



The Edward S. Rogers Sr. Department
of Electrical & Computer Engineering
UNIVERSITY OF TORONTO

Doctoral/Post Doctoral Position in Computational Modeling of Metasurface Antennas/Metamaterials

The research groups of Profs. Piero Triverio and Sean Hum at the University of Toronto are jointly seeking candidates for a doctoral or post-doctoral position in computational electromagnetism, with a focus on the development of efficient algorithms for the modeling of reflectarrays, metasurface antennas and metamaterials.

Project description: metasurfaces and metamaterials hold significant potential to lead to groundbreaking electromagnetic devices for countless application, including terrestrial and satellite communication, sensing and cloaking. A major obstacle to research in this field is the lack of algorithms for the computational analysis and design of metasurfaces and metamaterials. Their large and multiscale geometry is indeed well beyond the capabilities of existing methods for computational electromagnetism. The candidate will develop scalable algorithms for Maxwell's equations that can cope with the complex and multiscale nature of metasurfaces and metamaterials. The approach will be based on integral equation techniques and will leverage recent findings from the Triverio and Hum groups. The novel algorithms will be used to model and design new metasurface antennas for terrestrial and satellite applications related to the internet of things IoT and machine-to-machine communication. The project is in collaboration with Thales, a leading multinational active in the aerospace, defence and transportation sectors.

Required qualifications: M.A.Sc. degree (for doctoral position) or Ph.D. degree (for postdoctoral position) in electrical engineering, computational physics, computational mathematics or a field closely related to the project. Prior experience in at least one of the following areas: applied electromagnetism, computational EM, computational techniques. Proficiency in C/C++ programming.

Desired qualifications: Experience with integral equation methods, uncertainty quantification techniques, model order reduction, high-performance computing (MPI, OpenMP).

Institution and environment: The University of Toronto consistently ranks first in Canada and among the top universities in the world. Conveniently located in downtown Toronto, the university enjoys the lively and vibrant atmosphere of the city.

To apply: Email CV, statement of interest and transcripts to piero.triverio@utoronto.ca and sean.hum@utoronto.ca. Applications will be evaluated on a rolling basis.

Contacts:

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