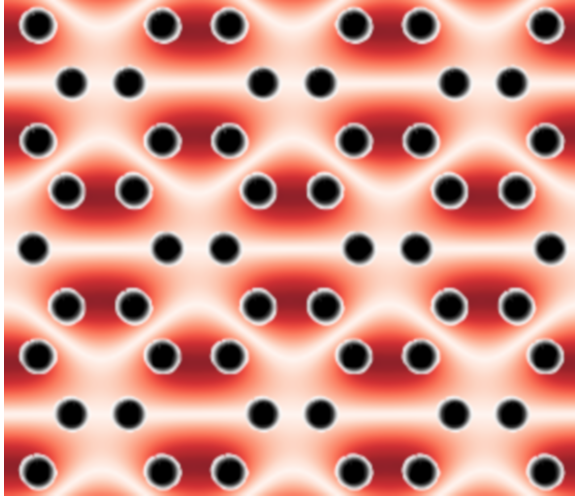


**M.Sc.. student position will be available, starting in the Fall 2022 in the group of
Professor Pablo Bianucci at the Department of Physics, Concordia University,
Montreal, Canada.**



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.

Topological nanowire lasers

In this project, we investigate novel science in photonics and develop computer models of novel metaphotonic lasers. Such novel metaphotonic lasers exploit edge states formed by unconventional metaphotonic structures with two different topological invariants, with the optical gain provided by quantum dots. Compared to conventional metaphotonic devices, whose emission characteristics (such as emission wavelength) are very sensitive to imperfections, the topologically-protected metaphotonic lasers we intend to simulate in this project are robust to imperfections introduced during the micro/nanofabrication process. The concept of utilizing different topologies for creating robust optical cavities in metaphotonic structures can enable high-yield, low-cost, technologically important lasers.

This position is being offered as part of the Masters of Science on Nanoscience and Nanotechnology, a new interdisciplinary program starting at Concordia University This is a team-based thesis-based project, co-supervised with a professor in the Department of Electrical and Computer Engineering. Successful applicants will be offered financial packages consisting of RA, TA and various awards for a total value of at least 20,000 CAD (gross) per year for 2 years

Please contact Professor Pablo Bianucci (pablo.bianucci@concordia.ca) for more information.