Photonics Forum

November 30, 2018

*11:45 a.m. -
1:15 p.m.*

9th Floor

Room 901

Photonics Center

8 Saint Mary's Street

Lunch will be served!

Professor Curtis Menyuk, University of Maryland, Baltimore County

Stability and Noise in Frequency Combs: Harnessing the Music of the Spheres

Frequency combs have revolutionized the measurement of time and frequency and impacted a wide range of applications spanning basic physics, astrophysics, medicine, and defense. The key theoretical issues in understanding and designing frequency combs are finding regions in the adjustable parameter space where combs operate stably, determining their noise performance, and optimizing them for high power, low noise, and/or large bandwidth. Professor Menyuk will present a unique set of computational tools that allow his team to efficiently address these issues. These tools combine 400-year-old dynamical systems theory with modern computational methods, are 3–5 orders of magnitude faster than standard evolutionary methods, and provide important physical insight. His methods predict improved operating regimes for combs that are produced from both the passively modelocked lasers and the microresonators.

Curtis Menyuk received a B.S. and M.S. from MIT in 1976, and a Ph.D. from UCLA in 1981. He worked as a Research Associate at the University of Maryland, College Park and at Science Applications Corporation in McLean, VA. In 1986, he became an Associate Professor in the Department of Electrical Engineering at the University of Maryland, Baltimore County, and he was the founding member of this department. In 1993, he was promoted to Professor.

For the last 30 years, his primary research area has been theoretical and computational studies of lasers, nonlinear optics, and fiber optic communications. He has authored or co-authored more than 280 archival journal publications as well as numerous other publications and presentations. He is a co-inventor of six patents.

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