Welcoming Remarks

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Hello. It is my pleasure to welcome you all to the 2023 Atlantic TQFT Spring School. Welcome also to Wolfville, in the Annapolis Valley of Nova Scotia.

It is a great privilege to be able to be here and discuss mathematics. Indeed, it is a privilege to be able to study the subjects we love wherever we are. Like almost all privileges, ours comes at the expense of others, and it is our duty to recognize our privileges, to understand the history that leads to those privileges, and to allow this understanding to guide our actions. Land acknowledgements, which recognize the Indigenous inhabitants of the lands in which we live and work, are a small, first step in doing that work. Also, Colleen told me she likes my short Wikipedia-derived history lectures, so here I go.

Wolfville is located in Mi'kma'ki, the national territory of the Mi'kmaq. Mi'kma'ki is (and has been since before European colonization) organized into several large administrative districts; Wolfille and Halifax are both within the Sipekni'katic, or Wild Potato, District. Mi'kma'ki encompases all of what is currently Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland, and the Gaspé Peninsula in what is currently Quebec, and extends into the northeast edge of what is currently Maine. The Mi'kmaq peoples have continuously inhabited this land since prehistoric times. There are currently about 170,000 Mi'kmaw people. Of them, about 11,000 speak Mi'kmaq. The word "Mi'kmaq" is plural; "Mi'kmaw" is singular. When talking among themselves, the Mi'kmaq simply call themselves "Lnu," or "human."

By the early 18th Century, partly in response to King Philip (aka Chief Metacom)'s war in New England, the Mi'kmaq joined the Wapnáki Confederacy with four other Algonquin nations. This confederacy was also allied with the Acadians, French speakers with their own rich culture and history in this region (distinct from the rest of New France). The Acadians were mostly neutral when it came to the wars between Britain and France, but nevertheless found themselves having to defend their territory against the British. Long story short: France lost, and ceded all of New France to England in the Treaty of Utrecht. At this point Mi'kma'ki sent ambassadors to Europe to point out that France had no right to cede land it didn't own. Europe responded: our laws give us the right to claim land not held by Christians. The Mi'kmaq responded: One, that's offensive, and two, Grand Chief Membertou converted to Christianity more than 100 years ago. As you can imagine, this was not the end of the legal argument, and that argument was not held just with words.

The main set of treaties governing the relationship between England, now Canada, and Mi'kmaki are the Covenant Chain of Peace and Friendship Treaties. These were, as the name implies, peace treaties, ending hostilities and establishing trade agreements. By then far outnumbered, the Mi'kmaq accepted British occupation, but the treaties also specify that continued occupation requires continual payment, in the form of gifts to the Grand Chief. Importantly, the Peace and Friendship Treaties never ceded territory, nor the right to hunt, fish, and gather. Although Canada had trouble honouring these treaties throughout much of the last two hundred years, they remain

in force to this day. This was affirmed by the Supreme Court in the 1999 decision R v Marshall, which established the right to Mi'kmaw-run "moderate lively" fisheries, and specified that the government could only regulate fisheries if it "consulted with the First Nation and could justify the regulations." These are some of the most valuable fisheries in North America, and debates over fishing continue to this day, including acts of violence by non-indigenous lobsterers. One intriguing way that some of these debates were partly settled: in 2020, a group of Mi'kmaq First Nations, including Sipekne'katik First Nation, bought Clearwater Seafoods, the largest shellfish producer in North America. This purchase brought quite a lot of the non-indigenous commercial fishing under Mi'kmaw management. Clearwater runs a store at the Halifax Airport, and will happily package up live lobster for you to take home with you in the overhead bin.

This part of Nova Scotia, the Annapolis Valley, is also the main farming region in the province. We've scheduled this school so that every afternoon is unstructured. I encourage you to explore the region and talk math while doing so. Perhaps you will just walk to Noggins Farm, and get incredible local produce. Perhaps you will go hiking. For restaurants and shops, your best bet is Wolfville, about 5 kilometers away: an hour on foot, 6 minutes by taxi. I haven't tried the walk myself. Either follow the highway downhill about a km past the stoplight, and then there's a rails-to-trails going all the way to Wolfville; or, for a 75-minute walk, go uphill and take Ridge Road the whole way. If you want to stay around here: the day spa here in the hotel is open, but you have to book with them (it's a separate company from the hotel). The hotel asked me to communicate their sincere apology about the pool: it stopped working late Thursday night, and they don't know whether they will have it fixed by the time we leave.

As I'm sure you've already figured out, the daily schedule will be: buffet breakfast in our own space, then lectures 9-10 and 10:15-11:15, a coffee and snack break, and then a third lecture 12-1. From 1 to 8 you are on your own. The hotel's restaurant is closed for lunches because they cannot find people to hire (they want to be open), and we assume you will also want to eat in Wolfville for dinner. From 8 to 10 we will have problem sessions back here. Let me introduce who will be in charge: the problem sessions will be run by Matt, Eilind, and Will, and the lectures will be given by Colleen, Arun, and Minta — but Minta will give her lectures virtually because she is home sick. Please take some time to introduce yourself to each other. And please remember that the goal of the workshop is to learn. It shouldn't require saying, but nevertheless it sometimes does require saying, that learning is best done in environments where everyone feels is respected. So don't be a jerk, and don't be a silent bystander if someone else is being a jerk.

Finally, on behalf of myself and Geoff, I'd like to thank the Old Orchard staff, and especially Jane Manning, for their help getting this workshop going and for all the help I know they will provide this week.

Ok, without further ado, Arun Debray will tell us about Spectral Sequences.