

Welcome,

by Claude Spino, vice-dean for research

Lundi le 30 mai 2016

8h15

Jouvence, Magog

Bienvenue à Sherbrooke,

It is a real pleasure to welcome all of you to Québec and to our beautiful Eastern-Townships for the fourth summer school on numerical methods. The Université de Sherbrooke and its Faculty of sciences are proud sponsors and organizers of this event.

You gather here from many places around the planet, from Europe, India, Korea, Australia, South Africa and, of course, Canada and the United States.

You will have a chance to learn from eighteen world experts, coming from Canada, France, United States, Switzerland, Belgium and Germany. Each of them will be present at the School for several days. We hope you will interact with them, ask them questions, share your own ideas and knowledge. You will also learn from your peers, who have been selected according to strict criteria to attend this school. It is quite likely that some of them will remain friends and that you will meet them again in your future endeavours. In other words, at this school you will learn, but we also hope you will take this opportunity to build your professional network.

We hope that you will enjoy this summer school on “Computational Quantum materials”. It encompasses many frontier fields of research: Quantum magnetism, Quantum liquids, Bose-Einstein condensates, Quantum Computing, cuprate and pnictide high-temperature superconductors, topological insulators, to name a few examples. Computers have given us a new way to learn about these fields and about nature in general. While the increase in computing speed has been astounding, the increase in speed provided by new algorithms has been faster. And our approaches to describe nature with quantum mechanics have improved. This is what this summer school is about. It will give you some theoretical depth as well as practical knowledge of the tools that you will need to advance Science for the benefit of mankind.

The school boasts a pedagogical approach rarely found in such events. Some of you are taking this school for credit and we encourage those of you who don't to change your mind. You can register today if you have not done so. You will thus be alumni from Université de Sherbrooke. So let me tell you a little bit more about your institution. We welcome around 28 000 students every year, coming from over 100 countries. 85% of our students are from outside of Sherbrooke. With 360 programs, we offer BSc, MSc and

PhD degrees in essentially all areas of knowledge. Although we were founded only in 1954, we have made our mark and are well known for our leadership and spirit of innovation. We were the first University in Québec to offer a work-study program for undergraduates. We were the first French-speaking University in the world to offer an MBA. Our teaching methods in medicine are copied everywhere. It is quite likely that your cell phone uses voice compression algorithms patented by members of this University. Last but not least, our Physics department, who is hosting this meeting, has made its mark in the fields of superconductivity, quantum materials and the physics of quantum information. This expertise has been recognized by a 33.5M\$ grant from the Canada First Research Excellence Fund last July, one of only 5 grants in all fields of science, engineering and medicine across Canada. The “Institut quantique” funded by this grant, is the main sponsor of this summer school and seeks graduate students and postdocs who are willing to join its efforts in Research at the interfaces between quantum information, quantum materials and quantum engineering.

We are grateful to Michel Côté (UdeM), Roger Melko (Waterloo), David Sénéchal (Sherbrooke), and Gabriel Kotliar (Rutgers) who helped André-Marie Tremblay with the organization of the event. We also acknowledge the invaluable help of Mrs. Dominique Parisé, who is here today. You have exchanged emails with her. She has taken care of the complicated logistics of every aspect of this event. We also thank Michel Barrette and the Centre de Calcul Scientifique from Université de Sherbrooke who installed the impressive computing and networking infrastructure that you will need for the hands-on training sessions. Jouvence had to install an additional 11 kW of electric power just to make this running.

We are, most of all, grateful to you and to our guests speakers who have come from far away to make this Summer School possible. We could not deliver this high quality training without our international experts. The credits for this activity may be handed out by our University, but the classes will have been delivered by truly international volunteer Faculties to an equally international student body. Welcome, thank you for being here and I wish you all, sincerely, a memorable experience.