynote talks, and the city of Ottawa itself were all especially impressive. We did have several main things we wanted to improve on.

First, and most importantly, we find it essential to have more time slots for student talks. It was disappointing to see 11 talks in the same time slot. This high volume of talks creates many awkward complications: it introduces a competitive element that we believe goes against a key ideal of this conference, low attendance can be discouraging for speakers, and it highly restricts the amount of material attendees could be exposed to. This is not fair to the presenters who only have a smaller audience show up and is also unfair to participants as it limits the talks they could possibly attend, especially since it is essential that this conference offers a perspective into the current research taking place across Canada at the undergraduate level. We want to present the student talks as taken seriously and worth attending. We believe having so many talks at once devalues the presenters' importance in the conference, and we wish to show the student speakers that they are taken seriously and that their talks are highly valued. We hope to be mindful of this when creating our conference schedule. We have looked closely at the schedules of the past five iterations of the CUMC to get a good idea of how to come up with a solid schedule that accommodates for the wonderfully large volume of student talks.

Another issue we had was that there were few organized socializing opportunities, which resulted in most delegates staying with students from their own universities for the majority of the conference. This meant missing out on meeting other enthusiastic young mathematicians and sharing ideas with them, when networking and building a strong Canadian undergraduate mathematics community is one of the most integral parts of this unique conference. At Carleton, we felt that there were many missed opportunities to have more active engagement between attendees. For example, it would have been beneficial to seat delegates randomly at different tables at the opening banquet (and we noted that this arrangement worked well at the WIM dinner), or to send everyone to the same karaoke bar after dinner as was quite successfully done at CUMC 2013. There are many small ways such as these to increase socializing between universities. Individuals coming from universities with smaller delegations will have a much more enjoyable experience if given a multitude of opportunities to network and collaborate. Conversely, when institutions sending large delegations are permitted to be stagnate in a big group, as is natural, everyone loses out on one of the most valuable, community-building aspects of the conference. Social events encourage groups to intermingle, allowing for all attendees to take more out of the CUMC. We want to acknowledge that the CUMC is a meeting place for the great

mathematicians of tomorrow and do as much as we can to help foster a strong Canadian undergraduate mathematics community.

We hope to improve the situation for students visiting Edmonton from out of town. Though staying in residence was very convenient for travelling to areas of campus, some aspects of the accommodation process were highly frustrating and we would like to attempt to smooth them out. We propose a roommate pairing service, where odd-numbered groups of delegates might apply to save money by avoiding booking extra single rooms. We are also looking into offering billeting to students travelling from particularly distant parts of the country.

As mentioned above, we recognize how important the Women in Math dinner is to the CUMC and we would like to make a few adjustments to how it runs. First, we would have a session open only to women. It is very important to have a safe space like this so that women feel comfortable sharing without being wary of defensive, sexist comments. We think it is important to keep an interactive feel to this part of the program; by sharing their experiences with others, women in mathematics can arm themselves with tools and the knowledge that issues they have faced are reflective of larger societal attitudes. The second part of the event would be an “allies” session open to all delegates that would start with tapas-style dishes and unstructured discussion, allowing delegates to speak with the panelists on a personal level before a more formal, but still strongly interactive panel discussion, highlighting a panel composed of women with rich knowledge of feminist issues. The evening would close with dessert, providing more opportunities to mix and discuss the issues brought up throughout the night.

One new idea we would be excited to bring to the conference is the addition of roundtable discussion sessions, where delegates and expert panelists would confront some modern issues in the world of mathematics. For instance, we would like a roundtable centred around the theme of mathematical education, since that is a fairly popular topic in the media. Since we would have a theme of collaboration running through the conference, we plan to incorporate that theme into the roundtable meetings. It would be suitable to address issues surrounding sharing ideas with others, communication skills, presentation skills, finding colleagues to collaborate with, and working with non-mathematicians as a mathematician in industry.

Another change to the standard CUMC structure we would make would be to spend one day at a different campus, as was done during CUMC 2012 when the conference moved to Okanagan College from UBCO to emphasize the importance of recognizing smaller universities and colleges. We hope to have a similar field trip to Campus Saint-Jean. In the heart of Edmonton’s francophone neighbourhood, the Campus provides a unique educational experience enriched by francophone language and culture. As bilingualism is one of the main values of the CUMC, we hope that this would be a good way to recognize Canadian francophone academic communities.

Finally, though we appreciate the efforts past CUMC organizing committees have made to accommodate food restrictions, we still feel that the meals sometimes fell short or failed to

add up to a balanced diet. Since one of the members of our organizing committee deals with food restrictions herself, we would keep a very close eye on the food provided by us or caterers and make sure to communicate with delegates who need that extra attention.

Logistics

4. What are your proposed dates for the conference and why?

June 17-21
or June 24-28

We have selected dates which fall between our Spring and Summer terms at the University of Alberta. This will not only allow more local students to attend, but also conflict-free room booking.

5. What are the unique aspects of your proposed conference location (institution, city, etc), that would add to the conference experience and why?

The University of Alberta Department of Mathematical and Statistical Sciences is one of the leading research departments in Canada, with most areas of pure mathematics, applied mathematics, and statistics represented by strong research groups. Some outstanding highlights are:

- The Algebra group, in particular its focus on algebraic groups and quadratic forms (Canada Research Chair Vladimir Chernousov and Centennial Professor Nikita Karpenko).
- The Functional Analysis group, lead by Anthony Lau (University Professor), Alexander Litvak (Steacie Fellow) and Nicole Tomczak-Jaegermann (Canada Research Chair)
- A young and rising group of strong researchers in Mathematical Physics led by Vincent Bouchard (Rhodes Scholar) working in String Theory and connections with Algebraic Geometry, an area with a formidable group of researchers of its own.
- The Centre of Mathematical Biology directed by Canada Research Chair Mark Lewis.
- The research groups in applied mathematics around nonlinear models of physical systems (Centennial Professor Vakhtang Putkaradze) and dynamical systems (Killam Memorial Chair Yingfei Yi).
- The Fluid Physics Lab led by Rouslan Krechetnikov (US Presidential Early Career Award recipient).
- The Statistics group, whose research focus includes projects of a highly mathematical nature.
- The Mathematical Finance group, one of the few active research groups of its kind in Canada.

We intend to give students at our CUMC plenty of opportunities to mix with members of our faculty to provide an opportunity to help situate themselves as individuals within the

mathematics community at large. We can achieve this through our plans for roundtable discussions and social activities.

Though perhaps better recognized for its bitter winters, Edmonton has beautiful summers, and the CUMC will fall in one of the most lovely times to see Edmonton. The University of Alberta campus is one of the most scenic parts of Edmonton with its variety of greenery and variation in architecture ranging from the pre-World War I Heritage buildings Athabasca, Assiniboia, and Pembina, built in 1911, 1912, and 1914 respectively, to the state-of-the-art buildings such as the Edmonton Clinic Health Academy and the Centennial Centre for Interdisciplinary Science. These new buildings provide spacious seating options with a variety of room sizes perfect to host both smaller student sessions and large keynote talks without having to move between buildings.

Additionally, the University of Alberta is home to 29 diverse museum collections spread out on campus between different faculties and departments. Some of these include the Paleontology Museum, the Mineralogy and Petrology Museum, and the Fossil Hominid Cast Collection that is the best of its kind in Canada. We would love to showcase some of the exhibits our university has to offer.

The University of Alberta campus is perfectly situated in the heart of the city, nestled in between downtown, the lively Old Strathcona shopping and nightlife district, and the beautiful river valley, which is the largest urban green space in North America. We would hope to hold our opening banquet as a barbeque in one of the parks bordering campus, with a clear view of the river and plenty of room for throwing around a frisbee or enjoying a game of soccer.

Of course, it goes without saying that Edmonton is home to West Edmonton Mall, the largest shopping complex in North America. Only a 20-minute bus ride from campus, the mall offers arcades, bowling, mini golf, the world's second largest indoor waterpark with the world's largest indoor wave pool, the world's second largest indoor amusement park featuring the largest indoor triple loop roller coaster, and much more. We would recommend that our delegates take advantage of the over 800 stores and services the mall has to offer, especially at our low 5% Alberta tax rate!

Edmonton is, culturally, an incredibly diverse city. The theatre scene is constantly growing, and provides Edmontonians with something to do on a nightly basis. Fringe Theatre Adventures, which hosts the oldest and largest fringe festival in North America each August, has shows bleeding into every part of the year, with their strongest presence in Old Strathcona, a quick walk away from the U of A campus.

The summertime also brings a host of free activities to Edmonton's downtown core. On Churchill Square, just outside of our city hall, there are numerous concerts by local musicians, free classes, mini zoos, and even CypherWild, a weekly hip hop event with live street art, freestyling, and MC battles.

Moreover, the city is highly active through the festivals that occur throughout the year. In the month of June alone, one can expect:

Improvaganza: Canada's largest alternative comedy festival

Edmonton Jazz Festival: a musical gathering of jazz greats and artists

The Works Art and Design Festival: an annual visual arts festival

Nextfest: A theatre, music and visual art festival

Edmonton Pride Festival: showcasing the unity and diversity of the LGBTQA community

And many others. What's more is that all these festivals are located in close proximity to the University of Alberta. Additional Edmonton attractions include the Alberta Gallery of Art, the Royal Alberta Museum, Fort Edmonton Park, and the Alberta Aviation Museum, to name only a few.

6. How will you do your best to ensure the conference attracts as many attendees as in the past or more?

To facilitate a large number of attendees, we believe it is crucial to attend to students' questions and problems as quickly as possible. One of our highest priorities is to provide planning information to students as early as we can, and maintain quick, accessible communication up to and throughout the conference. We know from experience that this makes a huge difference when it comes to applying for travel grants and sponsorship.

Our first focus is on drawing attendance from areas close to and inside of Alberta. We feel placing the CUMC in Alberta will enable many institutions that may have not had a strong representation at the CUMC in recent years to now have a stronger presence. However, without a commitment from those institutions, it is possible that some local math students might miss this opportunity. For this reason, we have already contacted local institutions MacEwan University, Concordia University College, and King's University College to reach out to them in partnership. These institutions are all very excited to have University of Alberta as a host, and have expressed a commitment to provide help where they can, while also promising to fund students to attend should we host in Alberta. We hope to see similar commitments from surrounding universities elsewhere in Alberta, British Columbia, and Saskatchewan, given the affordability of travel to Edmonton.

Given the excitement regarding our own first experiences of the CUMC and the intense desire to attend again, we also hope that hard work to attract students from the area will inspire more Western Canadian students to participate in the future, no matter the location, based on word of mouth and their own experiences.

Ongoing communication with universities across Canada and varying the formats of communication are both important aspects of reaching a wide variety of students. Forming

partnerships with the various undergraduate math societies and departmental representatives at other universities early on will help us pique interest and tailor our plans and information to other students' needs. Different communication formats, from posters to department emails to social networking to in-class announcements, will reach a different group of students. Additionally, the Pacific Institute of Mathematical Sciences (PIMS) office located on our campus has offered to contact their other offices on our behalf to promote the conference should we host.

Though we recognize that it can sometimes be more difficult to attract participants to iterations of the conference held in Western Canada, we believe that we can overcome this challenge while generating a new audience to diversify the CUMC in the future. We hope that students participating in our conference, should we host it, will be just as excited about the CUMC as we are.