PRINCETON
Mechanical & Aerospace Engineering

Friday, March 3, 2017
Bowen Hall Rm 222
3:30 PM

Chip-Based Frequency Combs and Random Number Generators

Alexander Gaeta
Columbia University
New York, NY

Not long ago, CMOS-compatible platforms based on Silicon were viewed as undesirable for integrated optics since lasers could not be created from such materials. However, over the past decade silicon has emerged as an exceptional material for manipulating light and has led to realization of ultrahigh-performance photonic devices in fields from data communications to medicine. I will discuss the nonlinear photonics using silicon-based chips with only milliWatt power levels. Such capability can be used to create chip-based optical frequency combs and quantum random number generators that offer a wide range of applications in telecommunications, time and frequency metrology and photonic computing.

Alex Gaeta received his Ph.D. in 1991 in Optics from the University of Rochester. From 1992 to 2015 he was on the faculty at the School of Applied and Engineering Physics at Cornell University. In July of 2015, he joined the faculty at the Department of Applied Physics and Applied Mathematics at Columbia University where he is the David M. Rickey Professor of Applied Physics. He has published more than 200 papers in areas of integrated nonlinear optics, all-optical signal processing, nanophotonics, ultrafast nonlinear optics, and quantum effects in nonlinear optics. He co-founded PicoLuz, Inc. and is the founding Editor-in-Chief of Optica. He is a Fellow of the Optical Society of America and of the America Physical Society.

Social Period outside of 222 Bowen Hall, following the seminar

ALL VISITORS ARE WELCOME