

PHOTONICS DISTINGUISHED LECTURE

Professor Bob Boyd

Quantum Nonlinear Optics: Nonlinear Optics Meets the Quantum World

Faculty Host: Professor Siddharth Ramachandran

April 11, 2014

10:00-11:15 a.m.

Room 906

Photonics Center

8 Saint Mary's Street

*Refreshments will
be served!*



Prof. Boyd argues that nonlinear optics is the key enabling technology for the blossoming field of quantum information science. The nonlinear optical processes of parametric down conversion and squeezed light generation are dominant processes in many quantum information protocols. From a different perspective, nonlinear optical effects such as self-action effects can modify the quantum statistics of light fields, leading either to advantageous or detrimental effects to various quantum protocols. Within this presentation, Prof. Boyd illustrate these points through use of several examples.

Professor Robert Boyd received a B.S. in Physics from MIT and a Ph.D. in Physics from the University of California at Berkeley. His Ph.D. thesis was supervised by Charles Townes, and involves the use of nonlinear optical techniques in infrared detection for astronomy. Professor Boyd joined the faculty of the University of Rochester in 1977, and in 2001 became the M. Parker Givens Professor of Optics and Professor of Physics. In 2010 he became Professor of Physics and Canada Excellence Research Chair in Quantum Nonlinear Optics at the University of Ottawa. His research interests include studies of “slow” and “fast” light propagation, quantum imaging techniques, nonlinear optical interactions, studies of the nonlinear optical properties of materials, and the development of photonic devices including photonic biosensors. Professor Boyd has written two books, co-edited two anthologies, published over 300 research papers, and been awarded five patents. He is the 2009 recipient of the Willis E. Lamb Award for Laser Science and Quantum Optics. Prof. Boyd is a fellow of the American Physical Society (APS), the Optical Society of America (OSA), and SPIE.