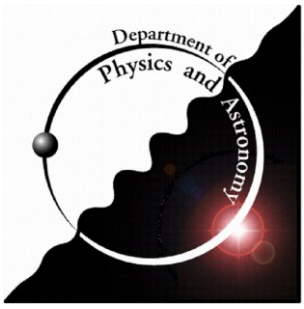


## PHYSICS AND ASTRONOMY
# COLLOQUIUM

# Dr. Reuven Gordon

EECS, University of Victoria

# "Challenging the Limits of Diffraction"

## Abstract

This colloquium talk will show how to overcome three limits of optical diffraction. First, it will be shown how to focus light below the Abbe diffraction limit. Next it will be shown how to squeeze light through subwavelength holes in a metal screen, allowing for 100% transmission, in contrast to Bethe's aperture theory. Finally, it will be shown how to optically trap dielectric nanoparticles (~10 nm) with powers orders of magnitude smaller than required by conventional by Rayleigh scattering trapping formulations, which has interesting applications for manipulating viruses and quantum dots. Both theoretical and recent experimental results will be presented.

## Biographical Sketch

Reuven Gordon received his B.A.Sc. in Engineering Physics (1997) and his M.A.Sc. in Electrical Engineering (1999) from the University of Toronto. He received a Ph.D. in Physics (2002) from the University of Cambridge. In 2002, he joined the University of Victoria, where he currently holds a Canada Research Chair in Nanoplasmonics and an Associate Professor position in the Department of Electrical and Computer Engineering. In 2009, Dr. Gordon was a visiting Professor at the Institute for Photonic Sciences (ICFO -- Barcelona, Spain). He has received a Canadian Advanced Technology Alliance Award (2001), an Accelerate BC Industry Impact Award (2009), and the Craigdarroch Silver Medal for Research Excellence (2011). Dr. Gordon's recent work on nanoplasmonics, biosensors and optical trapping has been featured in the news sections of Nature, Nature Nanotechnology and IEEE Spectrum. Dr. Gordon has authored and co-authored over 70 journal papers (including 5 invited contributions) with over 1500 indexed journal citations and he has co-authored two book chapters.

Wednesday, January 11, 2012
3:30 p.m.
Bob Wright Centre
Room A104