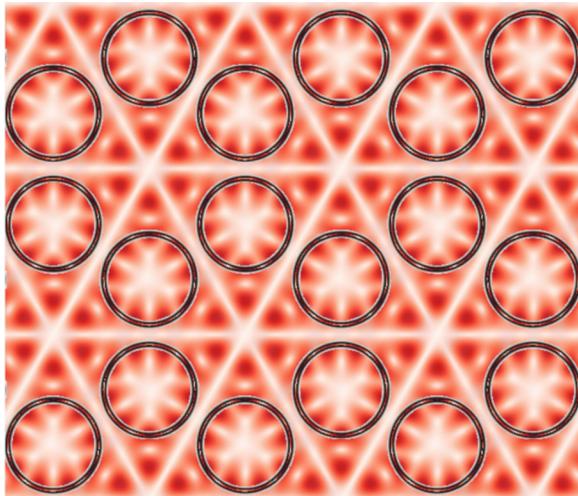


M.Sc. / Ph.D. student position will be available, starting in the Fall 2020 / Winter 2021 in the group of Professor Pablo Bianucci at the Department of Physics, Concordia University, Montreal, Canada.



In the Bianucci Research Group we investigate light, with particular interest in the interaction between light and matter and the trapping of light using microscale optical resonators. We perform experiments, use computer simulations, and apply theoretical models to understand the physics of light. Our current areas of research include cutting edge photonics, topological optics, optical sensors, and the growth and optical characterization of semiconductor nanostructures. We have a vibrant research group, with international collaborations. Each student has their own project, and they present their results at regional, national, and international conferences. We are looking for motivated students who are willing to take ownership of their projects. We believe that diversity is a strength of our research group, and take it seriously.

Designing and studying photonic graphene and other 2D materials

Graphene is a very interesting 2D material, with very interesting properties. Some of those properties come from the particular arrangement of its carbon atoms in a honeycomb lattice. In this project, we plan to use computer simulations to design honeycomb lattices of optical ring resonators and analyze their photonic band structures, looking for the similarities and differences with the electronic bands in graphene. We can then further generalize this to create other photonic 2D materials by changing the ring and lattice geometry. Once we have created photonic 2D materials with interesting behaviours, we will fabricate them and do experimental measurements on them to confirm the predictions.

Concordia's Department of Physics is a growing department in a university with rapidly increasing rating. We offer research-based M.Sc. and Ph.D. programs. Our faculty members conduct research in the areas of Condensed Matter Physics (theoretical and experimental), Molecular Biophysics, Medical Physics / Imaging, Photonics, Theoretical High Energy Physics, Computational Physics and Physics Education.

Successful applicants will be offered financial packages consisting of RA, TA and various awards of at least 20,000 CAD per year (often more), for 4 years (Ph.D.) or 2 years (M.Sc.). International students will be offered tuition remissions or other awards to compensate for the international tuition fees.

Please contact Professor Pablo Bianucci (pablo.bianucci@concordia.ca) or Professor Valter Zazubovits, Graduate Program Director (valter.zazubovits@concordia.ca) for more information.